


# HVP-HD1000 Header Application Specification

## HVP-HD1000 公端高压连接器 应用规范



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- ◆ **This connector is intended for use in high-voltage applications. Special care must be applied to ensure that the connector functions as intended.**
- ◆ **If you suspect that the connector has been modified, damaged, contaminated or other wise compromised, please discontinue it use immediately.**
- ◆ **This connector should only be serviced by a trained and qualified technician.**

## 1. SCOPE 适用范围

### 1.1 Content 内容

This specification covers the requirements for application of HVP-HD1000 High Voltage connector. The HVP-HD1000 connector system is designed to meet LV215 specifications (vibration refers to ISO16750-3 while salt spray refers to VDA233-102), there are 35mm<sup>2</sup>、50mm<sup>2</sup> and 70 mm<sup>2</sup> three kinds of metric wire size (acc. to ISO 6722-1 class D, ISO 19642-9 class D). The connector incorporates conductive EMC shields to reduce radiated emissions in the application. The HVP-HD1000 header can be divided into two kinds: 90Deg and 180Deg. All of them have 1POS、2POS、3POS, equipped with twelve different keying or polarizing configurations. The connector system incorporates the 10mm round contacts, integrated High Voltage Interlock (HVIL) System and High Voltage Finger Protection(IPXXB). The plastic housing is molded in orange to denote a high voltage system.

该规范涵盖了HVP-HD1000高压连接器的应用要求。HVP-HD1000连接器系统的设计符合LV215规范(振动符合ISO16750-3, 盐雾符合VDA233-102), 有35mm<sup>2</sup>、50mm<sup>2</sup>以及70mm<sup>2</sup>三种公制线径(符合ISO 6722-1 class D, ISO 19642-9 class D 标准)。该连接器采用导电EMC屏蔽, 以减少应用中的辐射。

HVP-HD1000连接器有90° 以及180° 两大类, 可分为1POS、2POS、3POS三种, 有12种不同的键位。连接器系统包含10毫米圆形电源连接系统和高压互锁 (HVIL) 系统和高压手指防护 (IPXXB) 要求。外壳采用橙色模制, 表示高压系统。

### 1.2 Processing notes 加工说明

The processor is responsible for ensuring the quality of the manufacturing process and the proper function of the system. The warranty and liability is excluded, if quality deficiency or damages occurs by failing compliance to this specification or using not specified, not released tools or not released connector components.

加工者负责确保制造过程的质量和系统的正常功能。如果由于未遵守本规范或使用未定义的、未发布的工装或未发布的连接器组件而导致质量异常或损坏, 则不承担保修和责任。

## 2. APPLICABLE DOCUMENTS 适用文件

The following mentioned documents are part of this specification. If there is a conflict between the information contained in the documents and this specification or with any other technical documentation supplied, the last valid customer drawings take preference.

以下提到的文件是本说明书的一部分。如果文档中包含的信息与本规范或提供的任何其他技术文档之间存在冲突, 则以最新有效的客户图纸优先。

### 2.1 TE Connectivity Documents 泰科电子文件

This application specification based on the latest valid customer drawings.

本应用规范基于最新的有效客户图纸。



## 2.1.1 Customer drawings 客户图纸

Table 1: Customer drawings / 泰科规范

Header side (Include interface) / 公端(包括应用面板)	
2394060	HVP-HD1000 1POS HEADER ASSY,180DEG
2394061	HVP-HD1000 2POS HEADER ASSY,180DEG
2394062	HVP-HD1000 3POS HEADER ASSY,180DEG
2394070	HVP-HD1000 1POS HEADER ASSY,90DEG
2394071	HVP-HD1000 2POS HEADER ASSY,90DEG
2394072	HVP-HD1000 3POS HEADER ASSY,90DEG
2407806	HVP-HD1000 HEADER SHIPPING CAP
2414100	HVP-HD1000 1POS THROUGH HOLE HEADER ASSY,180DEG
2414101	HVP-HD1000 2POS THROUGH HOLE HEADER ASSY,180DEG
2414102	HVP-HD1000 1POS THROUGH HOLE HEADER ASSY,90DEG
2414103	HVP-HD1000 2POS THROUGH HOLE HEADER ASSY,90DEG

## 2.1.2 Specifications 规范

Table 2: TE-specifications / 泰科规范

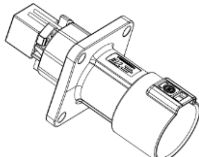
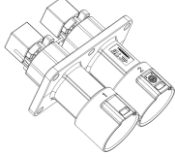
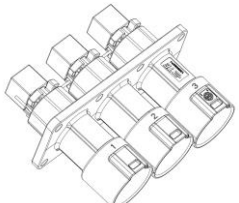
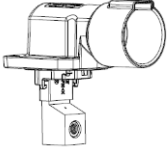
Specifications	Description
108-160337	Product specification 10MM contact system
108-160341	Product specification HVP-HD1000 connector

114-160178	Application specification 10MM contact system
114-160182	Application specification HVP-HD1000 plug
114-160181	Application specification HVP-HD1000 header

### 3. CONDITION OF DELIVERY AND PACKAGING 交货和包装状态

#### 3.1 HVP-HD1000 Header ASSY HVP-HD1000公端

Table 3: HVP-HD1000 Header ASSY / HVP-HD1000公端

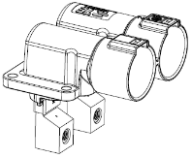
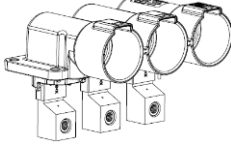

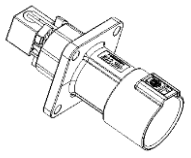
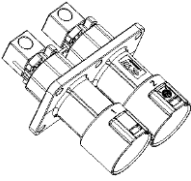
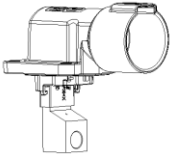
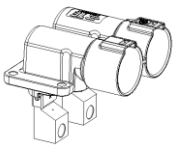
Description 描述	Picture 图片	Base Number 基础料号
HVP-HD1000 1POS HEADER ASSY,180DEG		2394060
HVP-HD1000 2POS HEADER ASSY,180DEG		2394061
HVP-HD1000 3POS HEADER ASSY,180DEG		2394062
HVP-HD1000 1POS HEADER ASSY,90DEG		2394070



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114-160181

Rev A

HVP-HD1000 2POS HEADER ASSY,90DEG		2394071
HVP-HD1000 3POS HEADER ASSY,90DEG		2394072
HVP-HD1000 HEADER SHIPPING CAP		2407806
HVP-HD1000 1POS THROUGH HOLE HEADER ASSY,180DEG		2414100
HVP-HD1000 2POS THROUGH HOLE HEADER ASSY,180DEG		2414101
HVP-HD1000 1POS THROUGH HOLE HEADER ASSY,90DEG		2414102
HVP-HD1000 2POS THROUGH HOLE HEADER ASSY,90DEG		2414103

## 3.2 Packaging and Storage 包装和贮存

The products should be used on a “first in, first out” basis to avoid storage contamination, please refer to the latest valid customer drawings.

