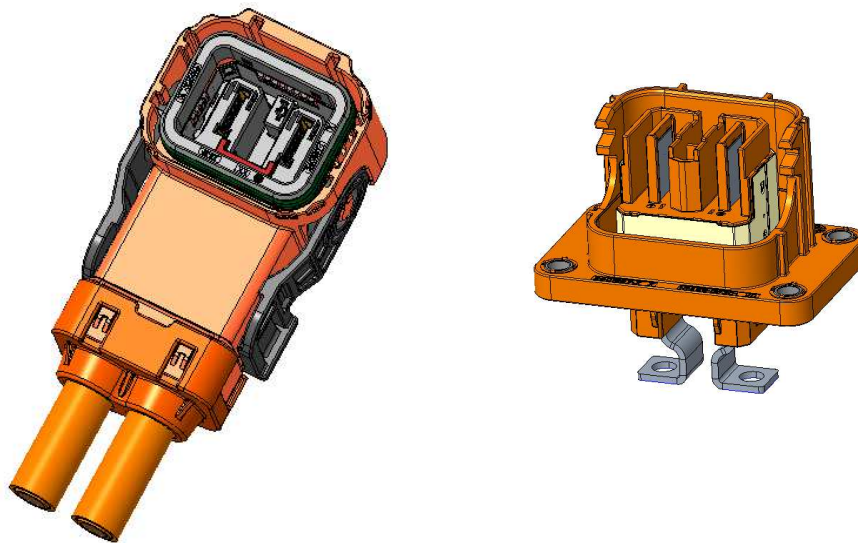



CSJ1200 90DEG Application Specification

CSJ1200 90° 高压大电流连接器应用规范



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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 the sealed CSJ1200 90DEG High Voltage connector. The CSJ1200 connector system is designed to meet LV215-2 specifications and for a metric wire size range of 10mm² up to 25mm² (acc. to LV216-2). The connector incorporates conductive EMI shields to reduce radiated emissions in the application.

The CSJ1200 connector is available for 4 different keying or polarizing configurations with a lever for low mating / unmating forces. The connector system incorporates the 12mm power contacts and an integrated High Voltage Interlock (HVIL) System. The housings are molded in orange to denote a high voltage system.

该规范涵盖了密封CSJ1200 90DEG高压连接器的应用要求。CSJ1200连接器系统的设计符合LV215-2规范，公制线径范围为10mm²至25mm²（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。CSJ1200连接器有4种不同的键位，采用杠杆齿轮结构来降低配合力。连接器系统包含12毫米电源链接和集成的高压互锁（HVIL）系统和高压手指防护(IPXXB, UL)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)	
2401695	Header Assembly
2401703	HVIL Housing
963715/928999	MQS Terminal

Plug side / 母端	
2401661	Plug Housing, 90 DEG, ASSY
2401674	Inner Ferrule
2401675	Outer Shielding
2401678	Family Seal and Clip Assy
2401684	Cable Cover
2400163	CSJ1200 Crimp Terminal for 90DEG

Application tools / 应用工装	
2151491 x-878591-x	MQS Contact Crimp Tool
3-1579001-5 5-1579001-72	MQS Hand Crimp Tool

2.1.2 Specifications 规范

Table 2: TE-specifications / 泰科规范

Specifications	Description
108-160512	Product Specification CSJ1200 Terminal 90DEG
108-18030	Product Specification MQS Contact System
108-160464	Product Specification CSJ1200 90DEG Connector
114-160283	Application Specification CSJ1200 Terminal 90DEG
114-160250	Application Specification CSJ1200 90DEG Connector
114-18021	Application Specification MQS Contact System

2.2 General Documentation 通用文档

2.2.1 Cable Specification 线缆规格

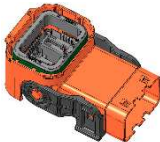
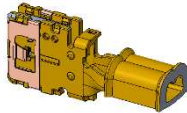
The connector is designed to meet LV216-2 specification for metric wire range 10 up to 25mm². Cable Specification acc. To the appendix.

