HVA HD400 2POS & 3POS 90DEG Header Application Specification

HVA HD400 两位&三位 90 度公端高压连接器 应用规范

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CONTENT 目录

- **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 the sealed HVA HD400 2P&3P High Voltage connector. The HVA HD400 2P&3P connector system is designed to meet LV215-1 specifications and for a metric wire size range of 2.5mm²/ 4mm²/ 6mm² (acc. to LV216-2). The connector incorporates conductive EMI shields to reduce radiated emissions in the application.
The HVA HD400 2P&3P connector is available for 6 different keying or polarizing configurations. The connector system incorporates the 4mm round contacts and an integrated High Voltage Interlock (HVIL) System. The housings are molded in orange to denote a high voltage system.

该规范涵盖了HVA HD400 2P&3P高压密封连接器的应用要求。HVA HD400 2P&3P连接器系统的设计符合LV215-1规范，公制线径范围为2.5mm²、4mm²、6mm²（符合LV216-2标准）。该连接器采用导电EMI屏蔽，以减少应用中的辐射。
HVA HD400 2P&3P 连接器有6种不同的键位。连接器系统包含4毫米圆形电源连接系统和集成的高压互锁（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 takes 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 客户图纸

Header side (Include interface) / 公端(包括应用面板)	
2416068	HVA HD400 90DEG HEADER OUTER HOUSING ASSY
2416070	HVA HD400 90DEG HEADER INNER HOUSING ASSY
2416073	HVA HD400 90DEG HEADER WIRE FIXTURE
2413806	HVA HD400 90DEG HEADER CLIP
2349180	DIA. 4MM MALE PIN
1418754	TAB CONTACT 1.2MM
2389821	DUSTPROOF COVER
Application tools / 应用工装	
2375591	4MM contact crimp tool(for 2.5mm² & 4mm² cable)
2375593	4MM contact crimp tool(for 4mm² & 6mm² cable)
2151311 (1528428)	MCON1.2 contact crimp tool
4-1579001-3	MCON1.2 contact hand crimp tool

2.1.2 Specifications 规范

Table 2: TE-specifications / 泰科规范

Specifications	Description
108-32306	Product Specification 4MM Contact System
108-18782	Product Specification MCON1.2 Contact System
108-160170	Product Specification HVA HD400 Single Core 2POS & 3POS Plug Connector
108-160599	Product Specification HVA HD400 Multiple Core 2POS & 3POS Plug Connector
114-160038	Application Specification 4MM Contact System

114-18464	Application Specification MCON1.2 Contact System
114-160093	Application Specification HVA HD400 Single Core 2POS & 3POS Plug Connector
114-160337	Application Specification HVA HD400 Multiple Core 2POS & 3POS Plug Connector
114-160443	Application Specification HVA HD400 2POS & 3POS 90DEG Header

2.2 General Documentation 通用文档

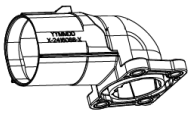
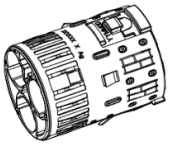
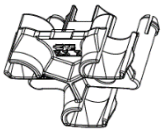
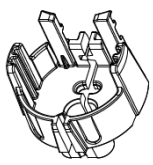
2.2.1 Cable Specification 线缆规格

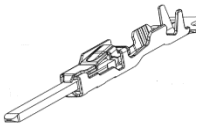
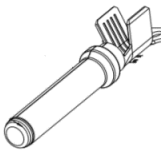
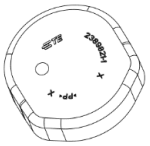
The connector is designed to meet LV216-2 specification for metric wire range 2.5/ 4/ 6mm². Cable Specification acc. To the appendix.
连接器设计符合LV216-2规范，适用于公制线缆范围2.5mm²、4mm²、6mm²，线缆规格见附录。

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

3.1 Components 零部件

Table 3 shows the required components for assembly of HVA HD400 2POS & 3POS Header Connector