为避免存储污染，产品应以“先进先出”的原则使用，请参见最新的有效客户图纸。

Store condition: Temperature:0~30℃, humidity:<60%

储存条件：温度：0~30℃，湿度：<60%

Reference shelf life: 6 months

参考保质期：6个月



If these silver-plating products aren't used up in the line after the package is opened. It shall be packed in the original way within 4 hours.

如果镀银的产品整箱在产线打开包装后没有用完，必须要打开包装4个小时内按照原始的方式重新包装。

## 4. FINAL EXAMINATION 终检

### 4.1 Visual Examination 外观检查

After processing the connector assembly, completeness & correctness has to be checked according to customer drawings and free of damage.

在装配连接器后，必须根据客户图纸进行完整性、正确性检查，且不能损坏。

During the storage period, the product surface may be oxidized and discolored. These oxide layers are composed of Silver sulfide. The contact resistance to the electrical performance of the product is not affected and is identical to the brand new state.

在储存期限内，产品表面可能有氧化变色现象，这些氧化层是由硫化银组成的，对产品的电气性能的接触电阻并不受影响，和全新状态完全相同。

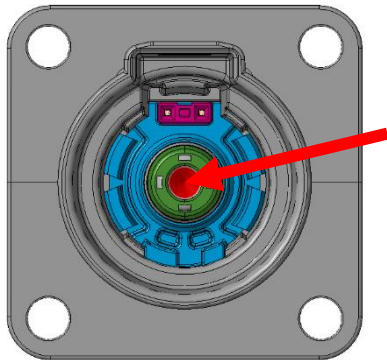


Figure 1 : 180 Deg header

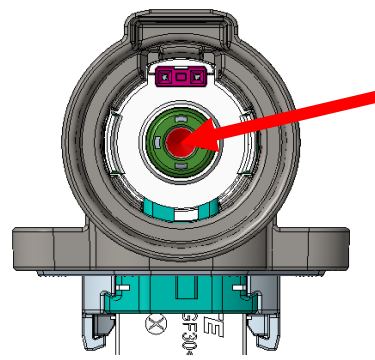


Figure 2 : 90 Deg header

The copper exposed at the bottom of round pin (not higher than the hole for plating process) is allowed due to non-functional area here.

由于圆柱端子内侧的底部不是功能区域，该区域露铜是允许的（不高于电镀工艺孔）。

### 4.2 Electrical Tests 电气测试

Applicator should ensure the electrical characteristic values according to product specification TE-108-160341 chapter 3.4. Test parameter should not exceed the specification in chapter 3.4.

使用方依据产品规范TE-108-160341第3.4章保证电气特性。测试参数不应超出规范3.4章的值。

## 5. HEADER ASSY INSTRUCTIONS 公端连接器安装说明

### 5.1 Inspection before installation 安装前检查

The cross section of HVIL wire is  $0.5\text{mm}^2$  (acc. to ISO 6722), operating temperature range from  $-40^\circ\text{C}$  to  $150^\circ\text{C}$ , withstand voltage  $\geq 4\text{KV}$ .

HVIL 线缆的截面积是  $0.5\text{mm}^2$ ，（参考 ISO 6722），工作温度范围  $-40^\circ\text{C}$ - $150^\circ\text{C}$ ，耐压  $\geq 4\text{KV}$

Check the position of HVIL wire(s) before installation, the HVIL wire(s) must be inside the housing hook, as shown in Figure 3. (Taking the  $90^\circ$  three-position male connector as an example, the other headers is the same.)

安装前检查 HVIL 线缆位置，线缆必须在塑胶卡扣内，如图 3。  
(以  $90^\circ$  三位公端为例，其他公端同样如此)

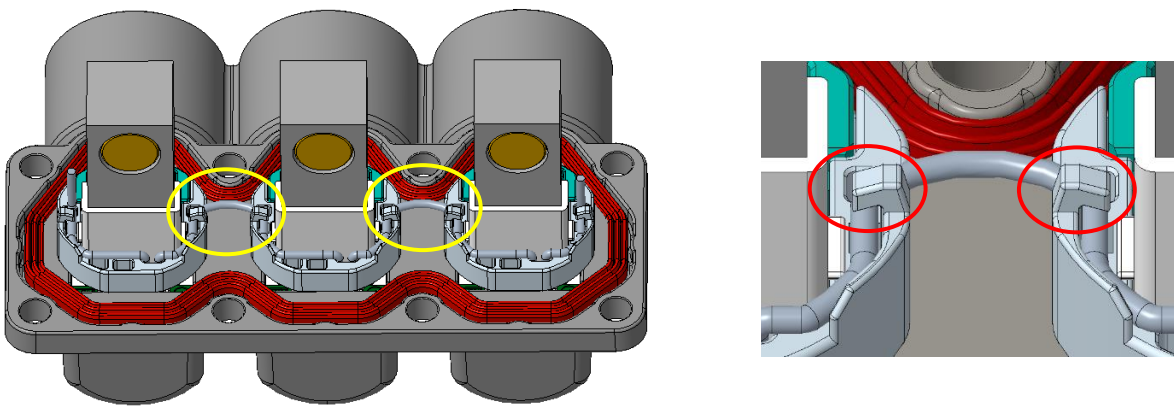


Figure 3 : Inspection before installation

If the HVIL wire is not in the plastic hook due to accidental touch before installation, as shown in figure 2. It can be re-installed manually, as shown in Figure 4, put the wire again in the position inside the hook.