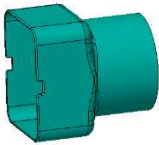
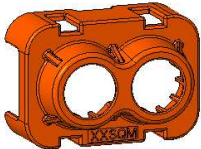
连接器设计符合LV216-2规范，适用于公制线缆范围10至25 mm²,线缆规格见附录。

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 CSJ1200 Plug 90DEG

Description 描述	Picture for ref. 图片	Usage 用量	PN for 10~25mm ² 10~25 平方线部件号
Plug Housing Assy		1	2401661- (Definite PN see customer drawing)
90DEG Terminal		2	2400163-1

Inner Ferrule		2	2401674-1 for 25 mm ² 2401674-2 for 16 mm ² 2401674-3 for 10 mm ²
Outer Ferrule		2	*-2401675-1 for 25 mm ² *-2401675-2 for 16 mm ² *-2401675-3 for 10 mm ²
Family Seal and Clip Assy		1	2401678-1 for 25 mm ² 2401678-2 for 16 mm ² 2401678-3 for 10 mm ²
Cable Cover		1	2401684-1 for 25 mm ² 2401684-2 for 16 mm ² 2401684-3 for 10 mm ²

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 CSJ1200 Terminal 90deg / CSJ1200 90度端子

Table 4. Required application tools contact crimp

Application tools / 应用工装
Terminal crimping device and requirement refer to 114-160283

4.2 Shielding 屏蔽

The following table contains the required order numbers for application tools.

下表包含所需应用工装的订货号。

Table 5: Application tools

Application tools / 应用工装	
2408334-1	Shield crimp tool for 25mm ² cable
2408333-1	Shield crimp tool for 16mm ² cable
2408345-1	Shield crimp tool for 10mm ² cable

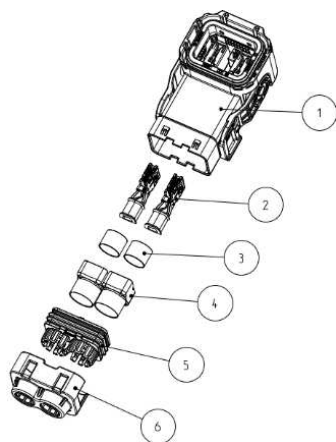
Terminator		Die Holder	
Part Number	Description	Part Number	Description
2335500-X	HF-20 TERMINATOR	2305470-1	HV MODULAR DIE HOLDER WITH FINE ADJUST
2348822-X	HV-20 TERMINATOR		

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



1	Cable Cover	6
1	Family Seal and Clip Assy	5
2	Outer Ferrule	4
2	Inner Ferrule	3
2	90DEG Terminal	2
1	Plug Housing Assy	1
QTY	DESCRIPTION	ITEM

Table 6: Components cable assembly

Figure1:CSJ1200 Plug 90deg overview

5.2 Shielded cable, contact, and inner housing assy 屏蔽线、端子、内壳体

Safety information, avoid prolonged or repeated skin with conductor or shieldings (wear protective gloves). Please note, the procedure of assembly the shielded 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，屏蔽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。

In order shown in figure 2, slide Cable seal assy and Shield crimp ferrule onto cable sheath, so that they are not in crimp work area.

按照图2所示的顺序，滑动密封组件和屏蔽压接套管到电缆护套上，使它们不在压接区域。

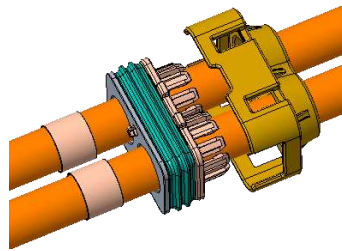


Figure 2: Before processing slide components onto cable

Strip and remove outer sheath, screening braid (if present screening foil), and conductor from the end as shown in Inner sheath only strip, needn't to remove as figure 3.

如图3所示，从末端切开并去除外护套，屏蔽编织物（如果存在屏蔽箔）和导体，内护套切开但是需要保留

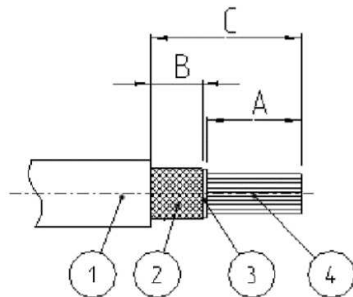
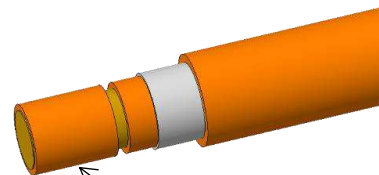


Figure 3: Cutting cable to length



Inner sheath
Need to preserved

Stripping dimensions for exposing cable.



Attention: Cable sheath and shielding braid shall not be cut or broken during the cutting procedure.
 注意：切割过程中不得切割或破坏电缆护套和屏蔽编织层。

(ID)	Cable Spec	10 mm ²	16 mm ²	25 mm ²
1	Outer sheath C[mm] ±0.5	21	21	21
2	Screening braid B[mm]	(10.5)	(10.5)	(10.5)
3	Inner sheath	--	--	--
4	Conductor A[mm] ±0.5	10.5	10.5	10.5

Table 7: Cutting dimensions 剥线尺寸

Comb out screening braid and assemble gasket ring.



Attention: Shielding braid shall not be broken.