Description 描述	Picture 图片	Usage 用量		PN for 2.5mm² 2.5mm²线零件号	PN for 4mm² 4mm²线零件号	PN for 6mm² 6mm²线零件号
		2POS	3POS			
Outer housing assy		1	1	2416068-* (Definite PN see customer drawing)		
Inner housing assy		1	1	*-2416070-* (Definite PN see customer drawing)		
Wire fixture		1	1	2416073-1	2416073-2	2416073-3
Clip			1	2413806-1	2413806-2	2413806-3
		1		1-2413806-1	1-2413806-2	1-2413806-3

MCON1.2 terminal		2	2	5-1418758-3 (LV wire section 0.35mm²) 5-1418760-3 (LV wire section 0.5mm²)		
4MM PIN contact		2	3	*-2349180-1	*-2349180-2	*-2349180-3
Dust cover		1	1	2389821-1		

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, see latest valid customer drawings too.
为避免存储污染，产品应以“先进先出”的原则使用，也请参见最新的有效客户图纸。

4. APPLICATION TOOLS 应用工装

The Application tools are only valid for the specified cables at appendix. More tooling information can be obtained through a local TE Representative, or after purchase, by calling the product information Center.
应用工装仅对附录中的指定电缆有效。可通过当地TE代表获取更多工装信息，或者在购买后，拨打产品信息中心电话。

4.1 4MM round contact / 4MM 圆形端子

Table 4. Required application tools contact crimp

Application tools / 应用工装		
TE Applicator	Pin P/N	Description
2375591	*-2349180-1	4MM contact crimp tool(for 2.5mm² & 4mm² cable)
2375593	*-2349180-2	4MM contact crimp tool(for 4mm² & 6mm² cable)

Figure 1: 4MM contact crimping applicator（4mm 端子压接设备）

5. ASSEMBLY INSTRUCTIONS 组装说明

The following procedures show the details of the cable assembly and insertion instructions of the cable assembly into the plug housing subassembly. The processing is only valid for the specified cable at appendix and only these combinations have been validated by TE. Alternative cables may be used after ensuring performance through validation testing.
下述步骤显示了线缆组件的细节和线缆组件插入母端壳体子组件的插入说明。该制程仅对附录中的指定线缆有效，并且仅这样的组合通过TE验证。在通过验证测试性能之后，可以使用替代电缆。

5.1 Overview of all parts should be assembled 全部部件总览图

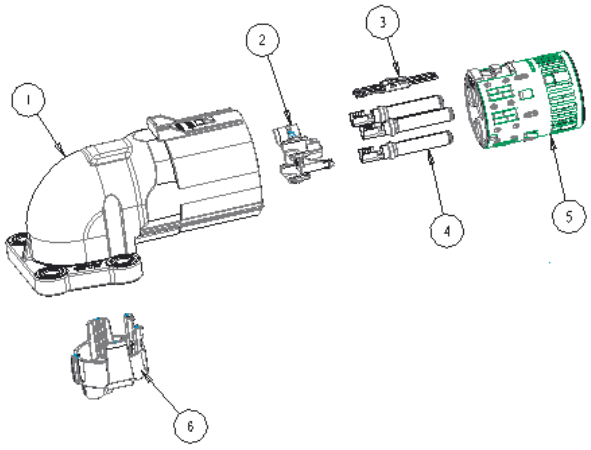


Figure 2: HD400 90DEG 2POS & 3POS Header

Table 5: Components cable assembly

2POS	3POS	DESCRIPTION	ITEM
Q'TY			
1	1	Clip	6
1	1	Inner housing assy	5
2	3	4MM PIN contact	4
1	1	MCON1.2 terminal	3
1	1	Wire fixture	2
1	1	Outer housing assy	1

5.2 Cable components assembly 线缆组件组装

Safety information, avoid prolonged or repeated skin with conductor or shieldings (wear protective gloves).
Please note, the procedure of assembly the cable is provided in two documents, the following steps shows the assembly without contact processing.
安全提醒，避免皮肤长时间或重复与导体或屏蔽接触（戴防护手套）。
请注意，线缆的组装步骤在两个文档中提供，以下组装步骤不包含端子。

