

## CombiTac uniq 安装说明

CN

## CombiTac uniq Assembly instructions

EN

CombiTac 安装说明包含了关于如何安全装配单个组件的精确指导, 必须严格遵守。

所有 CombiTac 安装说明均可在线获取。在线查看安装说明, 请扫描下方的二维码或访问指定网址。

CombiTac assembly instructions contain precise directions on how to safely assemble the single components and must be followed strictly.

All CombiTac assembly instructions are available online. To view the assembly instructions online, please scan below QR code or access the indicated url.



[www.staubli.com/combitac-downloads.html](http://www.staubli.com/combitac-downloads.html)

### 安装说明概览

### Assembly instructions overview

MA213		主文件 Main document
MA213-01		电源与信号触子 Power and signal contacts
MA213-02		同轴连接模块 Coaxial connectors
MA213-03		塑料光纤模块 Plastic optical fiber contacts POF
MA213-04		数据传输模块 Contacts for data transmission
MA213-05		高压模块 2.5 kV/5 kV High voltage module 2.5 kV/5 kV
MA213-06		玻璃光纤模块 Glass optical fiber contacts GOF
MA213-07		先断后通 Last Mate First Break (LMFB)
MA213-08		10Gbit 模块 10Gbit module
MA213-09		PE模块 PE module
MA213-11		6 GHz 同轴模块 Coaxial unit 6 GHz
MA091		CombiTac 电池组 CombiTac for battery pack

**MA213 (cn\_en)**  
**安装说明**

**CombiTac uniq**

**目录**

安全须知.....	3 - 4
单一型号同时配置电连接模块与液体和气体连接模块的注意点.....	5
CombiTac 连接器安全须知.....	6
工具准备.....	7
触子支撑块的定位.....	7
单一零件/CombiTac 组装.....	7 - 9
外壳组装.....	10
底座外壳安装.....	12
耦合器外壳安装.....	12
编码.....	13
外壳尺寸 1 到 6.....	13
CombiTac面板安装.....	14
最终检查.....	19
插拔次数.....	20

**MA213 (cn\_en)**  
**Assembly instructions**

**CombiTac uniq**

**Content**

<i>Safety Instructions</i> .....	3 - 4
Electrical contacts in close proximity to connectors for liquids and gases.....	5
Safety situation for CombiTac connectors.....	6
Tools required.....	7
Orientation of the contact carriers.....	7
Individual parts/CombiTac assembly.....	7 - 9
Housing assembly.....	10
Installing in surface mount housing.....	12
Installing in housing coupler hood.....	12
Coding.....	13
Housing sizes 1 to 6.....	13
Fixing the CombiTac on panel.....	14
Final check.....	19
Mating cycles.....	20

**适用于面板组装**

**Panel mount**



**适用于外壳组装**

**Housing assembly**



压缩空气和冷却液联轴器预组装交付。

The compressed air and coolant couplings are delivered pre-assembled.

## 安全须知

仅可使用 Stäubli 指定的组件和工具。自行装配时，切勿背离本手册所述的制备及装配说明，否则 Stäubli 无法保证产品安全性或性能达到官方技术参数。请勿以任何方式修改产品。

可与 Stäubli 元件插合的非 Stäubli 原厂制造的连接器的，在某些情况下，某些制造商甚至将其描述为“与 Stäubli 兼容”，但该连接器并不符合长期稳定安全的电连接要求，而且出于安全考虑，不得与 Stäubli 元件插合在一起。因此，Stäubli 对因此类连接器（即未经 Stäubli 批准）与 Stäubli 元件插合而造成的任何损失不承担任何责任。

如您未遵守上述警告，则 Stäubli Electrical Connectors (Stäubli) 不承担任何责任。



**IEC 60417-6182**  
安装需电气专业知识

产品可由具备电气技能或受过此方面指导的人员依照适用的安全法规进行装配或安装。



**IEC 60417-6042**  
注意电击风险

请在断电状态下工作  
操作电气装置时，请遵守五项安全规定。  
各电气装置确定后，应按照规定顺序执行以下五项基本要求（除非另有必要理由）：

- 完全分离；
- 确保不会重新连接；
- 确认无工作电压；
- 进行接地和短路；
- 针对临近带电部件提供防护。

任何从事此工作活动的人员均应具备电气技能或受过此方面指导，或者由同等能力的人员监督。

来源：EN 50110-1:2013

最终应用时，还应检查电击防护。

对于大于 DC 60 V 或大于 AC 30 V 的电压，必须测量以确认金属外壳到保护地 (PE) 的电阻。



**IEC 60417-6070**  
在负载下请勿断开连接

仅当额定电压不超过 AC 1000 V /DC 1500 V 时，连接器才可能在带电压的状态下断开和插合。

当额定电压超过 AC 1000 V/DC 1500 V 时，仅在连接器插合状态下方可带电，且不允许在负载下进行断开和插合作。这也适用于在单一型号中同时配置电连接模块与气体和液体模块的情况。

## Safety instructions

Use only the components and tools specified by Stäubli. In case of self-assembly, do not deviate from the preparation and assembly instructions as stated herein, otherwise Stäubli cannot give any guarantee as to safety or conformity with the technical data. Do not modify the product in any way.

Connectors not originally manufactured by Stäubli which can be mated with Stäubli elements and in some cases are even described as "Stäubli-compatible" by certain manufacturers do not conform to the requirements for safe electrical connection with long-term stability, and for safety reasons must not be plugged together with Stäubli elements. Stäubli therefore does not accept any liability for any damages resulting from mating such connectors (i.e. lacking Stäubli approval) with Stäubli elements.

Stäubli Electrical Connectors (Stäubli) does not accept any liability in the event of failure to observe these warnings.

### Installation, electrotechnical expertise

The products may be assembled and installed by electrically skilled or instructed persons duly observing all applicable safety regulations.

### Caution, risk of electric shock

Work in a de-energized state  
Follow the five safety rules, when working on electrical installations.  
After the respective electrical installations have been identified, the following five essential requirements shall be undertaken in the specified order unless there are essential reasons for doing otherwise:

- disconnect completely;
- secure against re-connection;
- verify absence of operating voltage;
- carry out grounding and short-circuiting;
- provide protection against adjacent live parts.

Any person engaged in this work activity shall be electrically skilled or instructed, or shall be supervised by such a person.

Source: EN 50110-1:2013

Protection against electric shock shall be checked in the end-use applications too.

For voltages > DC 60 V or > AC 30 V, protective earthing (PE) measures of metal housings must be taken.

### Do not disconnect under load

Connecting and disconnecting when live is only permitted if the rated voltage does not exceed AC 1000 V/DC 1500 V.

For rated voltages over AC 1000 V/DC 1500 V, the voltage must only be applied in mated condition, disconnecting under load or connecting when live is not permitted. This also applies for electrical connections in close proximity to fluid and gas connections.

**安全须知****Safety instructions****ISO 7000-0434B**  
注意**Caution**

每次使用连接器前,需提前检查外部是否有缺陷(尤其是绝缘层)  
如有安全疑虑,必须咨询专业人员或更换连接器。

Each time the connector is used, it should previously be inspected for external defects (particularly the insulation). If there are any safety concerns, an electrically skilled person must be consulted or the connector must be replaced.

带外壳应用的连接器的防水功能可参考相关产品的IP保护等级。

The plug connectors are watertight in accordance with the product specific IP protection class.

未插合的连接器必须防潮防尘。被污染的公母连接器不应插合使用。

Unmated plug connectors must be protected from moisture and dirt. The male and female parts must not be plugged together when soiled.

**ISO 7000-0421**  
检查**Examine; Check**

告知检查

To indicate examination or checking

**产品使用说明或技巧****Useful hint or tip**

欲了解更多技术参数,请参阅产品目录。

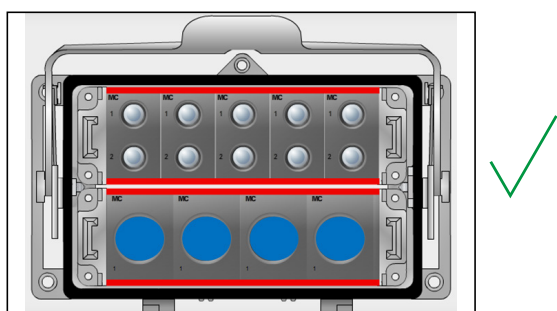
For further technical data please see the product catalog.

## 单一型号同时配置电连接模块与液体和气体模块

损坏的电源触子或存在气体/液体泄漏的连接器,可能对人员和环境造成安全隐患,并影响系统的正常运行。终端用户有责任确保最终使用时的安全和正常运行。风险分析的结果要求,CombiTac 连接器的终端用户必须确保以下内容:

- 在最终使用时,必须遵守所有相关的国家和国际标准和法规。
- 必须采用经过现场测试的技术,必要时必须进行风险评估,以识别和降低风险。
- 禁止使用易燃易爆的液体或气体。
- 独有的公头母头均采用止回阀技术的流体CT-...SCT或CT-...-LCT06模块可以用于流体连接。
- 根据 IEC 60364-4-41 的规定,在发生间接接触、过载或短路时,要求能够自动断开电源。
- 当电压高于 AC 30 V, DC 60 V 时,所有在正常操作时不载流的可触及导体部件,必须连接至保护导体 (PE)。
- 如果电压高于 AC 30 V, DC 60 V,则所有电路都必须由符合 IEC 60364-4-41 规定的剩余电流动作保护装置 (RCD) 保护,其额定剩余动作电流不得超过 30 mA。
- 不允许在带负载或带电状态下插合或分离(符合 IEC 61984 标准的无分断能力连接器)。
- 在永久性固定装置上,电接触对必须置于流体连接器触对方。
- 连接器的液体和气体模块已预先组装好,不能从支撑块上拆下来。

将电连接器模块置于流体连接器模块上方:



请勿在负载或带电压状态下断开或连接

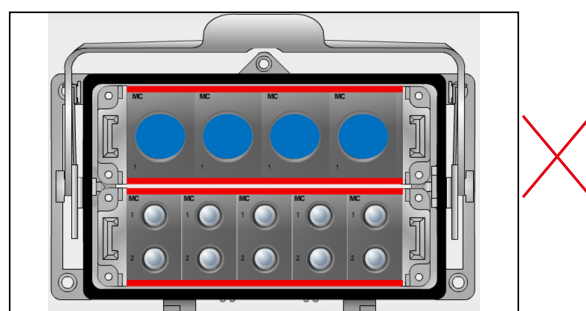
- 在 CombiTac 外壳应用中,必须根据 IEC 60364-4-41 将外壳连接到保护导体。
- 最大额定电压为相对的 AC/DC 1000V。
- 如果检测到泄漏,必须更换流体接头。

## Electrical contacts in close proximity to connectors for liquids and gases

Defect electrical contacts or connectors which leak gas or liquids can be a safety hazard to personnel and the environment as well as affecting the proper function of the system. It is the responsibility of the end user to ensure that both safety and proper function in the end use is guaranteed. The result of a risk analysis requires that the end user of CombiTac connectors must ensure the following:

- All relevant national and international standards and regulations must be complied with in the end use.
- Field-tested techniques must be applied and if necessary a risk assessment must be carried out in order to identify and reduce the risks.
- The use of flammable or explosive liquids or gases is prohibited.
- Exclusively CT-...SCT or CT-...-LCT06 couplings with both male and female sided locking systems are permitted to be used for liquids.
- Automatic disconnection of power supply in the event of indirect contact, overload or short circuit is required according to IEC 60364-4-41.
- If the voltage is higher than AC 30 V, DC 60 V all simultaneously accessible conductive parts, which do not carry current during normal operation, must be connected to the protective conductor (PE).
- If the voltage is higher than AC 30 V, DC 60 V all electric circuits have to be protected by a residual-current-operated protective device (RCD) with a rated residual-operating-current not exceeding 30 mA according to IEC 60364-4-41.
- Connecting or disconnecting under load or live is not allowed (Connector without breaking capacity according to IEC 61984).
- On permanently fixed installations electrical contacts have to be placed above liquid couplings.
- Connectors for liquids and gases are pre-assembled and cannot be removed from the carrier.