注意：屏蔽编织不得被破坏

5.2.1 Shielding assembly 屏蔽组装

Comb out and turn over screening braid to the inner ferrule

梳理并捋直屏蔽编织，翻折到到内衬套上

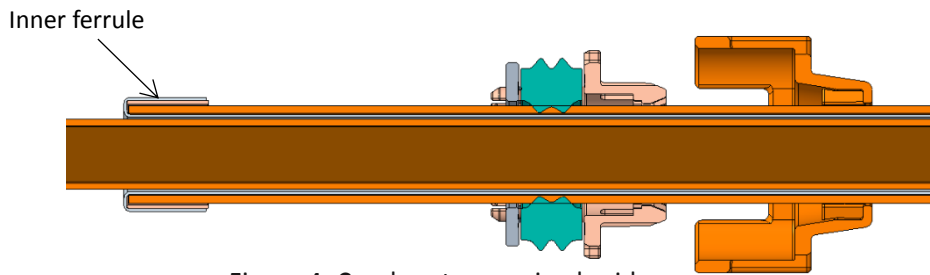
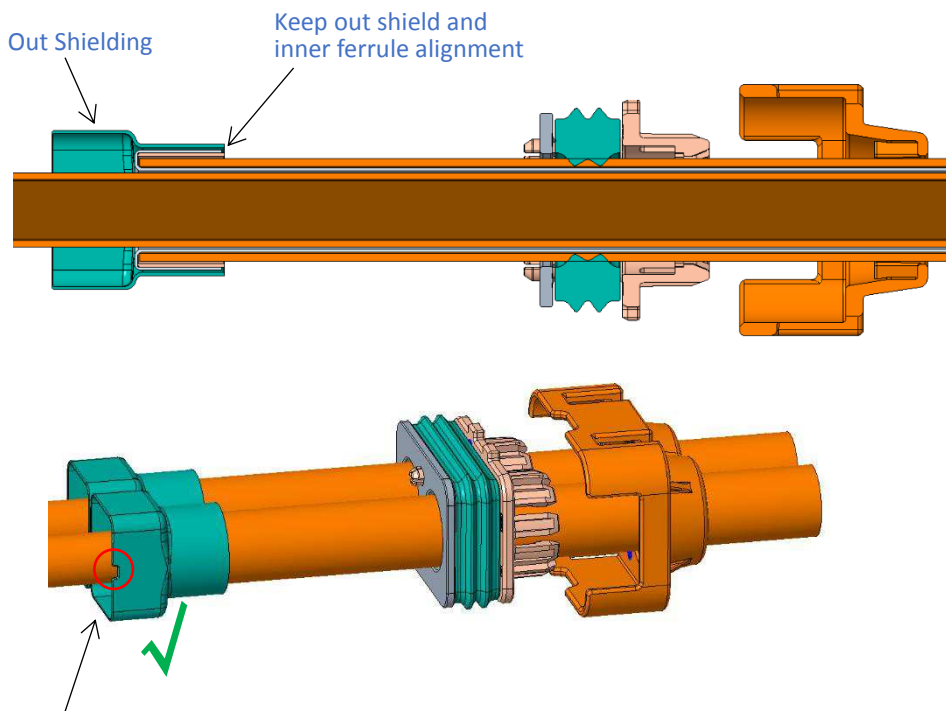


Figure 4: Comb out screening braid

Assembly Out shielding and make sure shielding full cover inner ferrule

将Out shielding装配到线束上，确保屏蔽完全覆盖内衬套



Attention: The Shield notch at both sides, not allow at top and bottom sides.

注意：屏蔽缺口在两侧，而非上下方向

Figure 5: Shielding assembly

5.2.2 Shielding Crimping 屏蔽压接



It is essential that there are no mistakes in this step because there will be no chance to re-work the parts. 在这一步中没有错误是至关重要的，因为无法重新加工。

The following items at minimum must be inspected and verified, before shield crimp process.

- a. All components are present, and parts are crimped in correct orientation and location
- b. No visible cracking of the shielding parts and no loose cable shield strands
- c. Hex crimp dimensions per figure 10 and table 8
- d. Excess length of screening braid must be visible max. 1mm, refer to DIM C
- e. Allocation of screening braid should be equal over perimeter

在屏蔽压接前，必须至少检查并验证以下项目：

- a. 所有部件完整，部件以正确的方向和位置进行压接
- b. 屏蔽部件没有明显的开裂，也没有松散的电缆屏蔽线
- c. 每个压接尺寸依据图6和表8的六边形
- d. 屏蔽编织的长度必须可见最大1毫米，见尺寸C
- e. 屏蔽编织应该均匀分配在四周