如果 HVIL 线缆在安装前因为意外碰触导致不在塑胶卡扣内，见图 4。  
这种情况可以被手工重新组装恢复，根据图 5 所示，再次将导线再放入钩子下面的位置里。

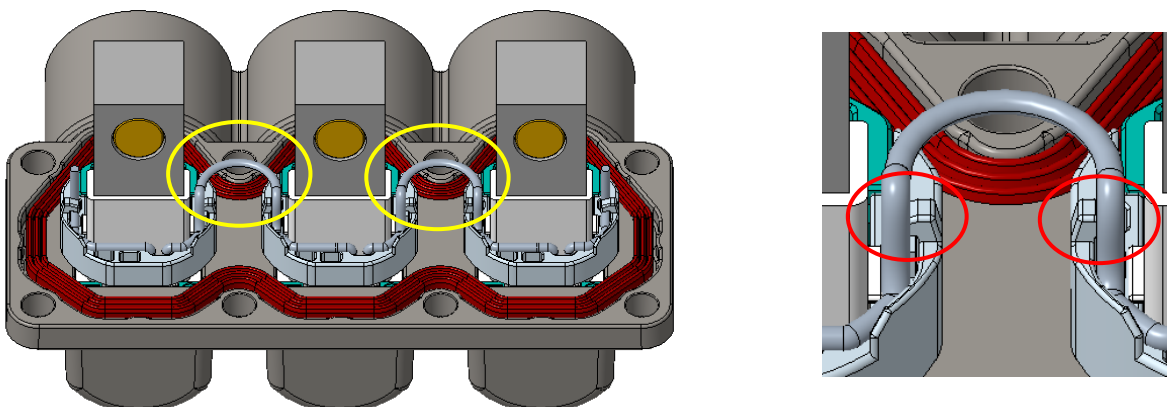


Figure 4 : Wrong installation position



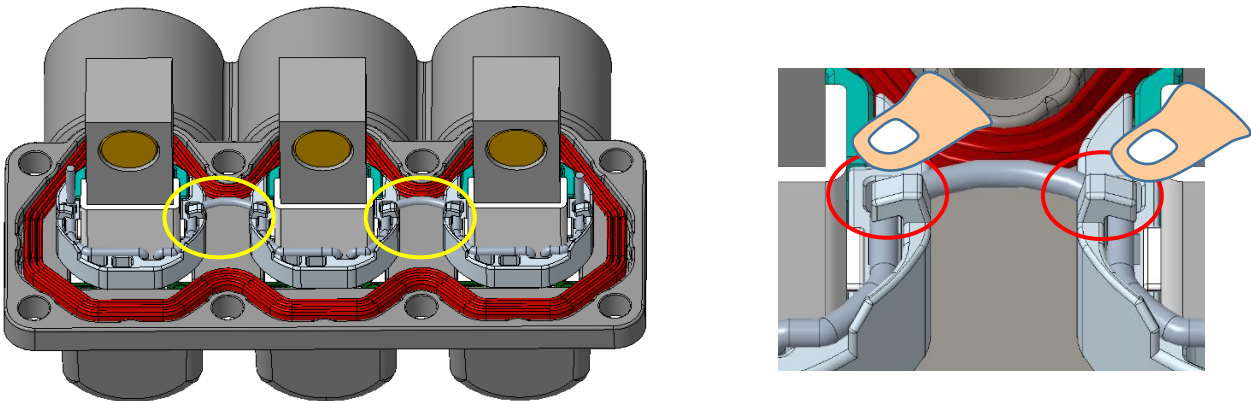


Figure 5 : correct the installation position

If one side outlet mode is required, customer can add protection sleeve to wrap the HVIL wires according to their needs.

如需要单侧出线方式，客户依照需求可增加套管来包裹高压互锁线缆。

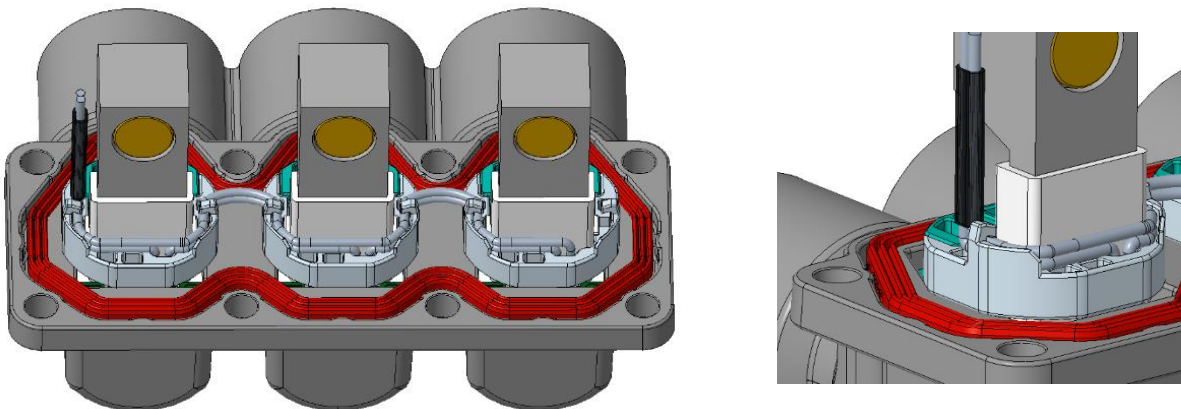


Figure 6 :One side outlet mode

## 5.2 Pre installation inspection for Busbar aggregate 安装前铜排安装面检查

Considering the lateral force which occurs during the assembling with misalignment will lead to the deviation of contacts position on the header, busbar with flexible/ multi-layered material or flexible structure is recommended to be used for power connection to cover the mounting gap.

考虑到因为错位安装产生的侧向力会导致 header 里端子位置的偏移，推荐使用多层铜排或其他柔性结构铜排来吸收掉安装间隙。

If a rigid busbar will be used, below instruction need to be followed:  
Please check the position of aggregate mounting surface before installation, as shown in figure 7 and figure 9.