Place the electrical contacts above the fluid couplings:



Do not disconnect or connect under load or voltage

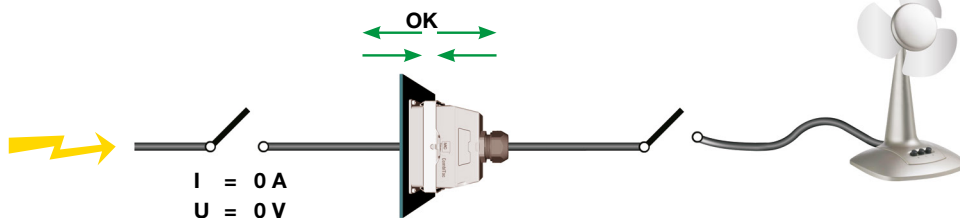
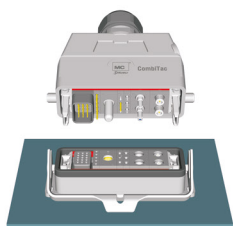
- In CombiTac housing applications the housing has to be connected to the protective conductor according to IEC 60364-4-41.
- The maximum rated voltage phase to neutral conductor is AC/DC 1000 V.
- The fluid couplings must be replaced if a leak is detected.

### CombiTac 连接器的安全须知

在电源已被隔离的情况下, Combitac可以进行分离或插合的操作

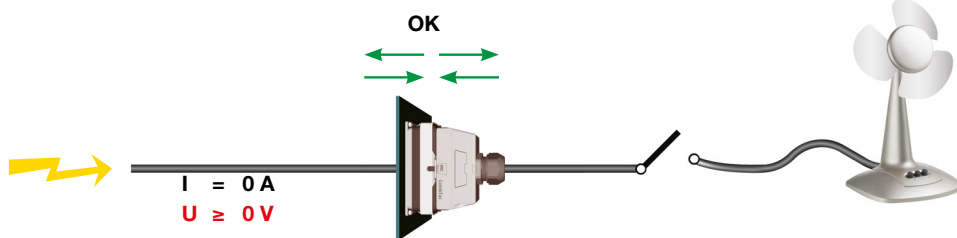
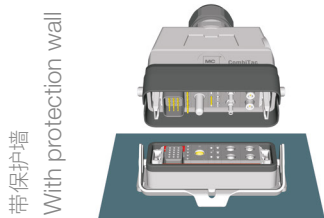
### Safety situation for CombiTac connectors

Connecting or disconnecting when CombiTac is isolated from supply



仅当额定电压不超过 AC 1000 V/DC 1500 V, 连接器可在带电的状态下断开和插合。  
当额定电压超过 AC 1000 V/DC 1500 V, 连接器仅可在插合状态下带电, 且不允许在带负载的情况下进行断开和插合的操作。这也适用于在单一型号中同时配置电连接模块与气体和液体模块的情况。

Connecting and disconnecting when live is only permitted if the rated voltage does not exceed AC 1000 V/DC 1500 V. For rated voltages over AC 1000 V/DC 1500 V, the voltage must only be applied in mated condition, disconnecting under load or connecting when live is not permitted. This also applies for electrical connections in close proximity to fluid and gas connections.



**注意**

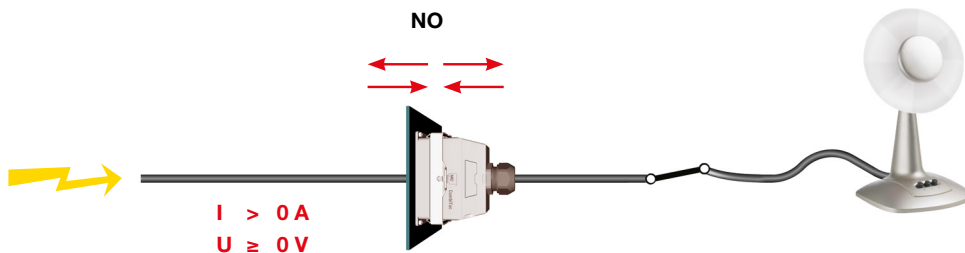
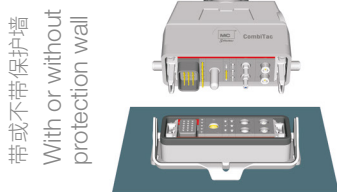
连接器断开状态下, 母座具备触摸保护功能, 例如 IP2X (根据 IEC 60529)。详见CombiTac 样本册中 UL 1977 内容。

**Attention**

When disengaged, the socket side is touch protected, i.e. has IP2X protection according to IEC 60529. See also catalogue CombiTac line section Underwriters Laboratories UL 1977.

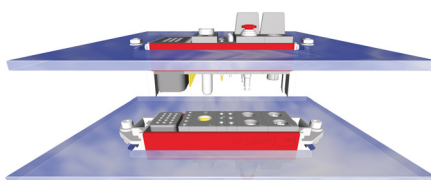
连接器带负载情况下, 不允许进行插合或断开操作。

Connecting or disconnecting when under load



### 面板安装版

### Panel-mounted version

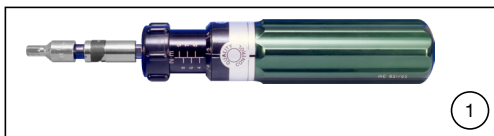


面板安装应用时, 电击防护应由设备安装处的外壳来保证, 须由 CombiTac 的最终用户提供。

The protection against electric shock is provided by the enclosure of the equipment in which it is installed. This is provided by the CombiTac end user.

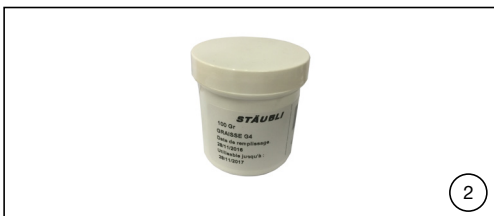
**工具准备**

**Tools required**



(图 1)  
扭矩扳手

(ill. 1)  
Torque wrench

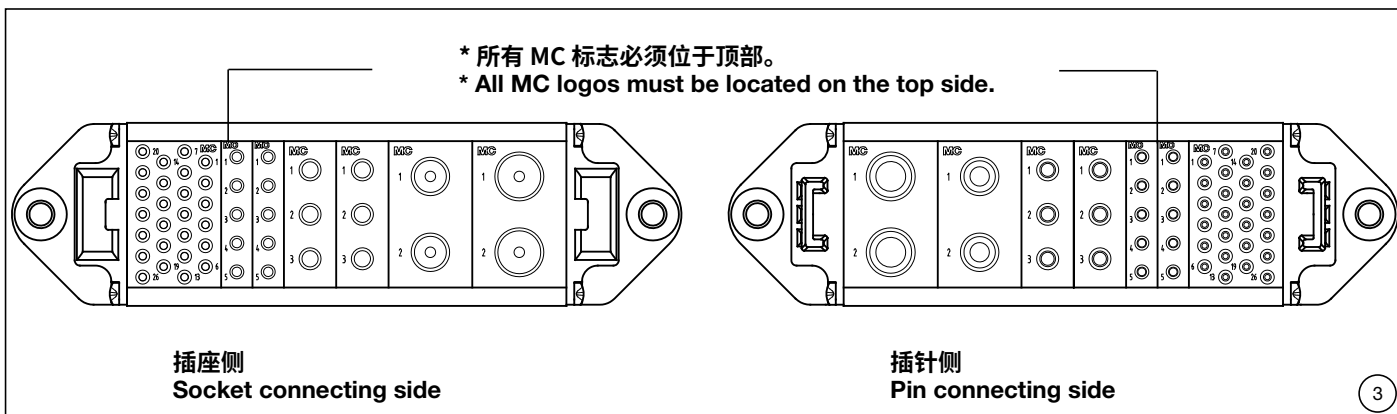


(图 2)  
润滑脂 Stäubli G10, 50 g  
订货号 70790053  
润滑脂 Stäubli G4, 100 g  
订货号 70790054

(ill. 2)  
Grease Stäubli G10, 50 g  
Order No. 70790053  
Grease Stäubli G4, 100 g  
Order No. 70790054

**触子支撑块的定位**

**Orientation of the contact carriers**

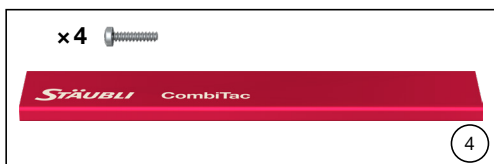


(图 3)  
每个支撑块上带有“MC”标识的一面为对接面。  
触子支撑块在不能同时适用于公针和母座的情况下，会在支撑块的插合背面标记“B”（针对插座）和“S”（针对插针）。

(ill. 3)  
The mating side is the side with the MC logo on each carrier.  
Most contact carriers that are not identical for pins and sockets, are marked with a “B” (for sockets) and “S” (for pins)

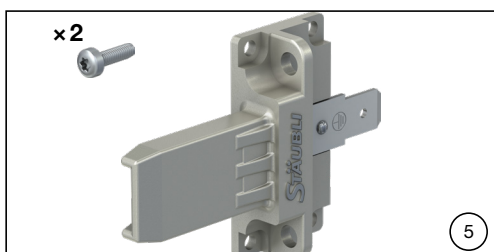
**单一零件**

**Individual parts**



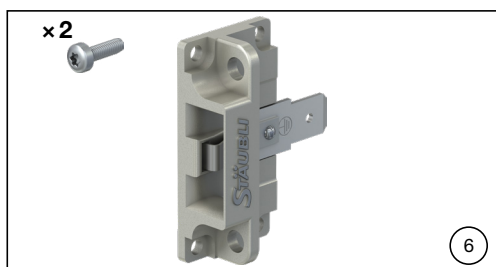
(图 4)  
支撑导轨 CT-BS 或 CT-BS-UR,  
订货号 33.5606-...  
支撑导轨 CT-BS-AL,  
订货号 33.5601-...  
圆头螺钉形  
型号 LI-BL-SHR,  
订货号 33.5615

(ill. 4)  
Supporting rail CT-BS or CT-BS-UR,  
Order No. 33.5606-...  
Supporting rail CT-BS-AL,  
Order No. 33.5601-...  
Filister head screws form  
Type LI-BL-SHR,  
Order No. 33.5615