Shield crimp specification

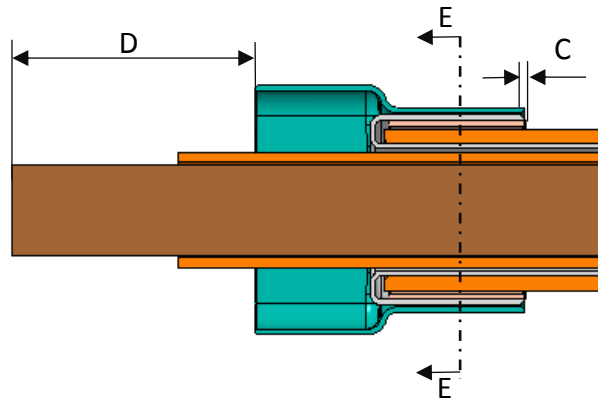
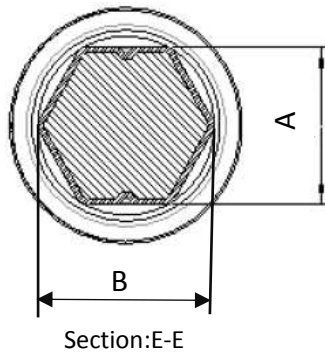


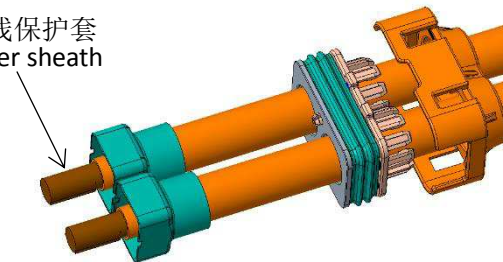
Figure 6: Shielding crimping dimensions

Table8: Shield crimped dimensions

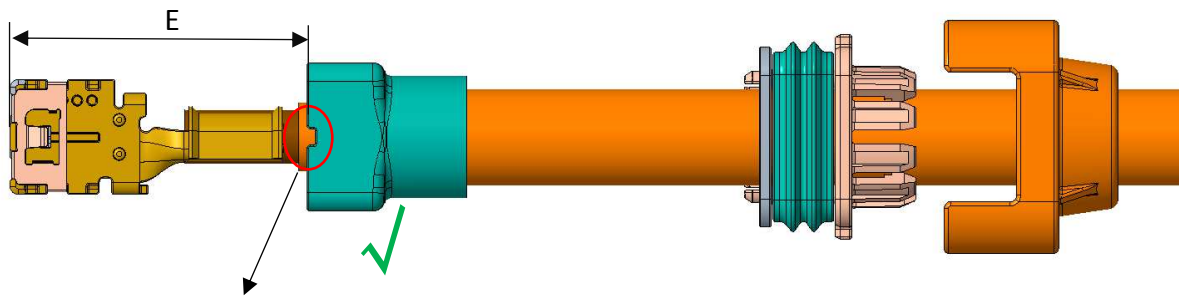
Cable Type	Cross Section (mm ²)	A ± 0.10 (mm)	B (mm)	C (mm)	D (mm)
Force	10	10.3	(11.89)	Max. 1.0	(14)
Force	16	11.8	(13.63)	Max. 1.0	(14)
Force	25	13.2	(15.25)	Max. 1.0	(14)

5.2.3 Terminal crimping

压接前去除芯线保护套
Remove the Inner sheath



Terminal crimping spec and dimensions refer to 114-160283. the Dim E after crimping refer to Table9
端子压接标准及相关尺寸请参考TE 114-160283。压接后的尺寸E参考表9



⚠ Attention: The Shield notch at both sides, not allow at top and bottom sides.
 注意：屏蔽缺口在两侧，而非上下方向

Figure 7: Terminal Crimping

Please note, in this processing, make sure the shields must be not damaged.
 请注意，压接过程中，确保不可压伤屏蔽零件。

Table9: Shield crimped dimensions

Cable Type	Cross Section (mm ²)	E ± 0.5 (mm)
Force	10	36.9
Force	16	36.9
Force	25	36.9

5.3 Plug Housing 母端壳体

5.3.1 Insert cable assembly into the Plug Housing 线缆组件装入母端壳体

Note the alignment of plug housing subassembly and cable assembly as shown figure 13.
 注意，如图8所示，线缆组件与母端壳体组件界面对齐