5.2.1 HV Cable strip & 4MM contact crimp 高压线缆裁切以及 4MM 端子压接

Prepare the cable, then crimp the contacts according to TE-Application specification 114-160038. The cable should be as defined in the SPEC or connector. Only wire and contacts that meet the requirements of the application specification can be used.
根据最新的泰科应用规范114-160038准备线缆裁切以及压接端子。电缆应是SPEC或连接器中定义的。只有满足该应用标准的导线及端子才能被使用。

5.2.2 LV Wire strip & MCON1.2 contact crimp 低压线缆裁切以及 MCON1.2 端子压接

Prepare the cable, then crimp the contacts according to TE-Application specification 114-18464. The cable should be as defined in the SPEC or connector. Only wire and contacts that meet the requirements of the application specification can be used.
根据最新的泰科应用规范114-18464准备线缆裁切以及压接端子。电缆应是SPEC或连接器中定义的。只有满足该应用标准的导线及端子才能被使用。

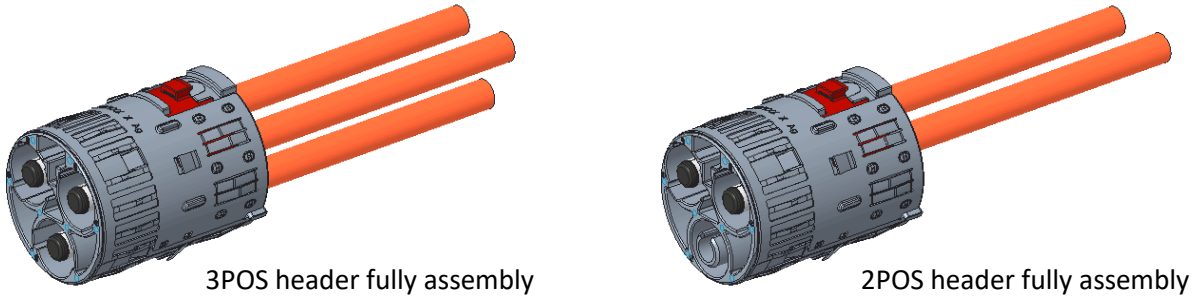
5.3 Header Housing 公端壳体

5.3.1 Insert 4MM terminals into the Header Housing 4MM 端子装入公端壳体

Insert the cable into the header subassembly until it stops against the inside of the housing and it makes “Click”.
将线缆插入公端壳体组件，直到抵住外壳内部并发出”咔嗒”声。

Figure 3: Insert cable into the header housing

Assemble three cable assy for 3POS connector application; assemble two cable assy for 2POS connector application.
3位连接器组装3根线缆；2位连接器组装2根线缆。

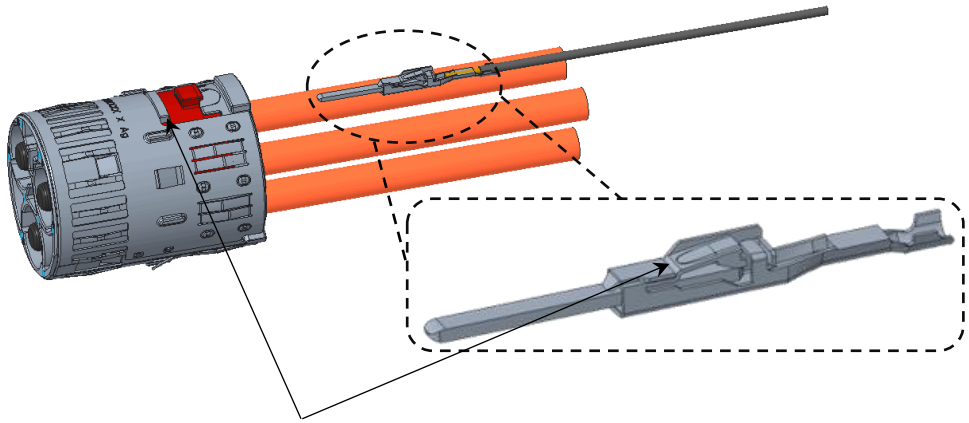


3POS header fully assembly　　2POS header fully assembly

Figure 4: Fully assemble cable assy to housing

5.3.2 Insert MCON1.2 terminals into the Header Housing MCON1.2 端子装入公端壳体

Note the alignment of Header housing subassembly and MCON1.2 terminal as shown figure 5.
注意，如图5所示，MCON1.2端子与公端壳体组件方向对齐。