(图 5)  
DIN 外壳的标准导向销，插头端  
CT-BEG-S, 订货号 33.4057  
**For DIN housings:**  
螺钉 LI-SHR-GF-TORX M3x10,  
订货号 33.2890  
拧紧扭矩: 最大 1.2 N m

(ill. 5)  
Standard end piece for DIN housing,  
pins CT-BEG-S, order No. 33.4057  
**For DIN housings:**  
Screws LI-SHR-GF-TORX M3x10,  
Order No. 33.2890  
Tightening torque: max. 1.2 N m



**(图 6)**  
DIN 外壳的标准导向销,插座端  
CT-BEG-B,  
订货号 33.4056  
**For DIN housings:**  
螺钉 LI-SHR-GF-TORX M3x10,  
订货号 33.2890  
拧紧扭矩:最大 1.2 N m

**(ill. 6)**  
Standard end piece for DIN housing,  
sockets CT-BEG-B,  
Order No. 33.4056  
**For DIN housings:**  
Screws LI-SHR-GF-TORX M3x10,  
Order No. 33.2890  
Tightening torque: max. 1.2 N m



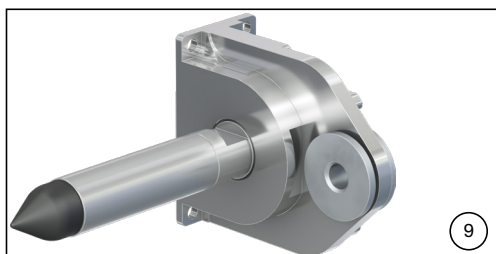
**(图 7)**  
面板安装的标准导向销,插头端  
CT-BE-S,  
订货号 33.4055

**(ill. 7)**  
Standard end piece for panel mounting,  
pins CT-BE-S,  
order No. 33.4055



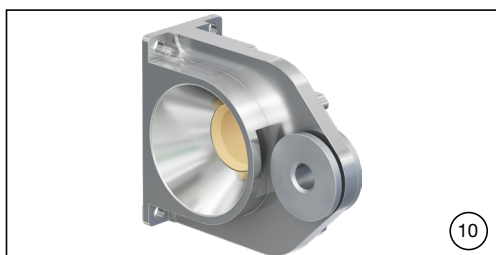
**(图 8)**  
面板安装的标准导向销,插座端  
CT-BE-B,  
订货号 33.4054

**(ill. 8)**  
Standard end piece for panel mounting,  
sockets CT-BE-B,  
Order No. 33.4054



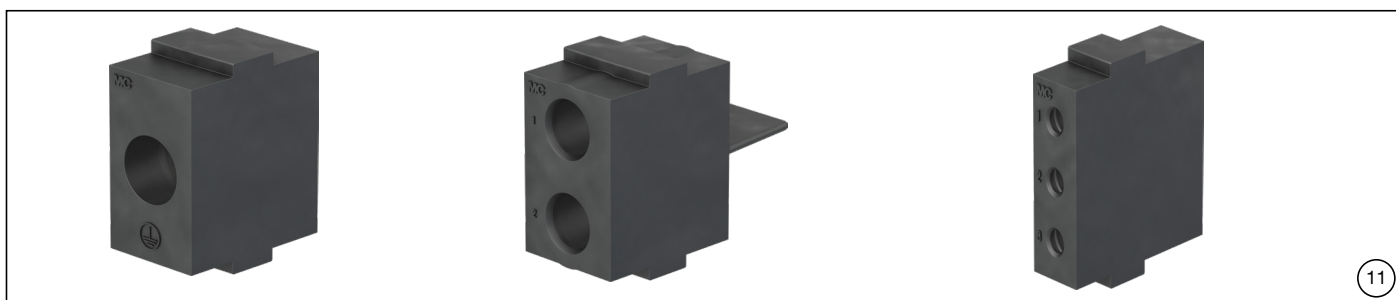
**(图 9)**  
大容差导向销用于面板安装,  
插头 CT-BE-S/4  
订货号 33.5727

**(ill. 9)**  
High misalignment end piece for panel  
mounting, pins CT-BE-S/4  
Order No. 33.5727



**(图 10)**  
大容差导向销用于面板安装,  
插座 CT-BE-B/4  
订货号 33.5726

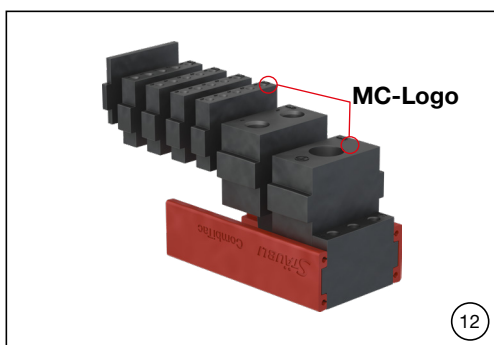
**(ill. 10)**  
High misalignment end piece for panel  
mounting, sockets CT-BE-B/4  
Order No. 33.5726



**(图 11)**  
触子支撑块

**(ill. 11)**  
Contact carriers





### CombiTac 组装

**(图 12)**  
按照所需顺序将所有触子支撑块夹紧在支撑导轨上。

**注意事项:**  
MC 标志的方向参照图 3

### CombiTac assembly

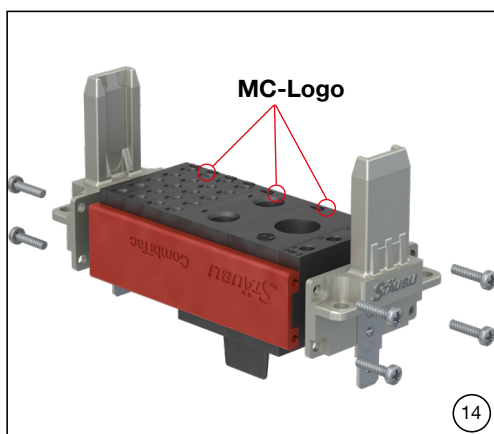
**(ill. 12)**  
Clamp on all the contact carriers in the desired sequence on a supporting rail.

**Note:**  
MC logo orientation according to ill. 3



**(图 13)**  
夹在第二个支撑导轨上。

**(ill. 13)**  
Clamp on the second supporting rail.



**(图 14)**  
如图所示, 将导向销连接到支撑导轨并使用 8 个螺钉固定。  
拧紧扭矩:  
塑料支撑轨: 0,5 N m  
铝材支撑轨: 0,8 N m

**注意事项:**  
注意导向销和支撑块带有“MC”标识面的方向。

**(ill. 14)**  
Connect the end pieces to the supporting rails and secure using the 8 screws as shown.  
Tightening torque:  
Supporting rail in plastic: 0,5 N m  
Supporting rail in aluminium: 0,8 N m

**Note:**  
Pay attention to the end pieces orientation in relation to the MC logo.

**注意事项:**  
由于配置不同, 连接器的插合面可能存在些微的不平整。

**Note:**  
Small projection of contact carriers is possible depending on the configuration.

### 使用直径 3 mm, 最高 1000 V 的触点支承 CT-E3-3 和 CT-E3-2+PE

模块 CT-3 的额定电压在污染等级 2/CATII 时可超过 600 V 2/CATII 提高至 1000 V, 在污染级 3/CATIII 时可提高至 400 V。

为此必须在 CT-3 和某些邻近模块之间用间隔块 CT-DIP 延长电气间隙和爬电距离。

在表中列出了相应的组合。

### Use of Ø 3 mm CT-E3-3 and CT-E3-2+PE contact carriers up to 1000 V

The rated voltage for a CT-3 module may be increased over 600 V 2/CAT II up to 1000 V for pollution degree 2/CAT II, and up to 400 V for pollution degree 3/CAT III.

To do so, the clearance and creepage distances between the CT-3 and some neighboring modules must be increased with CT-DIP spacers.

The corresponding combinations are given in the table.

CT-DIP2 必要 CT-DIP2 required	CT-DIP1 必要 CT-DIP1 required	不需要DIP No DIP required
信号模块/Signal unit: CT-E0,6-20 数据传输模块 Data transfer unit: CT-10GBIT	信号模块/Signal unit: CT-E1-6, CT-LMFB 数据传输模块 Data transfer unit: CT-NET, CT-RJ45 光纤模块/Optical fiber unit: CT-E-POF, CT-E-GOF 热电偶模块/Thermocouple unit: CT-E-TH	信号模块/Signal unit: CT-E1-15, CT-E1-26, CT-E1,5 电源模块/Power unit: CT-E12, CT-E8, CT-E6, CT-E3, CT-3/HV, CT-E1,5/HV 同轴连接器模块/Coaxial unit, 气体和液体模块/Pneumatic and fluid units, 体育模块/PE Module

在 CT-E3-3/PCB 版本中, 不允许施加更高的电压。

Higher voltages must not be applied to the CT-E3-3/PCB version.