如果一个刚性铜排会被使用，需要参照如下说明：  
请在安装前做铜排安装面位置的相关检查，尺寸建议值如图 7 和图 9。

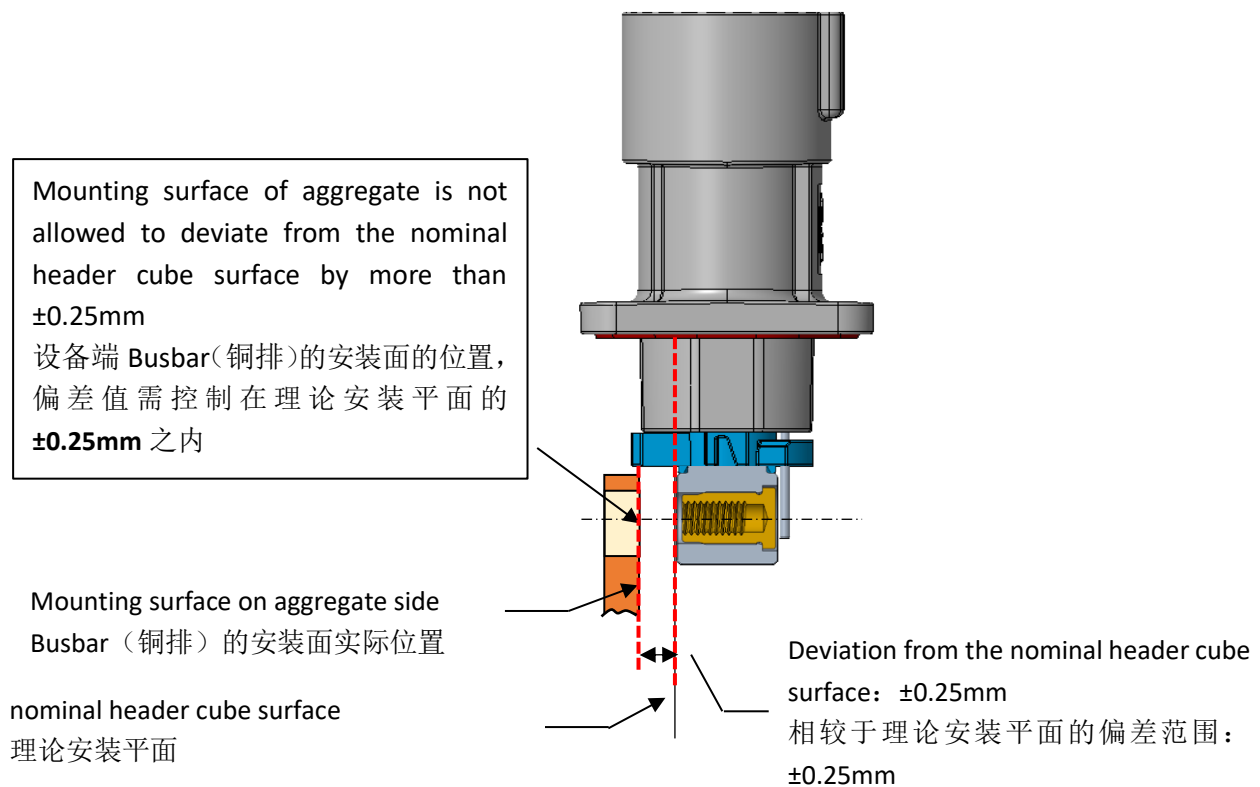


Figure 7 : Deviation from the nominal header cube surface (180deg Front Side)

Valid also for all other mounting orientations for 1pos,2pos and 3pos header variants.

同时也适用于端子安装面的其他几个方向。

Right side and Left side are not available for 2pos and 3pos header.

右面和左面不适用于 2 位和 3 位连接器。

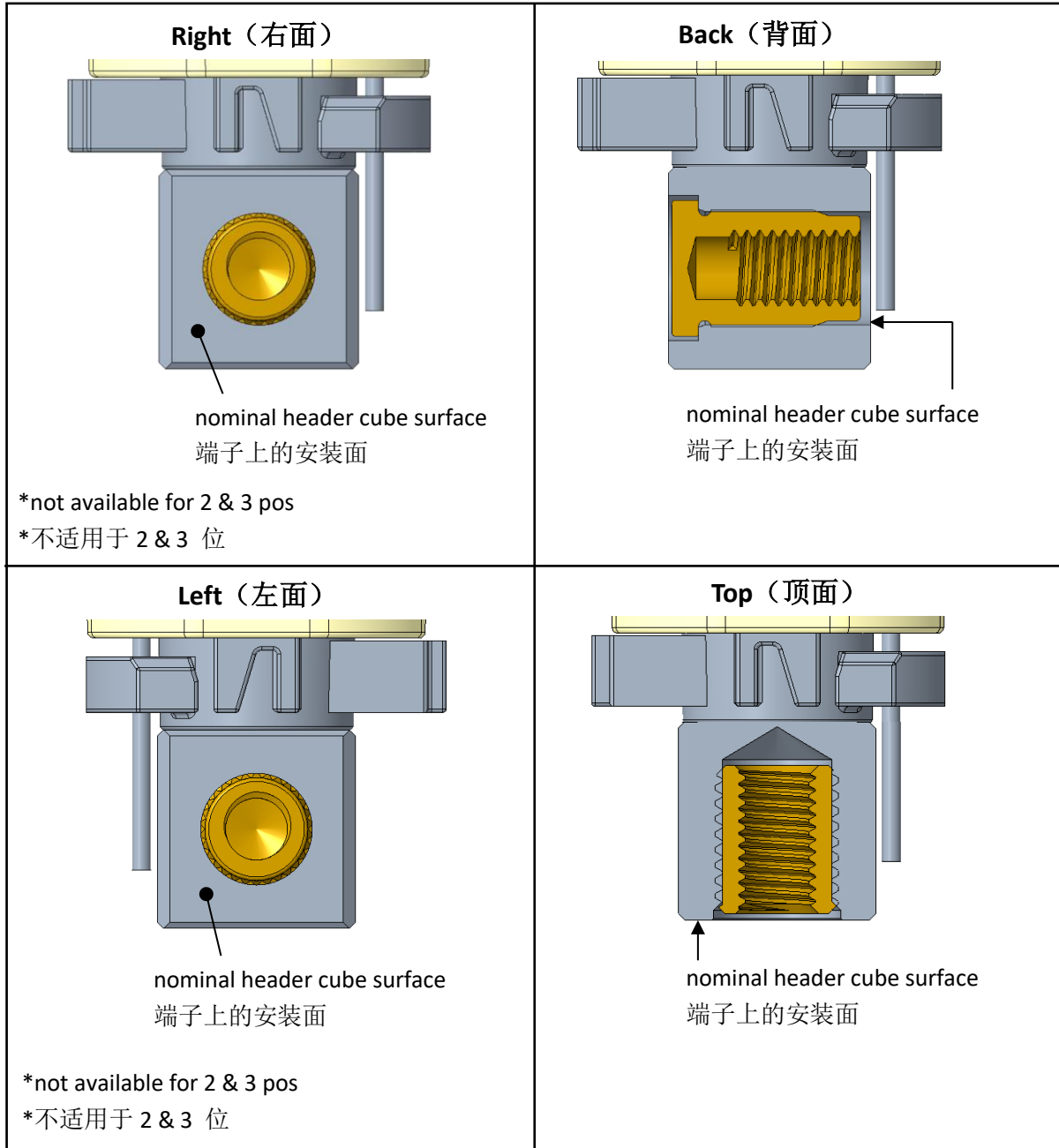


Figure 8 : Norminal header cube surface (180deg)