Oriented cable assembly to inner housing face

Figure 5: Oriented cable assembly to housing

5.3.3 Press TPA to end-lock position TPA 压到终锁位

Please note, after all cable assy were fully assembled, TPA should be pressed until it stops against the header housing.
Pressing smoothly indicates that the cable assy has been assembled in the correct position, otherwise the cable assembly and TPA status should be checked.
请注意，线缆组件安装完成后，下压TPA到终止位置。下压顺利说明线缆组件已安装到正确位置，反之需检查线缆组件和TPA状态。

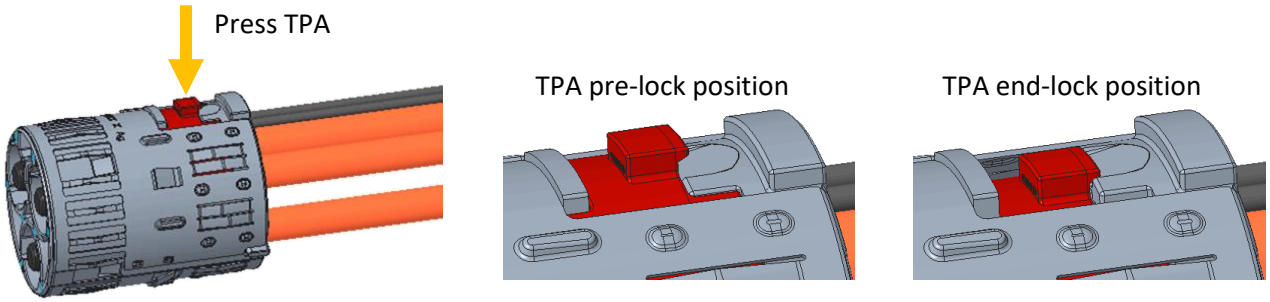


Figure 6: Press TPA to final lock position

5.3.4 Press Wire fixture to end-lock position 线夹压到终锁位

Follow the red arrow direction to install the HV wires into semicircle hole of fixture.
After all HV wires were fully assembled, wire fixture should be pushed until it stops against the header housing.
按照红色箭头组装高压线缆进线夹的半圆结孔内。
高压线缆组装完成后，推动线夹插进塑胶内。