### 使用带 M10 内螺纹的 Ø 12 mm 触子 CT-B12/M10 AG 和 CT-S12/M10 IP2X AG

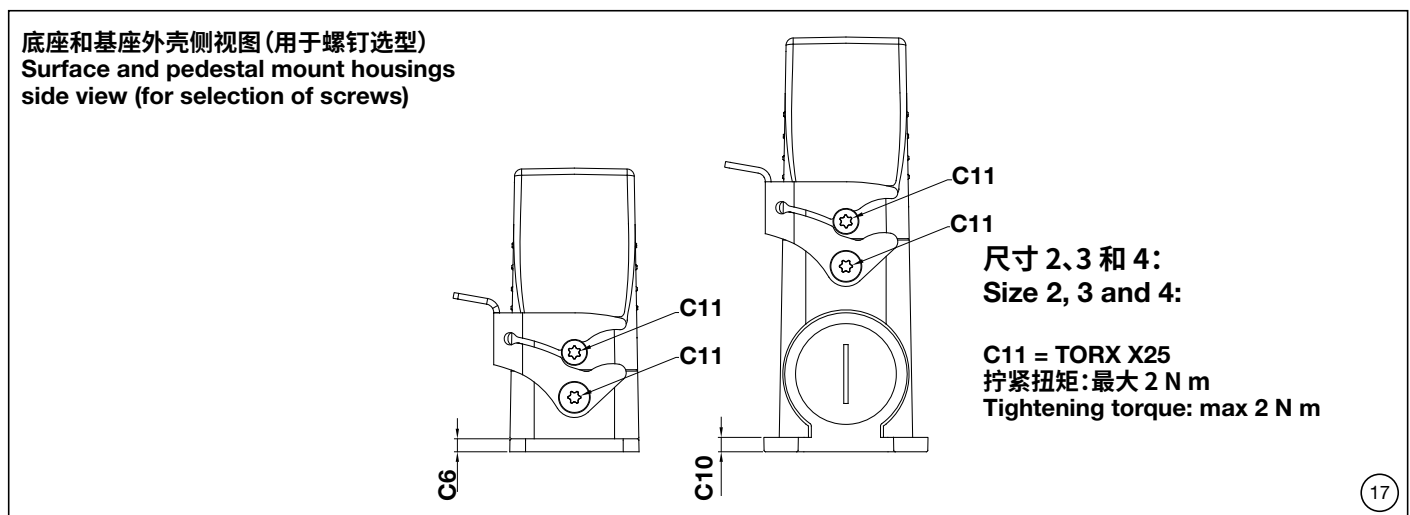
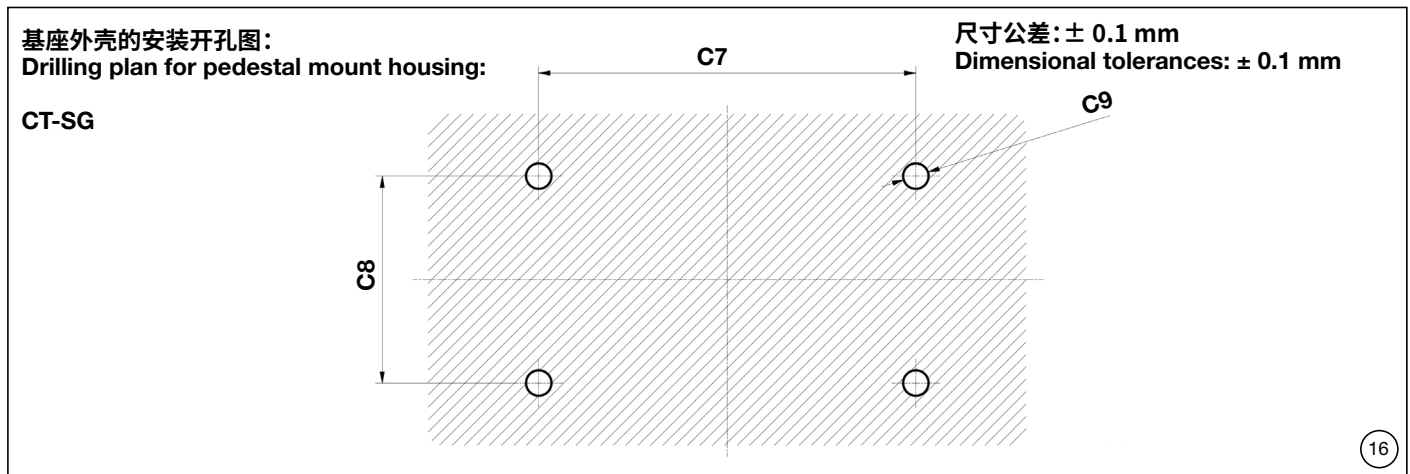
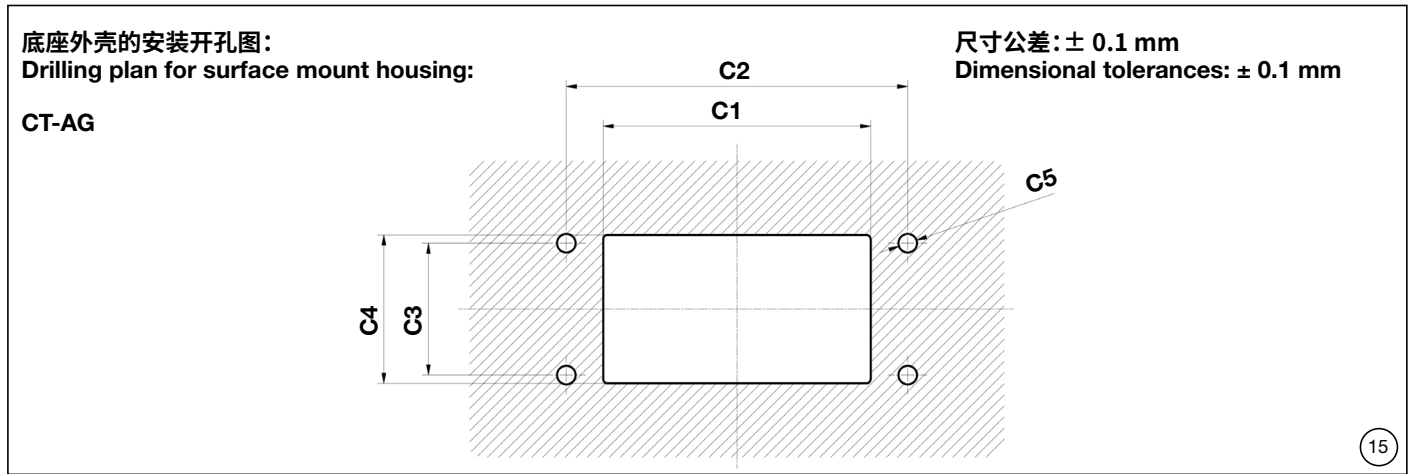
触子的两侧必须使用保护组件 (衬垫 CT-DIP4/2)。

### Use of Ø 12 mm contacts with M10 internal thread CT-B12/M10 AG and CT-S12/M10 IP2X AG.

A protective element (spacer CT-DIP4/2) must be used on each side of a contact.

外壳安装

Housing assembly



(图 15 - 17)  
根据第 11 页的表 1, 为 1 到 6 号外壳做安装开孔。

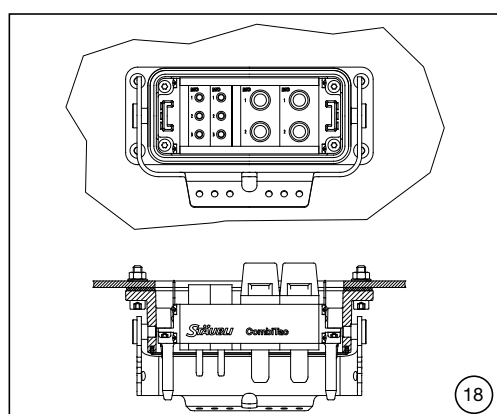
(ill. 15 - 17)  
Cutout dimensions according to Tab. 1, page 11 for housing sizes 1 to 6.

安装信息

MOUNTING INFORMATION

Tab. 1

型号 Type		尺寸 1 Size 1	尺寸 2 Size 2	尺寸 3 Size 3	尺寸 4 Size 4	尺寸 5 Size 5	尺寸 6 Size 6
CT-SM...IP65	C1 (mm)	52	67	87	113	88	110
	C2 (mm)	70	83	103	130	110	148
	C3 (mm)	32	32	32	32	65	70
	C4 (mm)	36	37	37	37	70.6	80.5
	C5 (mm)	M4/Ø 4,5	M4/Ø 4,5	M4/Ø 4,5	M4/Ø 4,5	M5/Ø 5,5	M6/Ø 6,5
	C6 (mm)	6.5	6	6	6	9	12
	拧紧扭矩 (N m) Tightening torque (N m)	3	3	3	3	5	9
CT-PM...IP65	C7 (mm)	70	82	105	132	112	111
	C8 (mm)	45	45	45	45	67	106
	C9 (mm)	M5/Ø 5,5	M5/Ø 5,5	M5/Ø 5,5	M5/Ø 5,5	M5/Ø 5,5	M6/Ø 6,5
	C10 (mm)	5	5	5	5	5	10
	拧紧扭矩 (N m) Tightening torque (N m)	5	5	5	5	5	9
CT-SM...IP68	C1 (mm)	48	60	82	108	-	-
	C2 (mm)	70	83	103	130	-	-
	C3 (mm)	32	32	32	32	-	-
	C4 (mm)	35	35	35	35	-	-
	C5 (mm)	M6/Ø 6,5	M6/Ø 6,5	M6/Ø 6,5	M6/Ø 6,5	-	-
	C6 (mm)	6	6	6	6	-	-
	拧紧扭矩 (N m) Tightening torque (N m)	9	9	9	9	-	-
CT-PM...IP68	C7 (mm)	127	140	160	187	-	-
	C8 (mm)	60	60	60	60	-	-
	C9 (mm)	M8/Ø 8,5	M8/Ø 8,5	M8/Ø 8,5	M8/Ø 8,5	-	-
	C10 (mm)	8	8	8	8	-	-
	拧紧扭矩 (N m) Tightening torque (N m)	9	9	9	9	-	-
CT-SM...TP	C1 (mm)	52	65	86	112	-	-
	C2 (mm)	70	83	103	130	-	-
	C3 (mm)	32	32	32	32	-	-
	C4 (mm)	35	35	35	35	-	-
	C5 (mm)	M4/Ø 4,5	M4/Ø 4,5	M4/Ø 4,5	M4/Ø 4,5	-	-
	C6 (mm)	5	5	5	5	-	-
	拧紧扭矩 (N m) Tightening torque (N m)	1.2	1.2	1.2	1.2	-	-
CT-PM...TP	C7 (mm)	70	82	105	132	-	-
	C8 (mm)	45	45	45	45	-	-
	C9 (mm)	M5/Ø 5,5	M5/Ø 5,5	M5/Ø 5,5	M5/Ø 5,5	-	-
	C10 (mm)	6	6	6	6	-	-
	拧紧扭矩 (N m) Tightening torque (N m)	1.2	1.2	1.2	1.2	-	-



(图 18)  
外壳固定螺钉<sup>1)</sup>

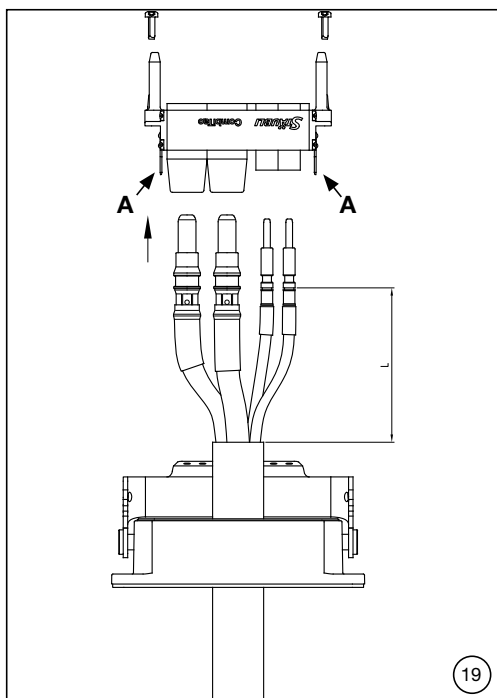
螺钉长度取决于客户面板的厚度和外壳底座的厚度 (C6、C10)

<sup>1)</sup> 不包含

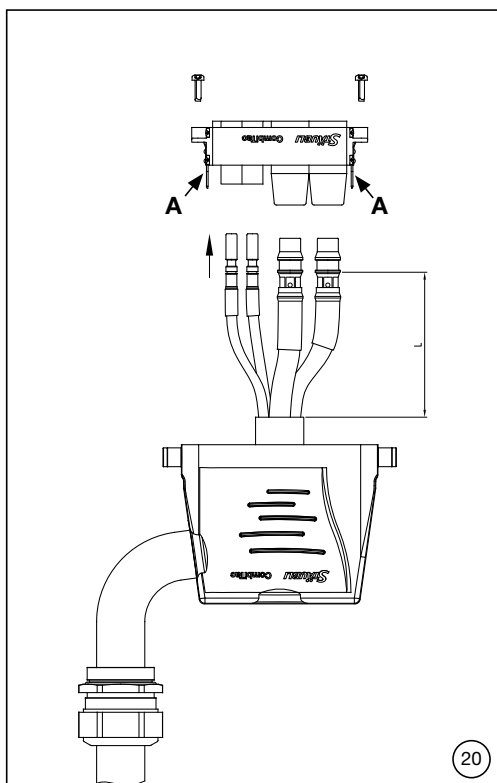
(ill. 18)  
Housing securing screws<sup>1)</sup>

The screw lengths depend on the customer panel thickness and housing base thickness (C6, C10).