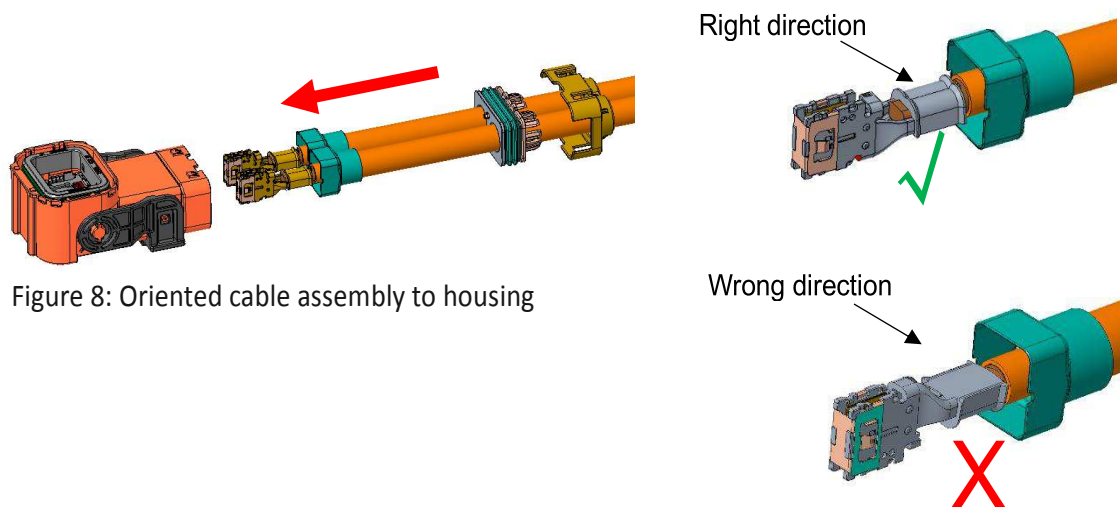
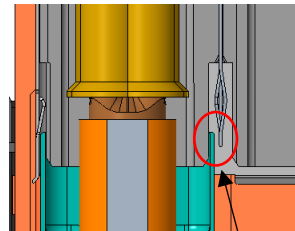
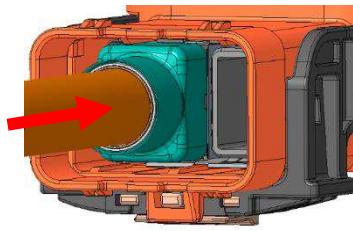


Figure 8: Oriented cable assembly to housing

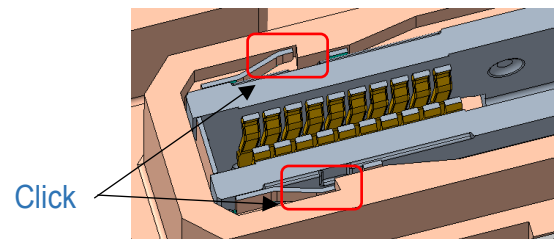
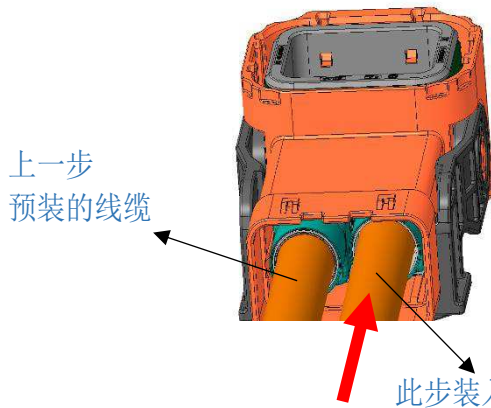
Pre-insert the one cable assembly into the plug subassembly as following position
先预装其中一根缆组件到母端壳体组件，预装到如下位置



Pre-assembly position 预装位置

Insert the other cable assembly into the plug subassembly until it stops against the inside of the housing and it makes "Click".

将另一根线缆组件插入母端壳体组件，直到抵住外壳内部并发出“咔嚓”声。



Insert "the Pre-insert cable assembly" into the plug subassembly until it stops against the inside of the housing and it makes "Click".

将“预装位置的线缆组件”插入母端壳体组件，直到抵住外壳内部并发出“咔嚓”声。

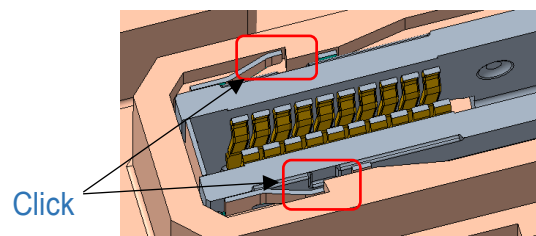
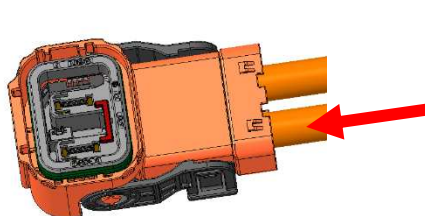