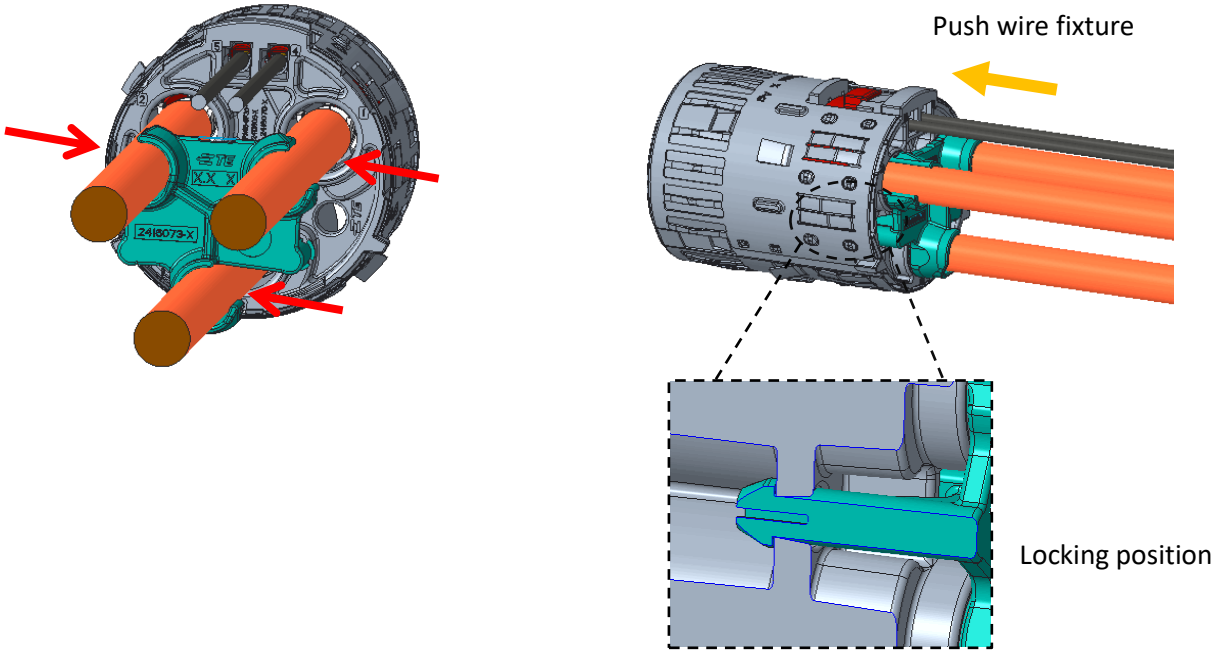


Figure 7: Assemble wire fixture to housing position

5.3.5 Press inner housing assy into outer housing 压到终止位

After TPA was fully pressed, pre-bending the tip of the wire will make it easier to pass through the outer housing. Please note, assembly the inner housing assy to pre-press position. Then apply specialized equipment to press inner housing assy to the correct position until it stops against the inside of the outer housing and it makes “Click”. Any about press in fixture's design and purchase can contact with TE for consultation.
请注意，线缆组件安装完成，下压TPA到终止位置后。组装线缆组件到外塑壳的预压入位置，然后采用特制压入设备将组件压倒正确的位置，直到抵住外壳内部并发出“咔嗒”声。任何夹具设计或采购均可联系泰科咨询。