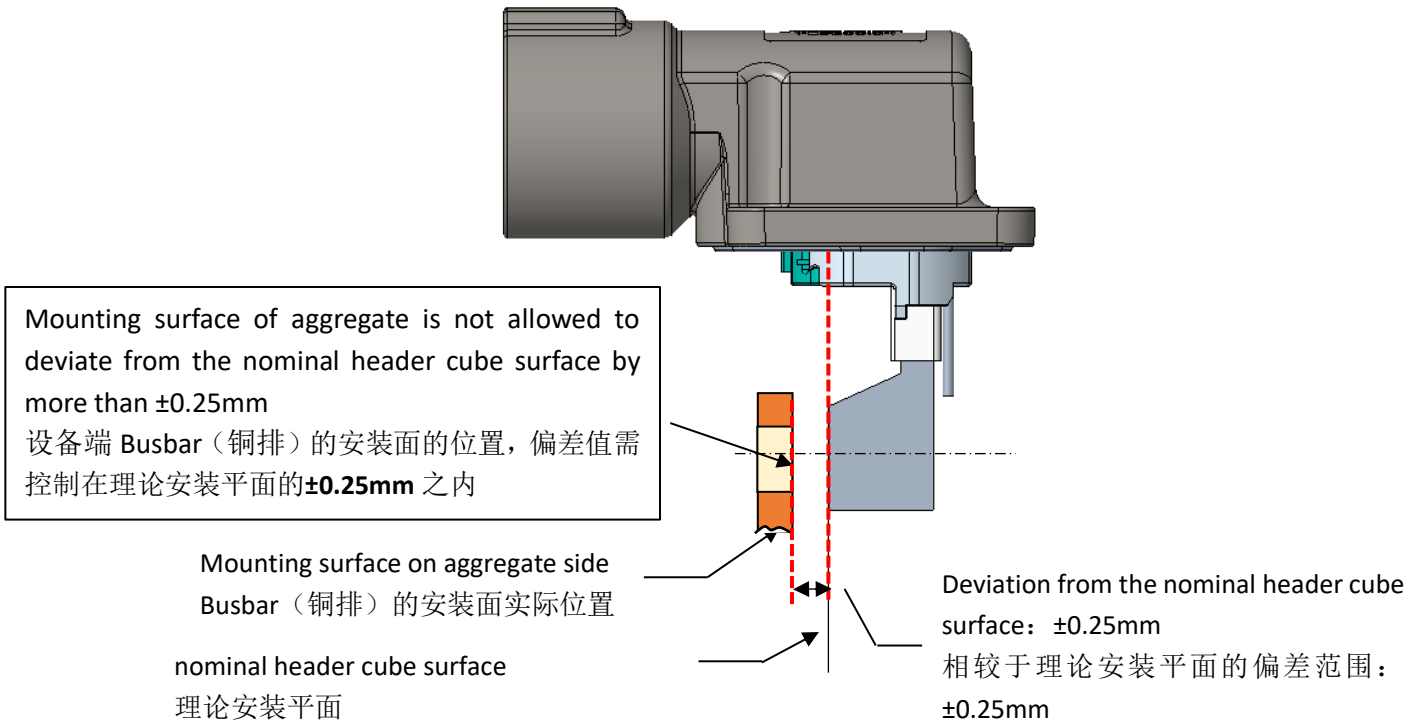


Figure 9 : Deviation from the nominal header cube surface (90deg)

Valid also for all other mounting orientations within cube for 1pos,2pos and 3pos header variants.

同时也适用于端子安装面的其他几个方向。

Right side and Left side are not available for 2pos and 3pos header.

右面和左面不适用于 2 位和 3 位连接器。

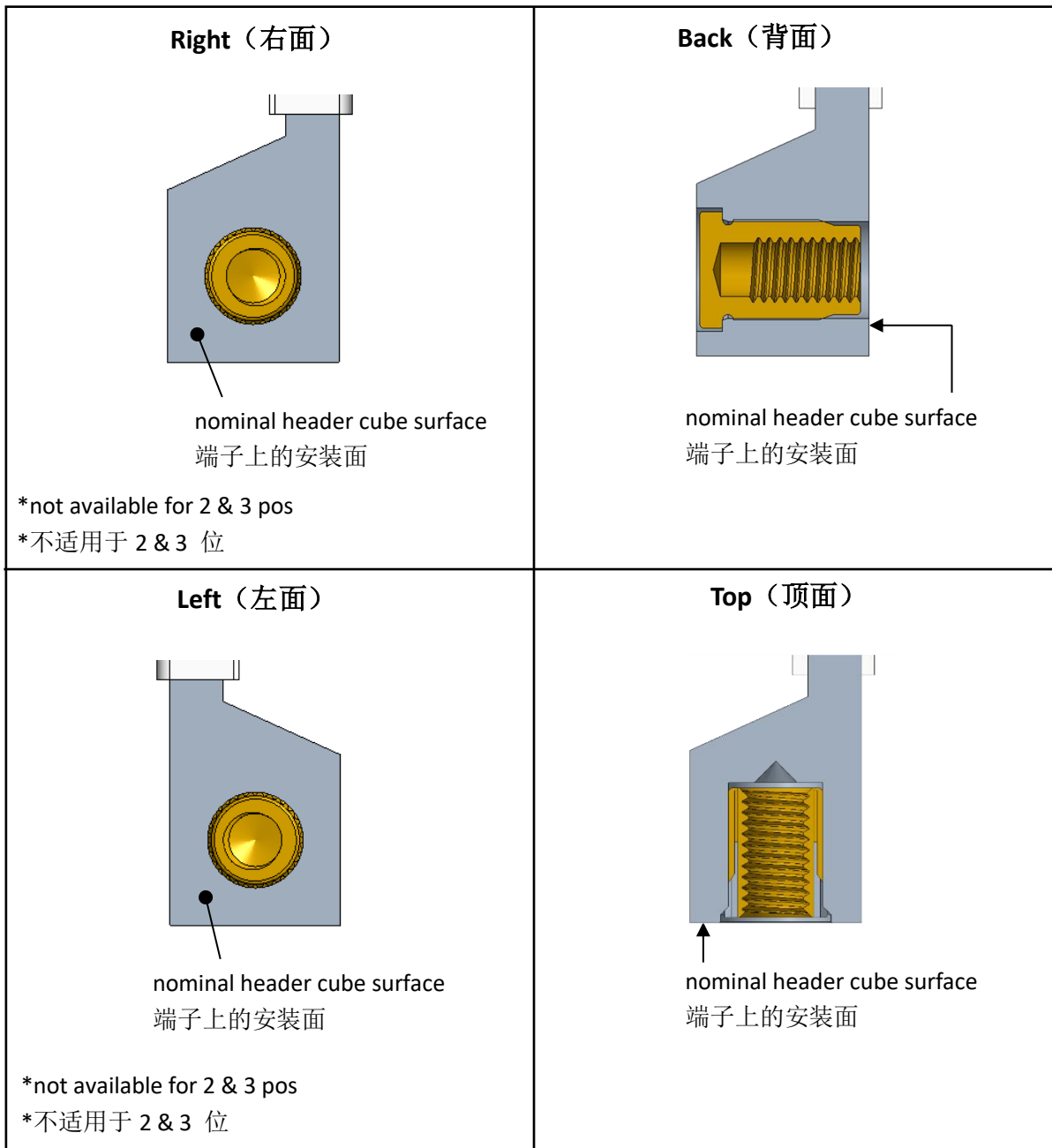


Figure 10 : Norminal header cube surface (180deg)