Figure 9: Insert cable assembly into the plug housing

5.3.2 Assemble cable seal assembly 组装线缆密封组件

Slide cable seal assy onto plug housing until the clip align with out housing
 滑动线缆密封组件到母端壳体上直到线夹平面与塑胶壳体框口面平齐。

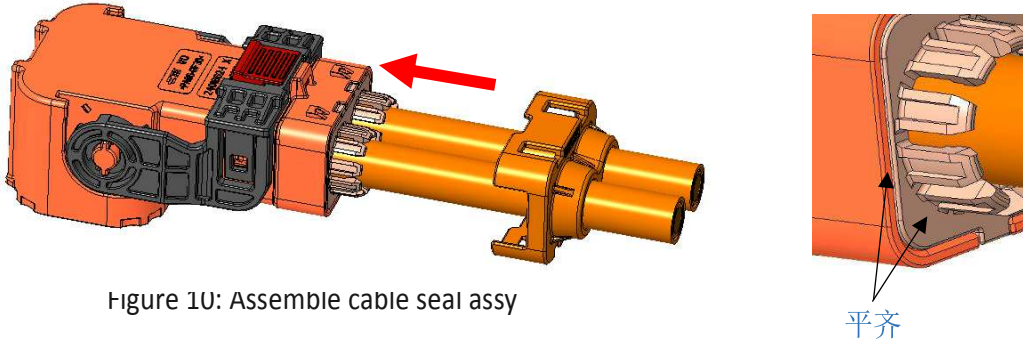


Figure 10: Assemble cable seal assy

5.3.3 Assemble cable cover 组装线缆后盖

Slide cable cover onto plug housing until it is fully locked and makes "click". The following items at minimum must be inspected and verified:

Visual Examination of correct assembling cable seal assy into housing.

滑动线缆后盖到母端壳体上直到完全扣住并发出“咔嗒”声。必须至少检查并验证以下项目：
 目视检查线缆后盖正确组装到外壳

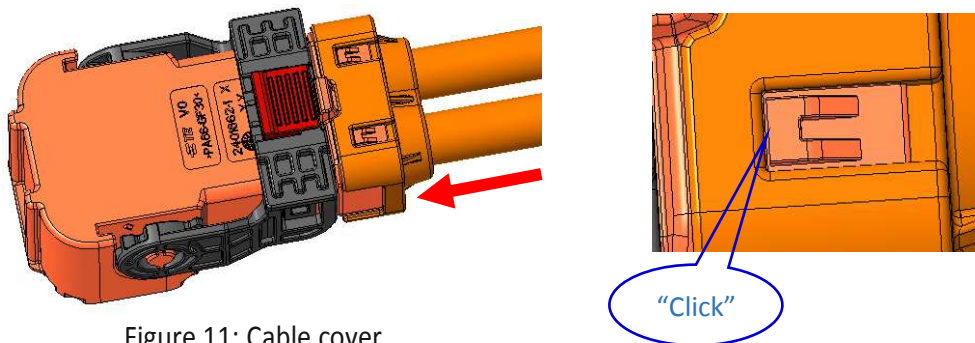


Figure 11: Cable cover

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

Please note, after two position cable assy were fully assembled. Press TPA until it stops against the plug 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，两位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。

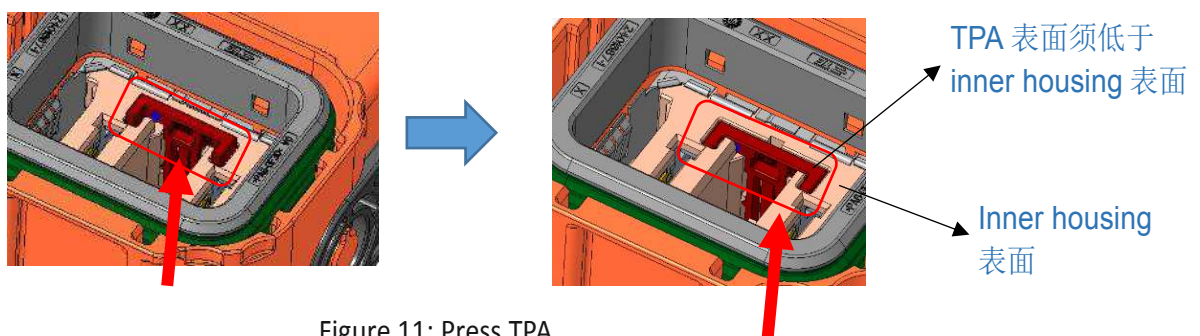


Figure 11: Press TPA

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. 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-108-160478 / chapter 3.4 are ensured by applicator. The test parameter should be not exceeding the values shown in point 3.4/ TE-108-160478.