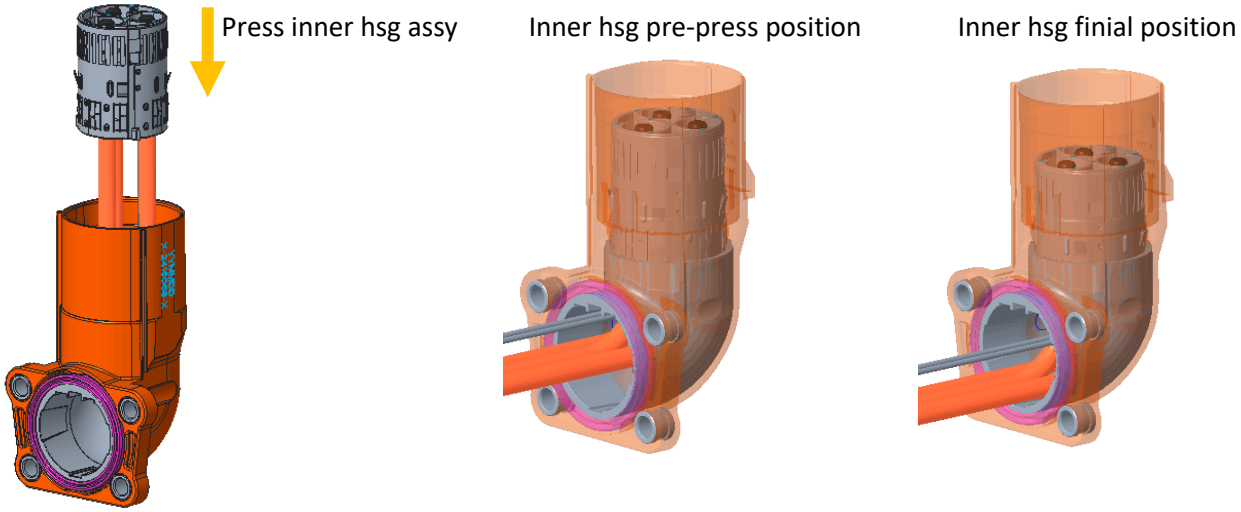
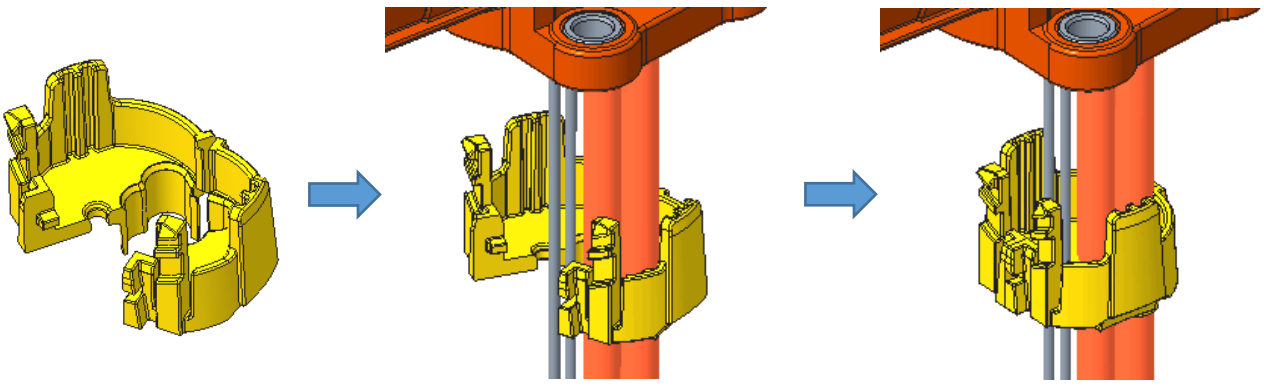
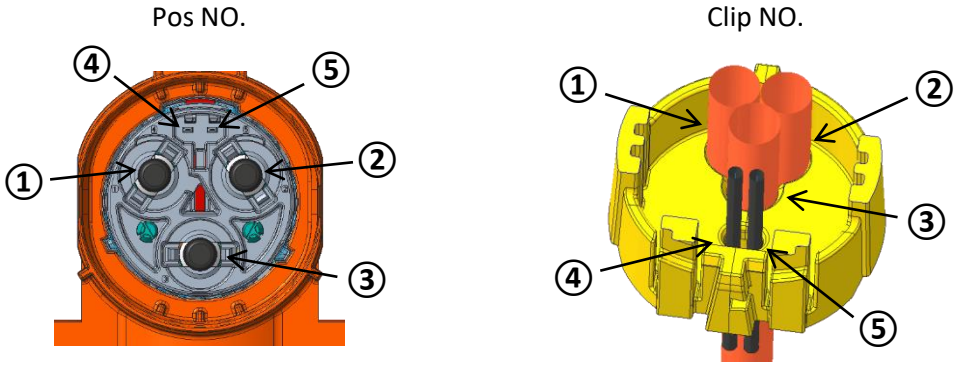


Figure 8: Press inner housing assy to final position

5.3.6 Assembly clip into outer housing 组装卡夹到塑壳

Open the clip to the sides, then apply clip to enclose the wires.Please ensure that the cables are inserted one by one. The corresponding pos NO.' wire should come out of the corresponding hole position of clip.
打开卡夹至合适角度，确保装配过程中线缆单根依次装入。对应的线号应当从对应的卡夹孔位出来。





Please note, pushing clip to finial posititon that the clip's bottom surface should be align with or below the outer housing's bottom surface.
请注意，线缆组件安装完成后，推进卡夹到终止位置，卡夹的底面需要齐平或低于外塑壳底面。