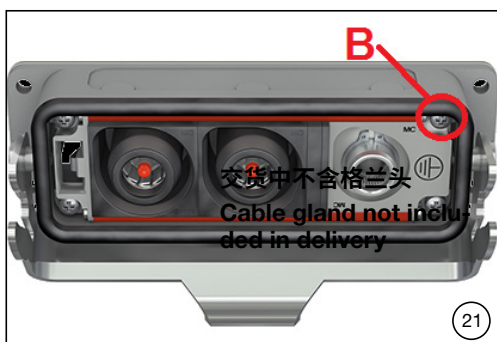
<sup>1)</sup> not included



19



20



21

## 底座外壳安装

### (图 19 – 21)

将带有触子的电缆穿过底座外壳 (图 19), 然后组装到 CombiTac 绝缘块组件中。  
重新拧紧螺丝 (B), 并将 CombiTac 重新固定到耦合器外壳中。拧紧扭矩 1.2 N m

#### ● 注意事项:

**i** 装运过程中, 螺丝未拧紧。如果外壳上没有用于拧紧的螺纹, 请在螺丝孔中拧入自攻螺丝。

#### ● 注意事项:

**i** 根据 MA213-01 准备电缆、压接和安装触子, [www.staubli.com/electrical](http://www.staubli.com/electrical)

#### ● 注意事项:

**i** 电缆长度 L (图 19) 取决于 CombiTac 的配置, 并且要足够长, 才能确保在组装到 CombiTac 支撑块组件时, 不会对触子施加拉力。

接线后, 必须使用热缩套管对  $\varnothing 3$  mm 到  $\varnothing 12$  mm 触子的压接位置进行绝缘处理。

## 耦合器外壳安装

将带有触子的电缆穿过耦合器外壳 (图 20), 然后组装到 CombiTac 绝缘块组件中。  
最后拧紧格兰头, 并确保没有对触子施加拉力。  
重新拧紧螺丝 (B), 并将 CombiTac 重新固定到耦合器外壳中。拧紧扭矩 1.2 N m

#### ● 注意事项:

**i** 装运过程中, 螺丝未拧紧。如果外壳上没有用于拧紧的螺纹, 请在螺丝孔中拧入自攻螺丝。

#### ● 注意事项:

**i** 格兰头的拧紧扭矩须符合供应商规范。

对于  $\varnothing 12$  mm 触子, 其绝缘套管须穿过格兰头。

#### ● 注意事项:

**i** DIN 金属外壳可以通过标准导向销 33.4056 和 33.4057 (位置 A) 上的扁平触子 (6.3 mm  $\times$  0.8 mm) 接地。可将最大 6 mm<sup>2</sup> 的电缆连接到扁平触子。PE 模块 33.4165 用于 10 mm<sup>2</sup> 或更大截面积。

## Installing in surface mount housing

### (ill. 19 – 21)

Pass cables with contacts through surface mount housing (ill. 19) and assemble into the CombiTac carriers.  
Secure CombiTac back into the housing coupler hood by screwing the screws (B) back on. Tightening torque 1.2 N m

#### ● Note:

**i** Screws are shipped loose. If there are no threads for screwing in the housings, screws are self tapping in the holes.

#### ● Note:

**i** Cable preparation, crimping and contact assembly according to MA213-01, [www.staubli.com/electrical](http://www.staubli.com/electrical)

#### ● Note:

**i** Cable length L (ill. 19) depends on the CombiTac configuration and must be sufficient to ensure pulling forces are not applied to the contacts when assembled in carriers.

After connecting the lead, the crimping area of connectors size 3 mm to 12 mm must be insulated with a shrinking sleeve.

## Installing in housing coupler hood

Pass cables with contacts through housing coupler hood (ill. 20) and assemble into the CombiTac carriers.  
Finally tighten cable gland and make sure that no pulling forces are applied to the contacts.  
Secure CombiTac back into the housing coupler hood by screwing the screws (B) back on. Tightening torque 1.2 N m

#### ● Note:

**i** Screws are shipped loose. If there are no threads for screwing in the housings, screws are self tapping in the holes.

#### ● Note:

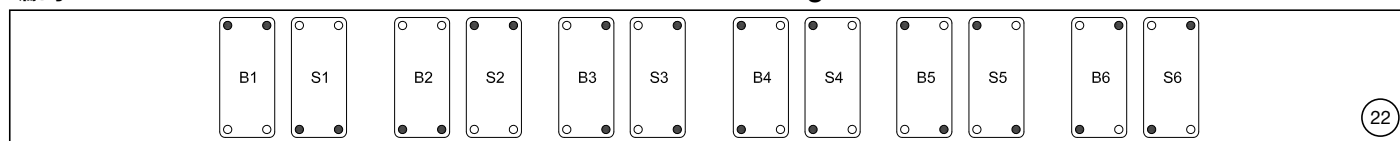
**i** Cable gland tightening torque according to supplier specifications.

For 12 mm contacts, the shrinking sleeve should pass through the cable gland.

#### ● Note:

**i** The DIN metal housings can be earthed through the flat contact (6.3 mm  $\times$  0.8 mm) on the standard end pieces 33.4056 and 33.4057 (position A). Cables up to a maximum of 6 mm<sup>2</sup> may be connected to the flat contact. The PE module 33.4165 is used for cross-sections for 10 mm<sup>2</sup> or higher.

## 编码



(图 22)  
编码组合

S = 插针一侧  
B = 插座一侧  
● = 编码插针

标准交货: 编码 C2, 订货号 33.2887

### 防触电保护

电压大于 DC 60 V 或大于 AC 30 V 的金属 (导电) 外壳, 必须连接至接地保护 (PE)。

### 外壳尺寸 1 到 6

**所有铝材 DIN 外壳的注意事项 (IP65):**

**i** 在首次使用前和 5000 次插拔后, 使用效果持久的商用滚动轴承润滑脂和滑动轴承润滑脂 (例如 Klüber LDS 18 special 或 Klüberlectric KR44-402) 润滑外壳滚筒、轴和杠杆制动器。每 1000 次插拔检查一次, 确保锁紧机构的螺钉没有松动。如果松动, 则将其拧紧至 1.9 N m。

## Coding

(ill. 22)  
Coding variants

S = Pin side  
B = Socket side  
● = Coding pin

Standard delivery: Coding C2, order No. 33.2887

### Protection against electrical shocks

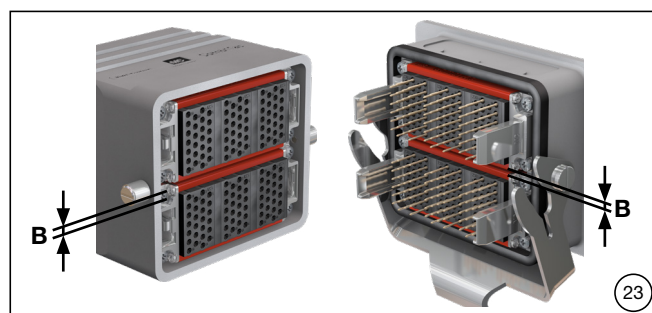
For voltages > DC 60 V or > AC 30 V, metal (conductive) housings must be connected to protective earth (PE).

### Housing sizes 1 to 6

**Note for all aluminium DIN housings (IP65):**

**i** Before first use and after 5'000 cycles, lubricate the housing rollers, axles and lever stops with commercial long-lasting rolling and plain bearing grease. e.g. Klüber LDS 18 special or Klüberlectric KR44-402. Every 1'000 cycles check to ensure that the locking mechanism screws have not loosened. If loosened, tighten them up to 1.9 N m.

### 外壳尺寸 5 到 6



(图 23)

对于所有尺寸为 5 号和 6 号的铝材 DIN 外壳, 必须在插针一侧和插座一侧之间保持均匀的间距 (B)。

### Housing sizes 5 and 6

(ill. 23)

For all Aluminium DIN housings sizes 5 and 6 an uniform spacing (B) between the pin and socket sides must be kept.

**观察:**

目视检查外壳密封圈是否损坏!

### 更换密封

可以订购 NBR 材质的密封圈用于替换。

**注意事项:**

**i** 使用尖嘴钳卸下 2, 3 和 4 号外壳的密封圈, 然后手动压入新的密封圈即可。

**Observation:**

Check housing seals visually for damage!

### Replacement seals

Housing seals from NBR material can be ordered as replacements.

**Note:**

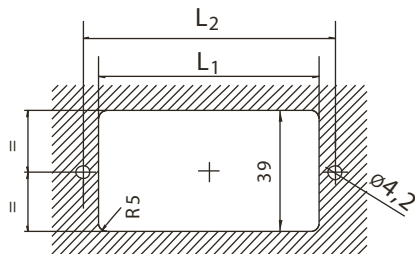
**i** Use a needle-nose pliers to remove replaceable seals of aluminium DIN Housings size 2, 3, 4. New seal can be inserted by hand.

外壳尺寸 Housing size	上密封 Upper seal	下密封 Lower seal		
	型号 Type	订货号 Order No.	型号 Type	订货号 order No.
2	CT-DDI-SM2	33.2782	CT-PDI-SM2	33.2792
3	CT-DDI-SM3	33.2783	CT-PDI-SM3	33.2793
4	CT-DDI-SM4	33.2784	CT-PDI-SM4	33.2794

### CombiTac 面板安装

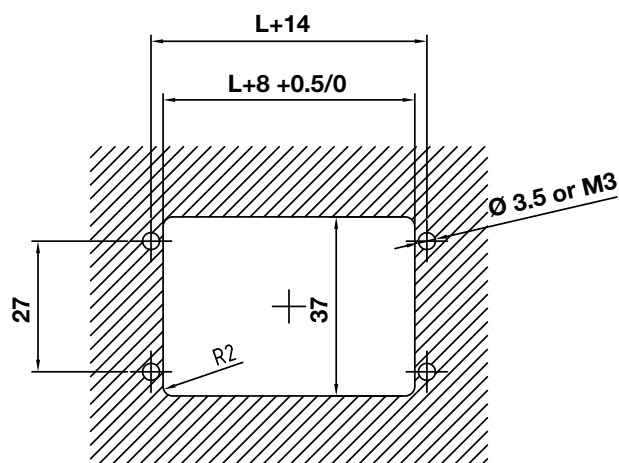
带面板安装导向销的 CombiTac 面板安装钻孔图  
Panel mounting drilling plan for CombiTac with panel mount end pieces

$L1 = L + 22 \text{ mm}$   
 $L2 = L + 33 \text{ mm}$



尺寸公差:  $\pm 0.1 \text{ mm}$   
Dimensional tolerances:  $\pm 0.1 \text{ mm}$

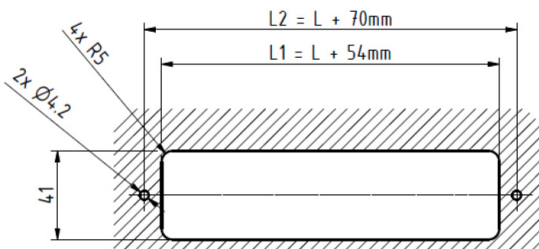
带外壳导向销的 CombiTac 插座一侧面板安装钻孔图  
Pin side panel mounting drilling plan for CombiTac with housing end pieces