使用方依据产品规范TE-108-160478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 AND PLUG ASSY INSTRUCTIONS 公母端安装说明

7.1 HVIL ASSY instructions 高压互锁安装说明

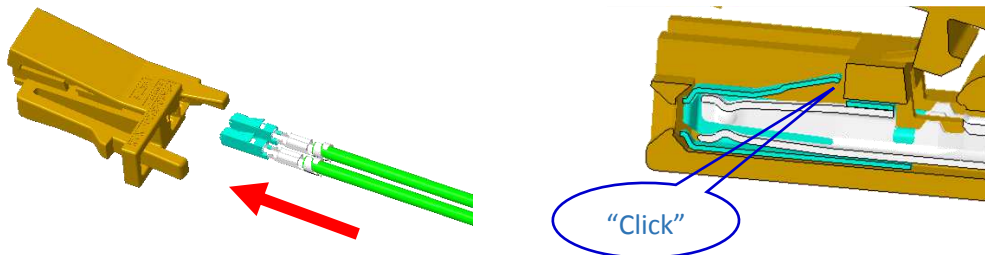
1. MQS terminal crimping

Table 10. Required application tools contact crimp

Application tools / 应用工装
MQS Terminal crimping device and requirement refer to 114-12021

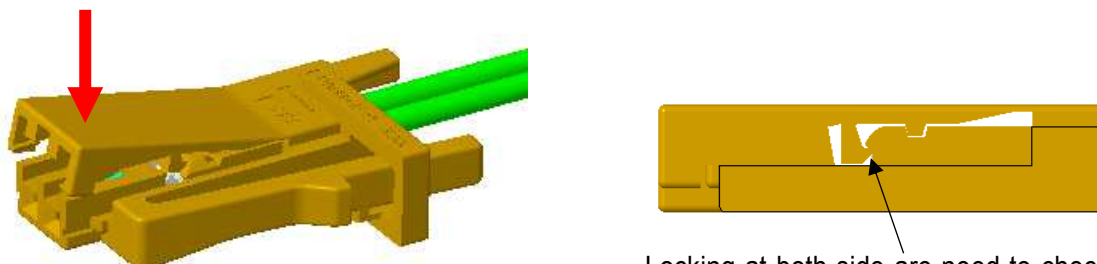
2. Insert crimped MQS terminal to the HVIL housing until it is fully locked and makes "click".

将压接后的MQS端子插入高压互锁护套直到完全插入并发出“咔嗒”声



3. Please note, after two position cable assy were fully assembled. Press TPA until it stops against the HVIL 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，两位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。



Locking at both side are need to check, need to adjust it if lockina not at the right position

7.2 Header ASSY instructions 公端组装说明

1. Inserting HVIL housing into the header. PNs of the HVIL housing and the HVIL contact please see customer drawing
 安装高压互锁壳体，壳体和端子料号请见客户图纸。
 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。
 After HVIL contacts crimped and assembled into HVIL housing, insert HVIL housing into header until it stopped and makes "click".

高压互锁端子压接并插入高压互锁壳体后，插入公断直到完全插入并发出“咔嗒”声。

Please avoid the blind insert HVIL housing to header housing, this will cause HVIL and header housing damaged, and HVIL housing not assembly at the right position. Assembly jig is needed in special case.

将高压互锁壳体装入公断连接器时候，需要避免盲插，盲插将会造成连接器损坏以及高压互锁壳体装入不到位的情况，特殊情况下需要安装治具辅助装配。



2. If there is the fixing housing, Inserting the fixing housing into the header busbar pin until it stopped and makes "click".

如果公端有固定作用的塑胶，将此塑胶完全插入端子螺栓处并发出“咔嗒”声。



Attention: Some form of Header need the fixing housing as following.

The fixing housing is delivered individually to customer.