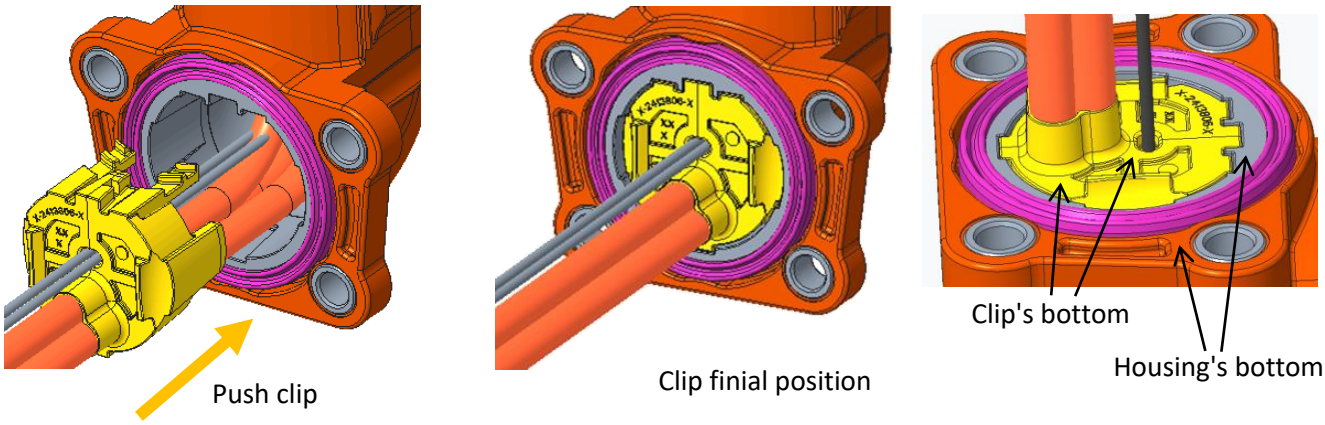


Figure 9: Assemble and press clip to final position

6. FINAL EXAMINATION 终检

6.1 Visual Examination 外观检查

After processing the connector assembly has to be checked of completeness, correctness acc. 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。

6.2 Electrical Tests 电气测试

Electrical characteristic values according product specification TE-108-160170 / chapter 3.4 are ensured by applicator. The test parameter should be not exceeding the values shown in point 3.4 / TE-108-160170.
使用方依据产品规范TE-108-160170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。

7. HEADER ASSY INSTRUCTIONS 公端连接器安装说明

7.1 Assemble header assy to panel 公端连接器组装到安装面板

Application system requires installation panel, interface dimensions see 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。
Header assembled to the panel with 4 pieces M4 screw. The mounting screw with screw head / washer Ø8.5mm to Ø9mm. Recommended tightening torque is 3±0.5NM
使用4枚M4螺丝固定公端到面板上。螺丝头和垫片的直径8.5~9毫米。建议安装扭矩3±0.5牛米。

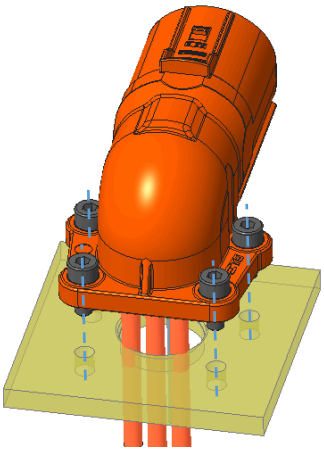


Figure 10: Assemble header to the panel

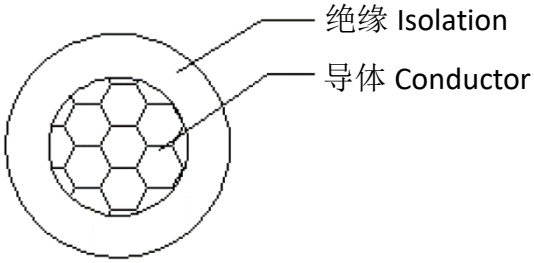
8. APPENDIX 附录

8.1 Data sheets 数据表

8.1.1 Force/Coficab unshielded cable 2.5/4/6mm² Force/Coficab 2.5/4/6mm²非屏蔽线

Force: No. FHLR91X-B/T150 2.5mm²、4 mm²、6 mm² unshielded cable for HVA HD400 header connector.
HVA HD400公端连接器采用物料编号FHLR91X-B/T150 2.5mm²、4 mm²、6 mm²非屏蔽线

Coficab: No. HCF4BR64500, 6mm² unshielded cable for HVA HD400 header connector.
HVA HD400公端连接器采用物料编号HCF4BR64500, 6 mm² 非屏蔽线



Region	Outer diameter (mm)		
	2.5mm²	4mm²	6mm²
Conductor	Max 2.2	Max 2.8	Max 3.4
Isolation	3-0.3	3.7-0.3	4.3-0.3

Table 11: Force / Coficab unshield cable