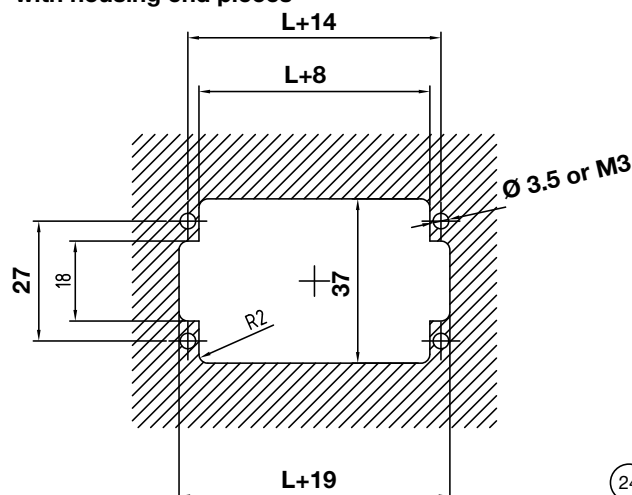
(图 24)  
准确的开槽和开孔是 CombiTac 产品在 X 和 Y 方向上吸收 2 mm 位置公差之必要条件。

### Fixing the CombiTac on panel

带大容差导向销 CombiTac 的面板安装钻孔图  
Panel mounting drilling plan for CombiTac with high misalignment end pieces



带外壳导向销的 CombiTac 插座一侧面板安装钻孔图  
Socket side panel mounting drilling plan for CombiTac with housing end pieces



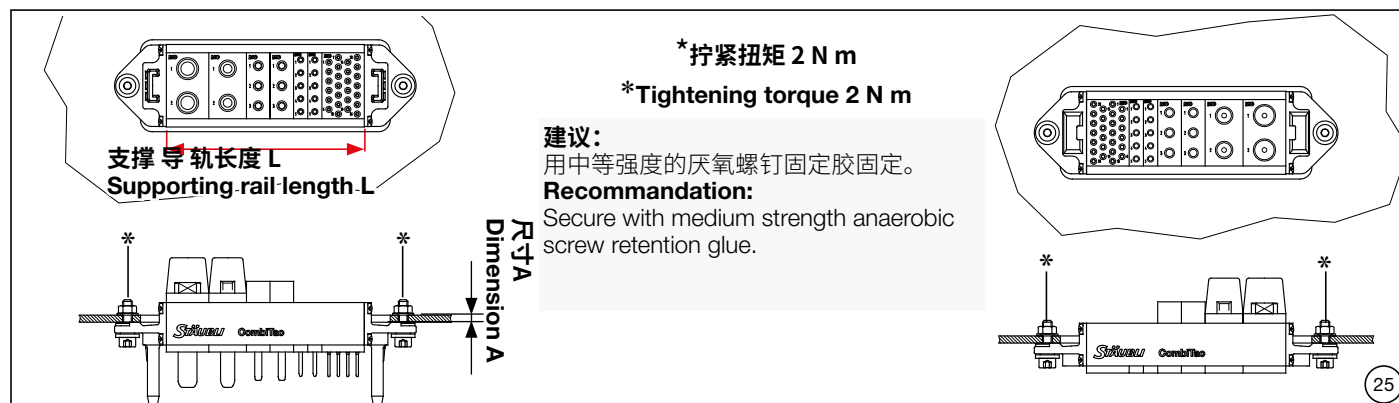
(ill. 24)  
The recess and boreholes are such that the connecting elements can absorb positioning errors of 2 mm in the x and y directions.

#### ⓘ 注意事项:

ⓘ 最小支撑导轨长  $L = 18 \text{ mm}$ 。如有需要,可填充垫片。

#### ⓘ Note:

ⓘ Minimal supporting rail length  $L = 18 \text{ mm}$ . If required, fill up with spacers.



(图 25)  
固定位置: 面板安装导向销<sup>1)</sup>

- 2 个 M4x16 (DIN 912) 螺钉 (螺钉长度可根据面板厚度选择, 尺寸  $A = 2-5 \text{ mm}$ )
- 2 个 M4 (DIN 934) 螺母
- 2 个 M4 (DIN 125A) 垫圈

<sup>1)</sup> 交付中不含 14/20

\* 拧紧扭矩 2 N m

\* Tightening torque 2 N m

#### 建议:

用中等强度的厌氧螺钉固定胶固定。

#### Recommendation:

Secure with medium strength anaerobic screw retention glue.

(ill. 25)

Securing material: Panel mounting end pieces<sup>1)</sup>

- 2 screws M4x16 (DIN 912), (screw length for panel thickness, size  $A = 2 - 5 \text{ mm}$ )
- 2 nuts M4 (DIN 934)
- 2 washers M4 (DIN 125A)

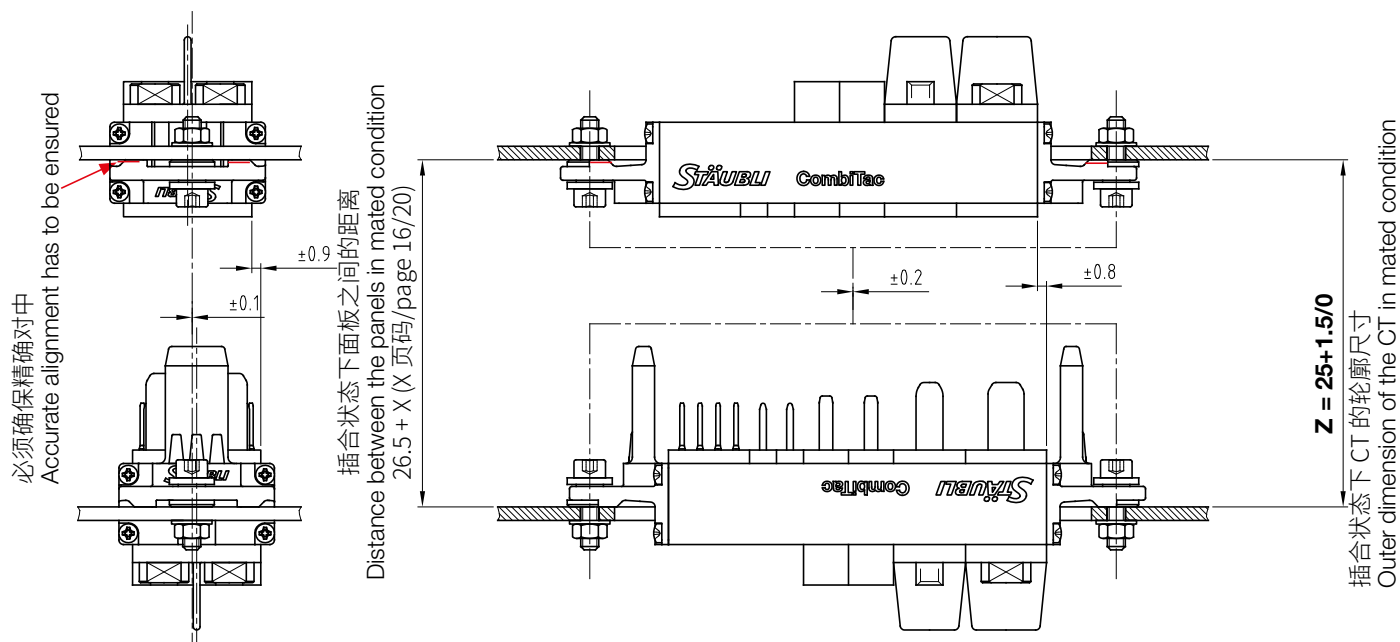
<sup>1)</sup> not included in delivery

### 面板安装

请注意,当包含的触子在插入状态下具有永久轴向力(LMFB、热电偶触子、POF、GOF、RCT、UCT和SCT)时,面板安装需要锁紧。

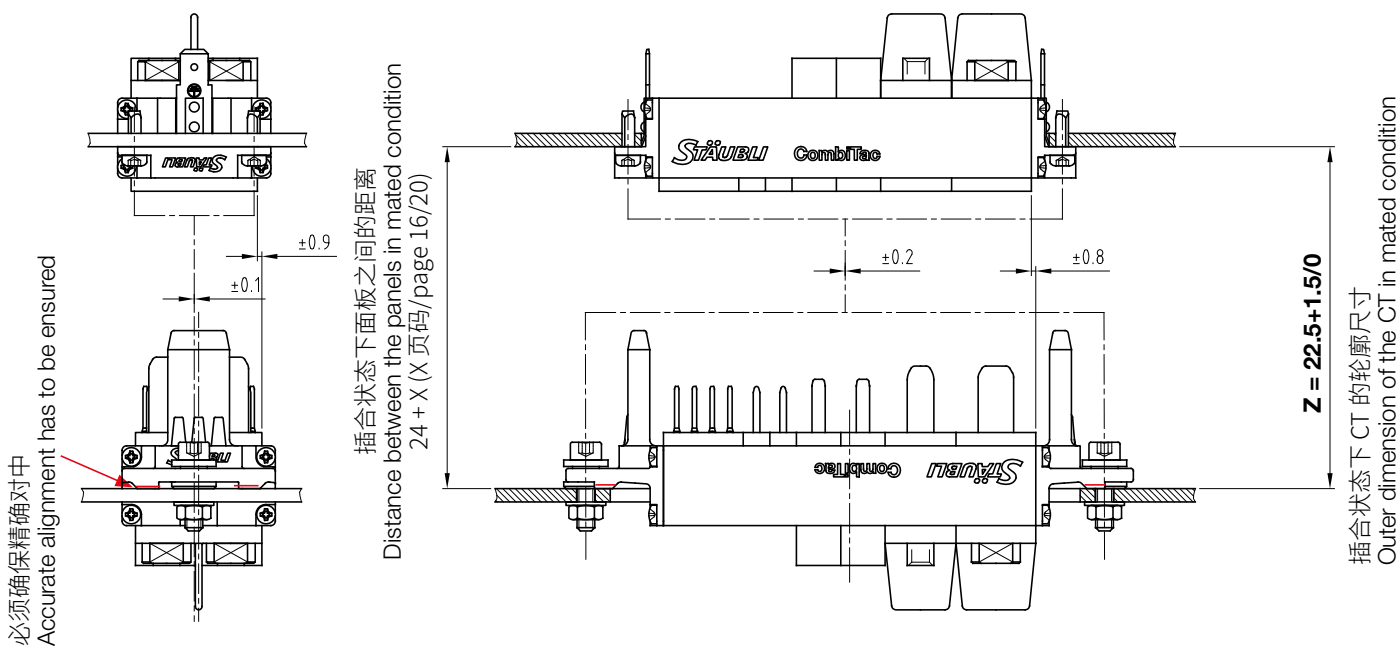
### Panel mounting

Please note that locking is required for panel mounting when contacts are included that have a permanent axial forces in mated condition (LMFB, Thermocouple contacts, POF, GOF, RCT, UCT and SCT).