### 5.3 Assemble header ASSY To Panel 公端连接器组装到安装面板

Application system requires installation panel, interface dimensions could be found in latest customer drawing.  
应用系统需有安装面板，界面尺寸请见最新客户图纸。

Four bolts of M5 are used to fix the one position header ASSY on the panel, while two position header ASSY need six bolts and three position header ASSY need eight bolts.  
It's recommended that using bolts of M5 with head & washer from  $\varnothing 9\text{mm}$  to  $\varnothing 11\text{mm}$ , and the tightening torque is better to be  $6\pm 0.5\text{N} \cdot \text{M}$ .

一位、两位、三位公端连接器固定到面板上需要4、6、8颗螺栓。建议使用直径9~11毫米螺丝头和垫片的螺栓，安装扭矩建议 $6\pm 0.5\text{牛} \cdot \text{米}$ 。

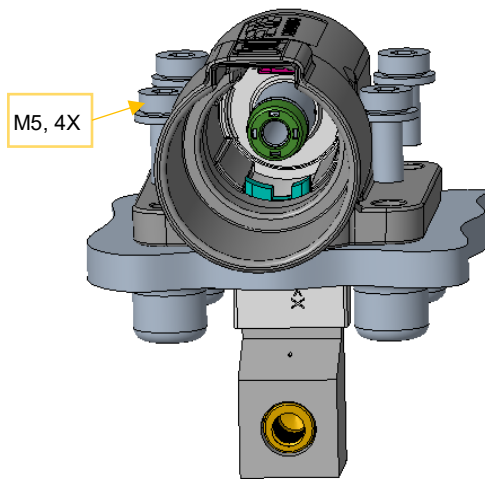


Figure 11 : Assemble header to the panel  
( 90° 1Pos )

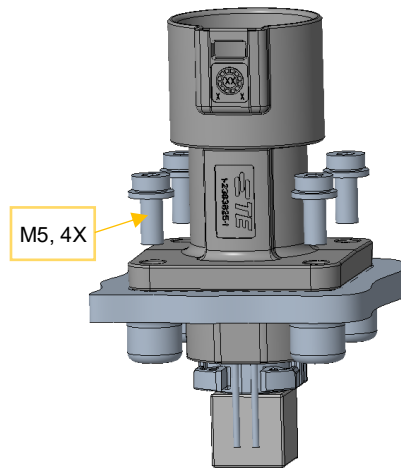


Figure 12 : Assemble header to the panel  
( 180° 1Pos )

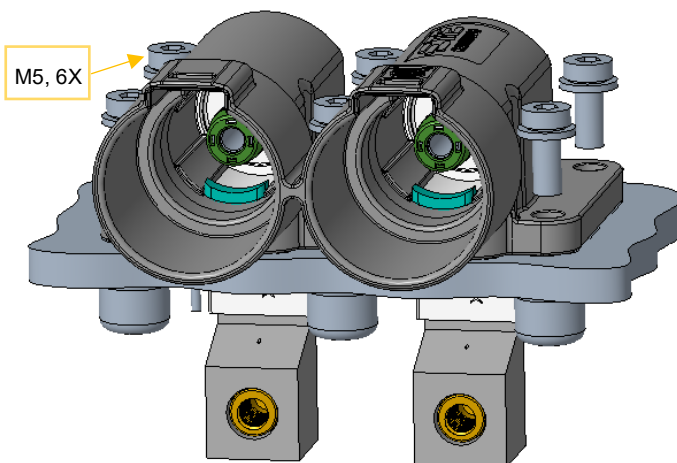


Figure 13 : Assemble header to the panel  
( 90° 2Pos )

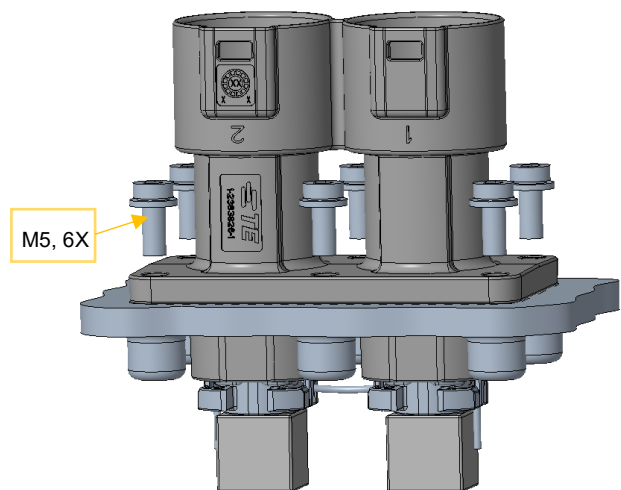


Figure 14 : Assemble header to the panel  
( 180° 2Pos )

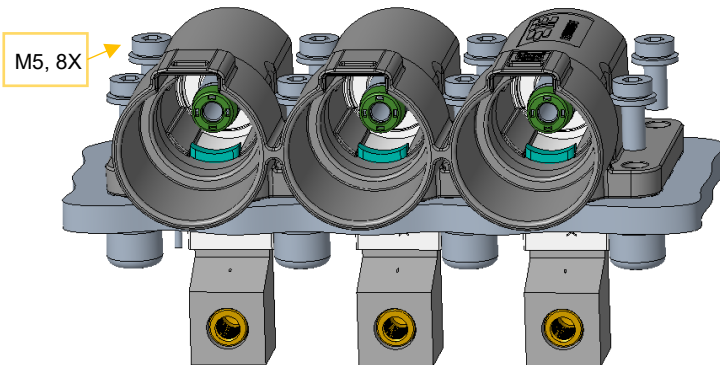


Figure 15 : Assemble header to the panel  
( 90° 3Pos )