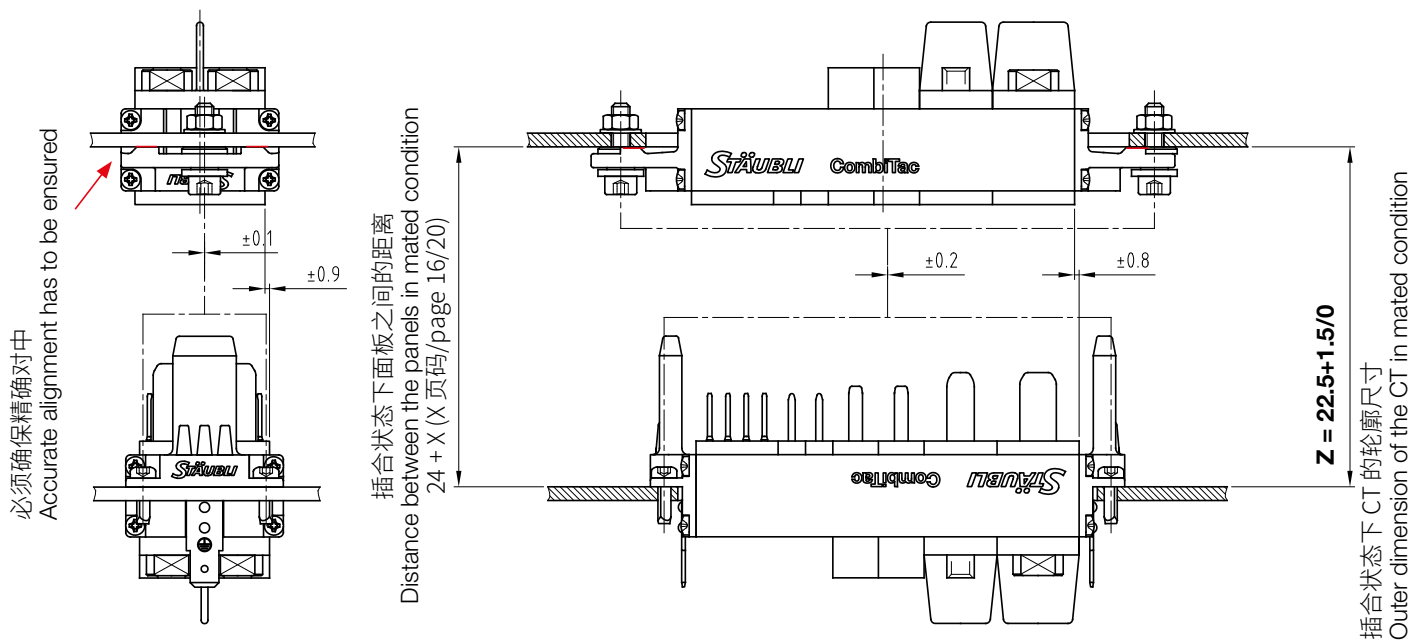
带导向销的面板安装。  
最大允许的安装偏移量。插合状态下的距离 Z。

Panel mounting with panel mount end pieces  
Max. permissible mounting offset. Distance Z in mated condition.



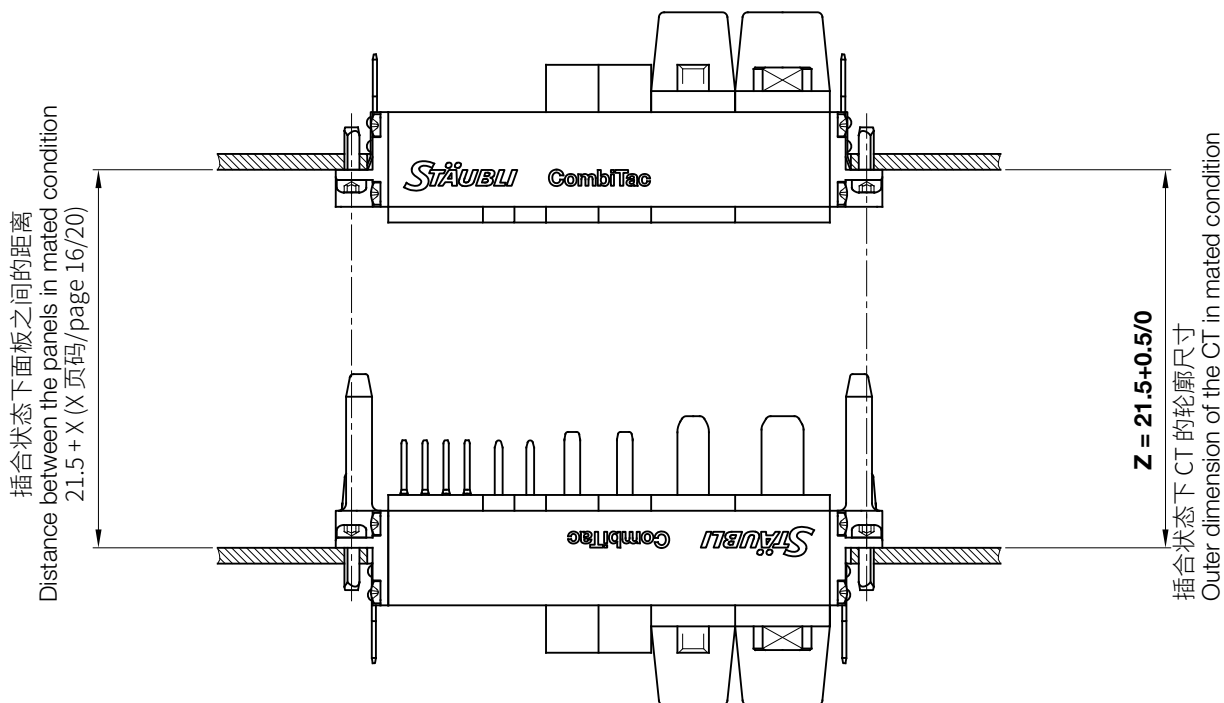
插座端带外壳安装导向销,插头端带面板安装导向销的情况。

Panel mounting with socket side housing end pieces and pin side panel mount end pieces.



插座端带面板安装导向销, 插头端带外壳安装导向销的情况。

Panel mounting with socket side panel mount end pieces and pin side housing end pieces.



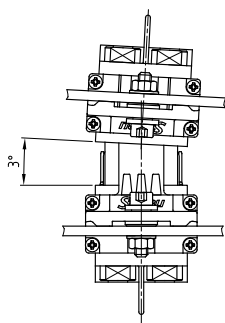
两侧均采用外壳安装导向销的情况

Panel mounting with housing end pieces.

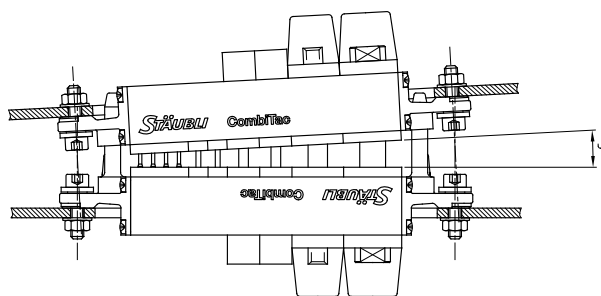
**ⓘ 注意事项:**  
导向和浮动固定必须由客户确保。

**ⓘ Note:**  
Guiding and floating fixation must be guaranteed by the customer.

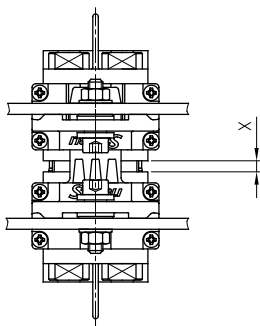




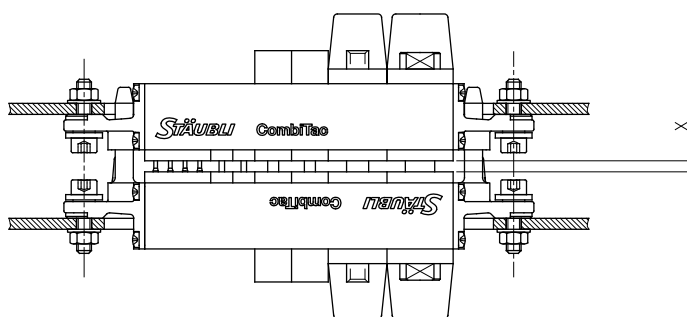
连接阶段的最大允许安装偏移量。



Maximum permissible mounting offset in the connecting phase.



插合时, 触子支撑块间的最大容许距离。



Max.permissible distance between the contact carriers when mated.

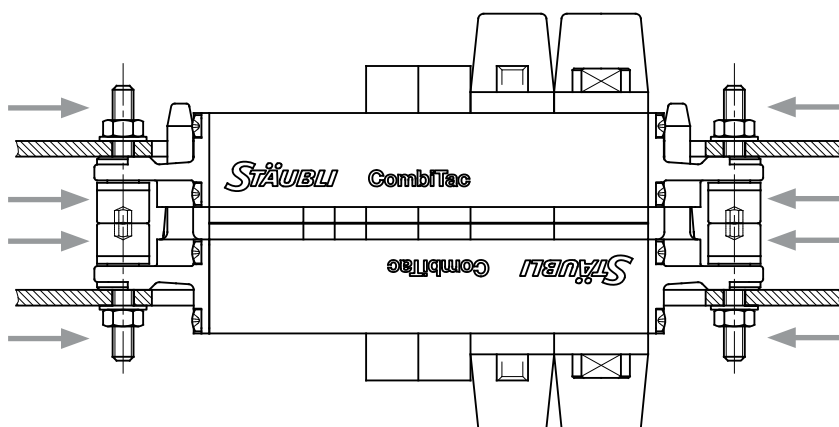
触子 Contacts	尺寸 X Sizes X
	max. mm
CT0.6	1,5
CT1.5	2.75
CT-E8-2-IP2X	2
CT-LMFB	1
其他电源触子/Further electrical	3
POF-/压接版本/crimp version	1,5
POF/SL-/透镜触子/Lens contact	7,5
同轴/Coaxial	1,5
热电偶压力触子/Thermocouple pressure contacts	1,5
CT-NET	2
SCT	2
UCT/RCT	2

### 带硬止动的面板安装

如果整个系统没有明确的停止装置, 则可以使用这种特殊的螺钉 CT-SHR-HS进行面板安装, 以实现硬止动, 这样插入过程中多余的力不必被框架吸收。其与面板安装的标准导向销(两侧)一起使用, 不适用HME。拧紧扭矩 2 N·m。

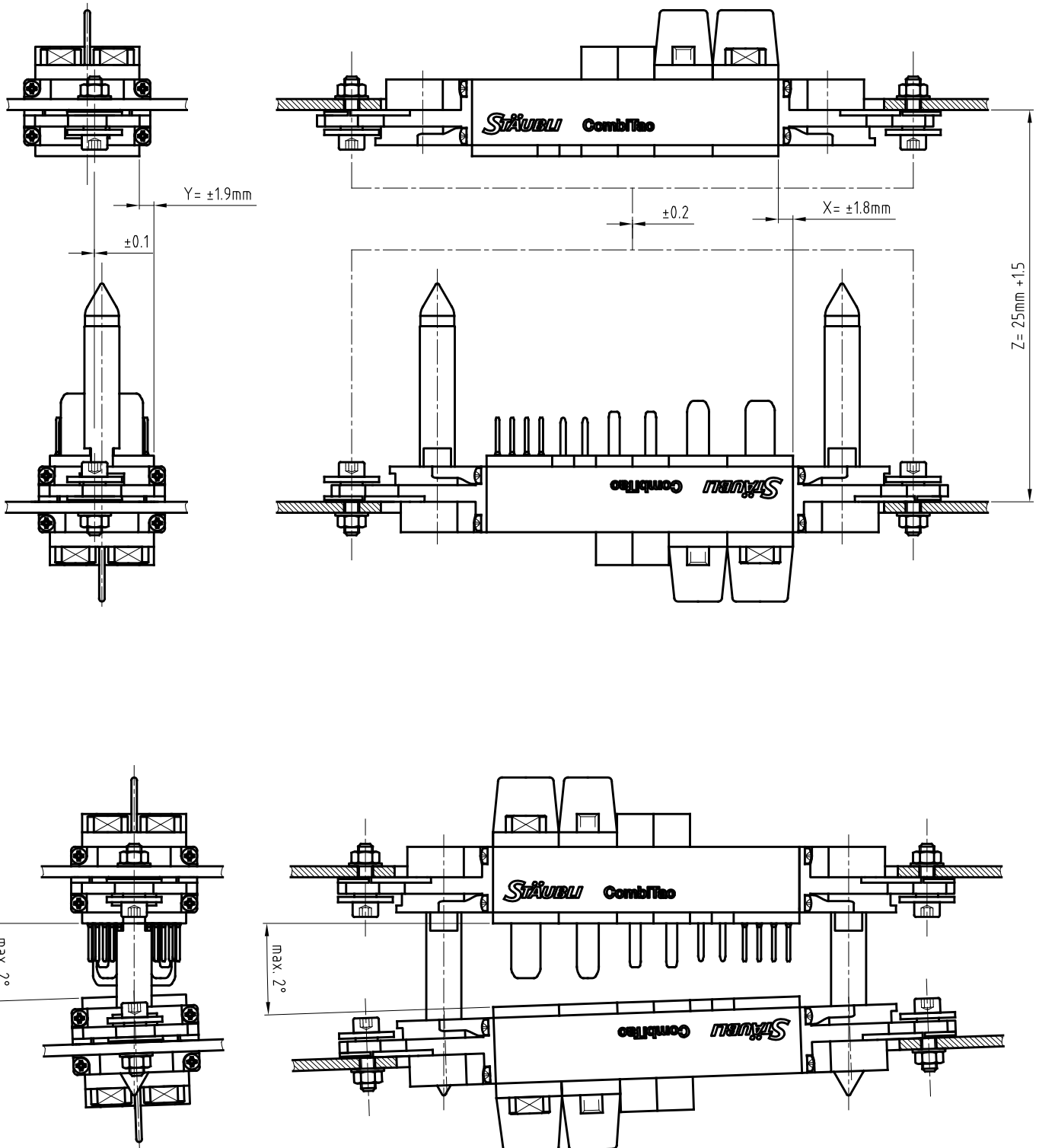
### Panel mounting with hardstop

If the overall system does not have a defined stop, this special screw CT-SHR-HS can be used for panel mounting to provide a hard stop so that the excess force during the plugging process does not have to be absorbed by the frame of the plug. For use with standard end pieces for panel mounting (both sides); no HME. Tightening torque 2 N m.



大容差导向销可补偿角度偏差

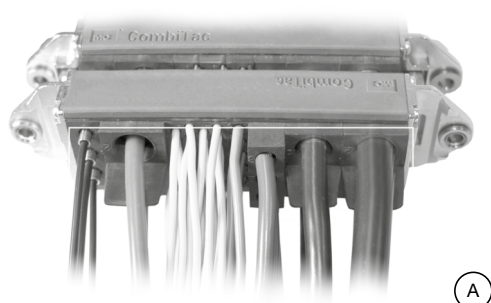
High misalignment end pieces mounting offset



**⚠ 注意**  
**耦合力不受控制且终端位置不确定的连接**  
 不得将不确定的耦合力施加到连接器、框架或导向销上。这种情况下，客户必须提供一个电极插合指南（例如与机械性稳固的插针插合）。不遵照这些建议可能会导致连接器损坏。

**⚠ Attention**  
**Connections with uncontrolled coupling force and undefined end position**  
 Undefined coupling forces must not be applied to the connectors, frames or guiding pins. In such cases the customer must provide a pole-mating guide (e.g. with mechanically robust pins). Failure to follow such recommendations may result in connector damage.

首次使用之前, 请检查以下内容:



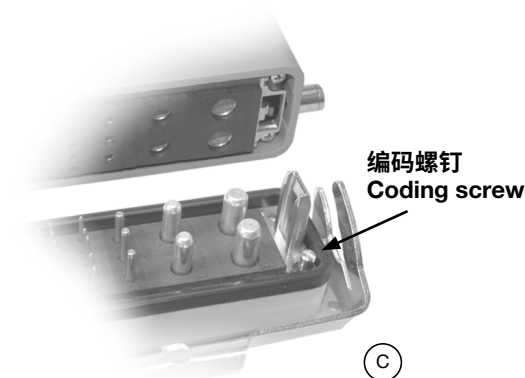
(A)

**(图 A)**

检查 CombiTac 连接侧裸金属零件 (电缆接线片、裸电线等) 之间的间隙和爬电距离。

**(图 B)**

对比插座和插针一侧的配置。



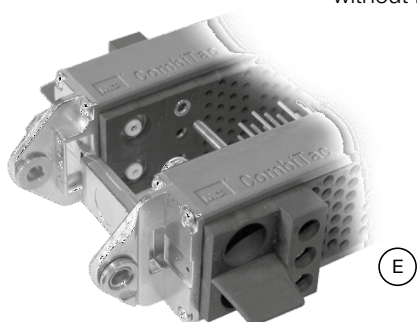
(C)

**(图 C)**

检查编码是否适用, 第 22 页图 13。

**(图 D)**

在面板安装应用中, 必须正确安装以确保浮动安装功能正常。插座和插针一侧应能够在 x 和 y 方向上无阻力移动  $\pm 1$  mm。



(E)

**(图 E)**

检查导向销位置是否正确。

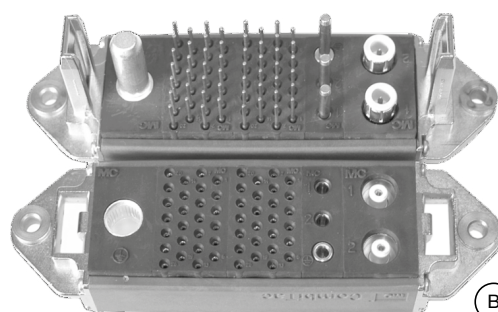
插合状态下必须确保 IP2X。

有关特定模块的组装, 请参阅相应的安装说明。

组装完成后, 不得通过组装的电缆对触子施加拉力。

**Final check**

Before using for the first time, check the following:



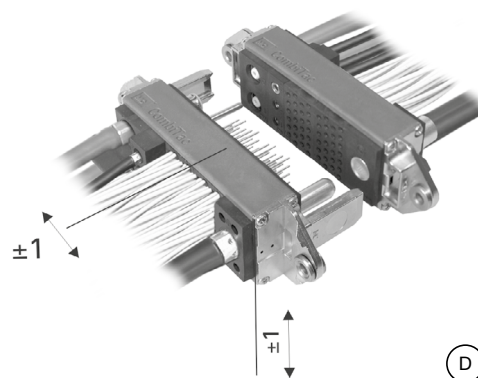
(B)

**(图 B)**

Check CombiTac connection sides for clearance and creepage distances between bare metal parts (cable lugs, bare wires etc.).

**(图 C)**

Compare the socket and pin side configuration.



(D)

**(图 D)**

Check coding if applicable, ill. 22, page 13.

**(图 E)**

In panel mount applications, correct installation is necessary to ensure proper float mounting function. It should be possible to move the socket and pin side in x and y direction by  $\pm 1$  mm without resistance.

**(图 E)**

Check end pieces are correctly positioned.

IP2X must be ensured in mated condition.

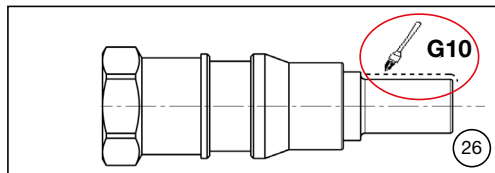
For assembly of the specific modules, please refer to the corresponding assembly instructions.

Following assembly, no pulling forces must act upon the contacts via the assembled cables.

## 插拔次数

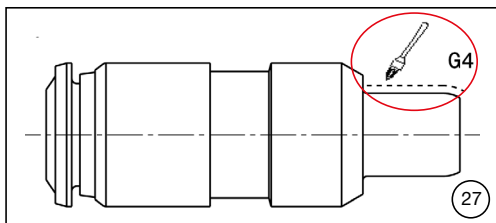
### 压缩空气和冷却液

**注意事项:**  
每 20000 次插拔润滑一次



(图 26)  
适用于 CT-...SCTXX  
润滑脂 Staubli G10, 25 gr, 订货号 70790053

**注意**  
仅润滑虚线区域



(图 27 + 28)  
适用于 CT-...UCTXX 和 CT-...RCTXX  
润滑脂 Staubli G4, 100gr, 订货号 70790054

**注意**  
仅润滑虚线区域

## 热电偶单元

### 适用类型

T: 铜 + 康铜  
J: 铁 + 康铜

**维护注意事项:**  
每 10000 次插拔: 用干净的压缩空气清洁触子。  
50000 次插拔后: 用酒精清洁触子  
(例如工业酒精) 并用棉签擦拭。

### 适用类型:

E: 镍铬合金 + 康铜  
K: 镍铬合金 + 镍铝镍  
N: 镍铬 + 镍硅

**维护注意事项:**  
每 50000 次插拔: 用干净的压缩空气清洁触子。  
每 100000 次插拔后: 用酒精清洁触子  
(例如工业酒精) 并用棉签擦拭。

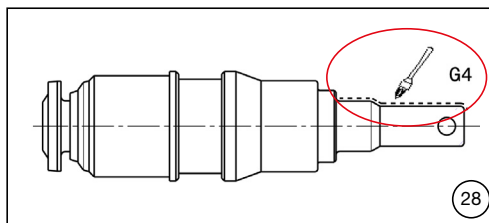
## Mating cycles

### Compressed air and coolant units

**Note:**  
Lubrication interval every 20'000 mating cycles.

(ill. 26)  
for CT-...SCTXX  
Grease Staubli G10, 25 gr., order No. 70790053

**Attention**  
Lubricate only the dotted area



(ill. 27 + 28)  
for CT-...UCTXX and CT-...RCTXX  
Grease Staubli G4, 100 gr., order No. 70790054

**Attention**  
Lubricate only the dotted area

## Thermocouple Unit

### for Types:

T: Copper + Constantan  
J: Iron + Constantan

**Maintenance note:**  
Every 10'000 cycles: clean the contacts with clean compressed air.  
After 50'000 cycles: clean the contacts with alcohol  
(eg. methylated spirit) with a cotton swab.

### for Types:

E: Chromel + Constantan  
K: Chromel + Alumel  
N: Nicrosil + Nisil

**Maintenance note:**  
Every 50'000 cycles: clean the contacts with clean compressed air.  
After 100'000 cycles: clean the contacts with alcohol  
(eg. methylated spirit) with a cotton swab.

## 生产商/Producer: Stäubli Electrical Connectors AG

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