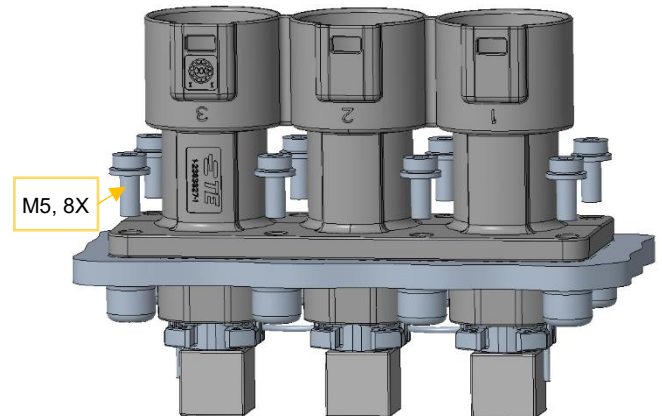


Figure 16 : Assemble header to the panel  
( 180° 3Pos )

Attention: Please pay attention to the keying or polarizing configurations, refer to the drafts for more details.

说明:请注意极性, 更多细节请参考图纸。

For all design variants, the requirements for power connection are according to customer drawings 2394060、2394061、2394062、2394070、2394071、2394072、2414100、2414101、2414102 and 2414103. It's requested that the power connection design should fulfill the requirements for creepage and clearance distance according to DIN EN 60664-1. The lateral force which occurs during the assembling of ring tongue/busbar must not lead to the deviation of contacts position on the interface side to the plug.

对于所有不同种类的设计, 电源连接要求请参照2394060、2394061、2394062、2394070、2394071、2394072、2414100、2414101、2414102、2414103 客户图纸, 请注意, 根据DIN EN 60664-1, 设计必须满足爬电和间隙距离的要求。环舌/母线组装过程中产生的侧向力不得导致安装面板上的端子位置与插头偏离。

It is advisable to pre-insert all the bolts into the holes before gradually tightening them one by one. This approach ensures that all bolts are correctly positioned and aligned before the final tightening process. To ensure consistent bolt installation, it is recommended to cross-arrange the tightening of bolts. The suggested sequence for installation is as follows:

建议将所有螺栓预先插入孔中, 然后逐个逐渐拧紧。这种方法可确保所有螺栓在最终拧紧过程之前正确定位和对齐。为了确保螺栓安装的一致性, 建议交叉安排螺栓的拧紧。建议的安装顺序如下(以180Deg为例):

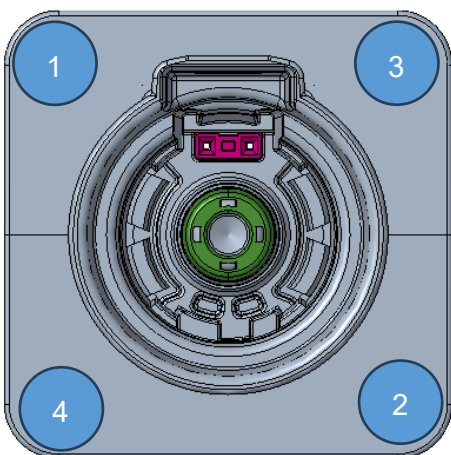


Figure 17 :Installation sequence (1Pos)

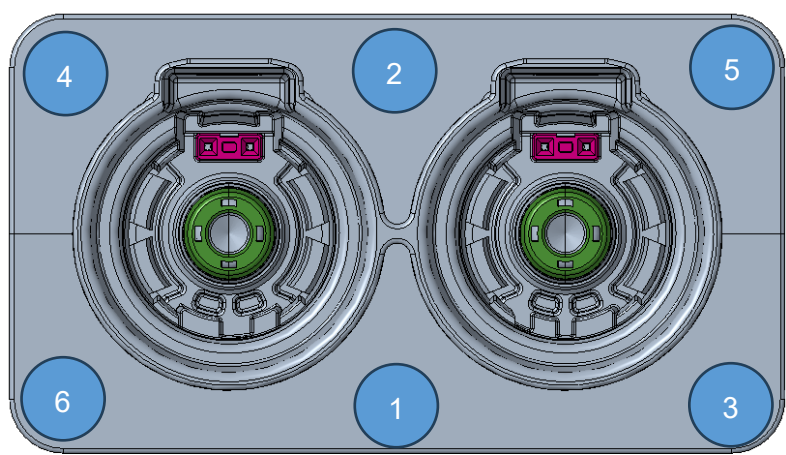


Figure 18 :Installation sequence (2Pos)

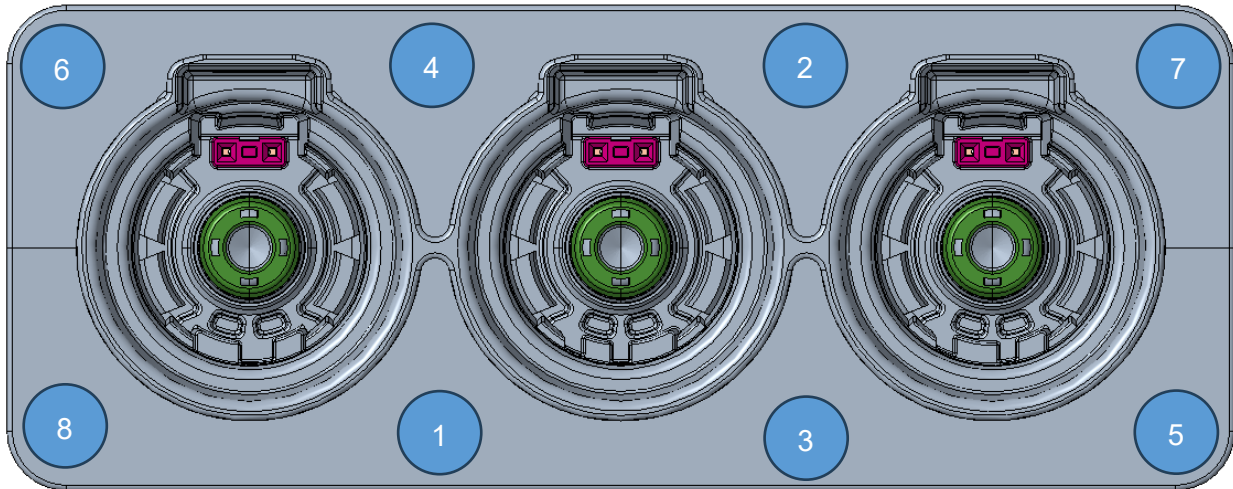


Figure 19 :Installation sequence (3Pos)

#### 5.4 Assemble Header ASSY with Busbar 公端连接器组装到汇流排

It takes one bolt of M6 to assemble one position header ASSY with busbar, while two position header ASSY need two bolts and three position header ASSY need three bolts. It's recommended that using M6 bolts, RH(right-handed), and the tightening torque is better to be  $8 \pm 0.5 \text{ N} \cdot \text{M}$ .

使用一颗M6螺栓将公端连接器与汇流排连接，两位、三位的公端连接器分别需要两颗、三颗螺栓。推荐使用M6螺栓，右旋拧入，安装扭矩建议 $8 \pm 0.5 \text{ 牛} \cdot \text{米}$ 。

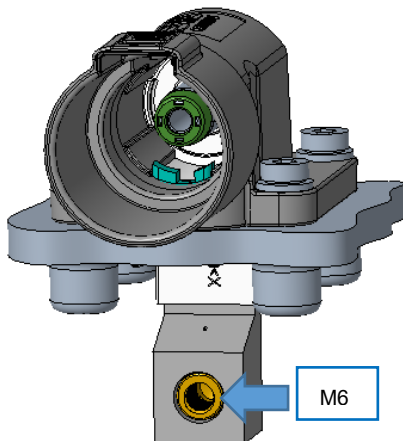


Figure 20 : Assemble header with busbar  
( 90° 1Pos )

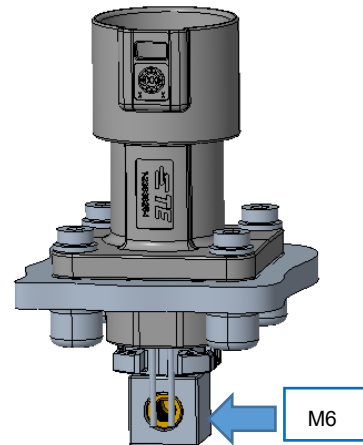


Figure 21 : Assemble header with busbar  
( 180° 1Pos )



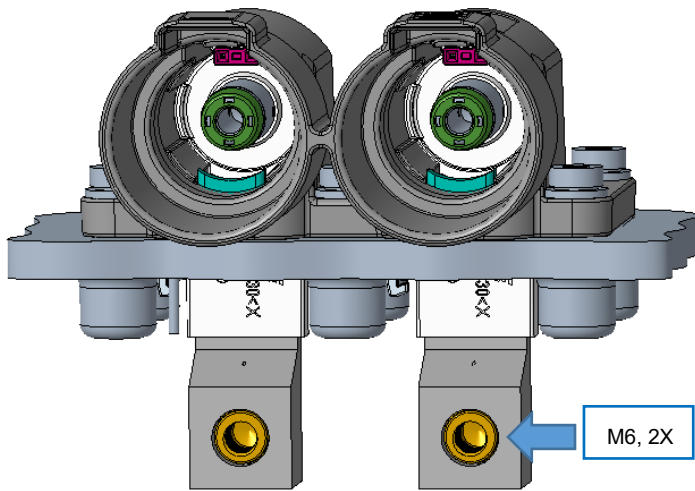


Figure 22: Assemble header with busbar  
( 90° 2Pos )

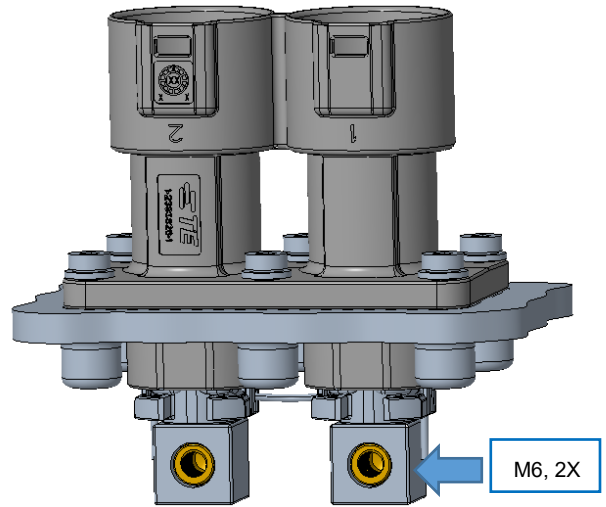


Figure 23: Assemble header with busbar  
( 180° 2Pos )

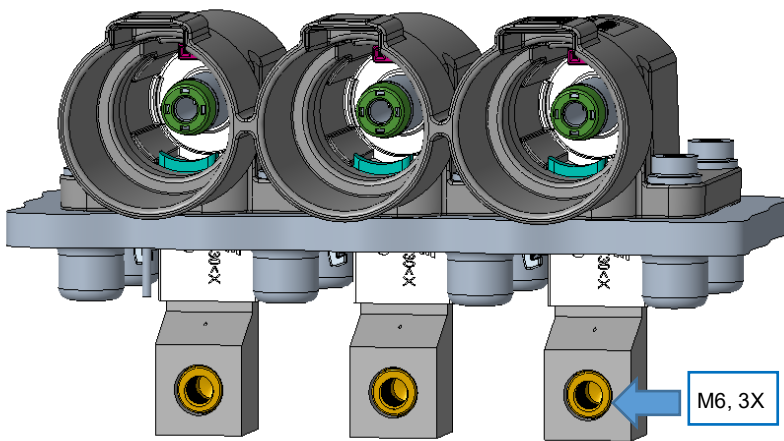


Figure 24 : Assemble header with busbar  
( 90° 3Pos )

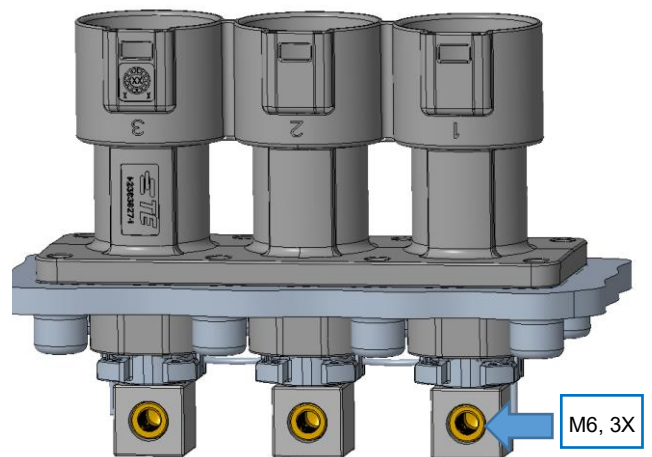


Figure 25 : Assemble header with busbar  
( 180° 3Pos )