注意：某些形态的公端，如下图所示，需要装配“起固定作用的塑胶”，此塑胶为单独出货给客户。

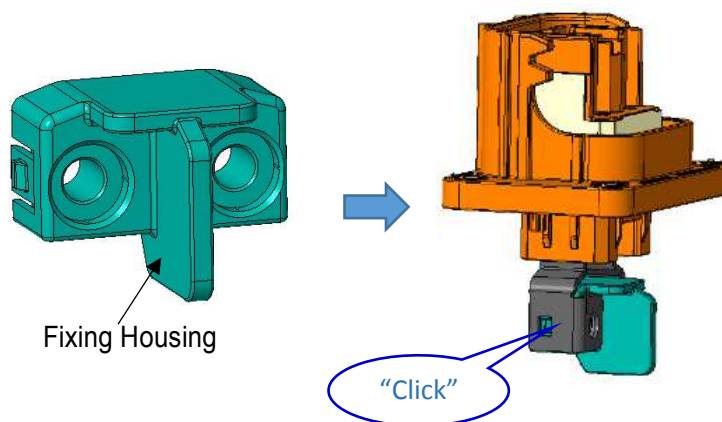


Figure 11: Press Fixing Housing

- Header assembled to the panel with 4 pieces M4 screw. The mounting screw with screw head no more than $\Phi 7.2\text{mm}$, washer is $\Phi 8.5\text{mm}$ to $\Phi 9\text{mm}$ and no more than 1mm for thickness. Recommended tightening torque is $3\pm 0.5\text{NM}$
使用4枚M4螺丝固定公端到面板上。螺丝头直径不超过7.2毫米，垫片的直径8.5~9毫米对应厚度不超过1毫米。建议安装扭矩 $3\pm 0.5\text{Nm}$ 。

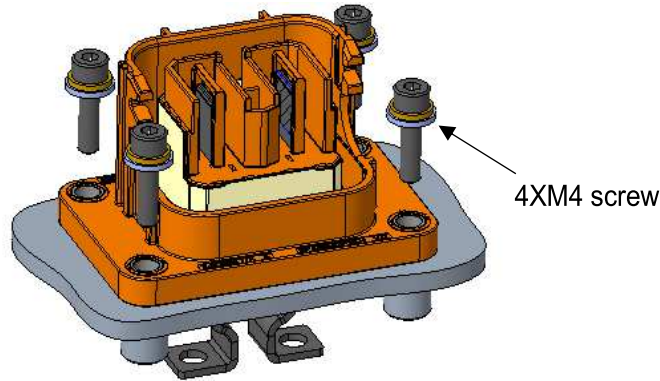


Figure 12: Assemble header to the panel

- Header pin assembled to inner busbar with M4 bolts. The fixing bolts should be locked after inner busbar fixed.
使用M4螺栓固定内部铜排和Header端子；并在固定内部铜排后锁紧固定螺栓；

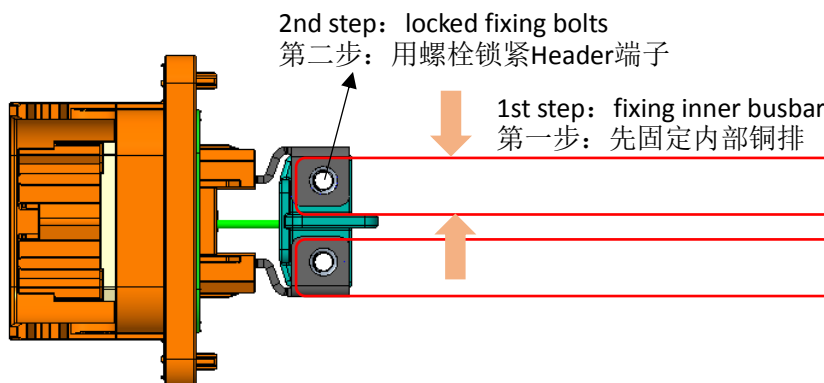


Figure 12: Assemble header to the panel

7.3 Plug assembly 母端安装

Delivery condition with lever and CPA are in locked position. Release the CPA by shifting CPA along the arrow direction.

杠杆和CPA的交付条件是处于终锁位置。通过沿箭头方向移动CPA来打开CPA。

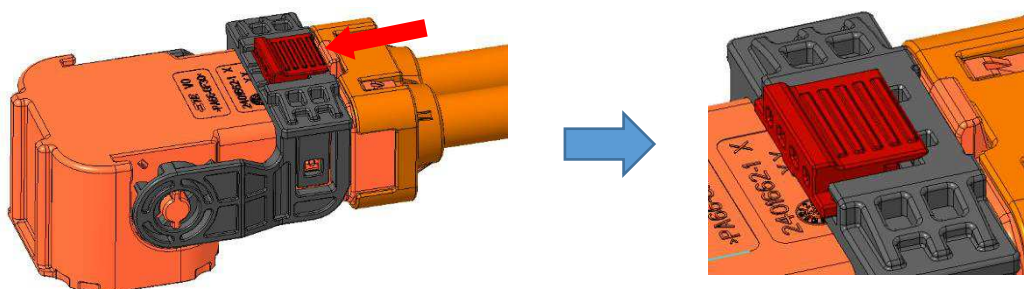


Figure 13: Release CPA

Rotate lever into plug position until vertical to plug housing and maks audible “Click”, keep lever in open position
 旋转杠杆到插入位置直到与母端壳体垂直且发出“咔嗒”声,确保杠杆在起始位置.

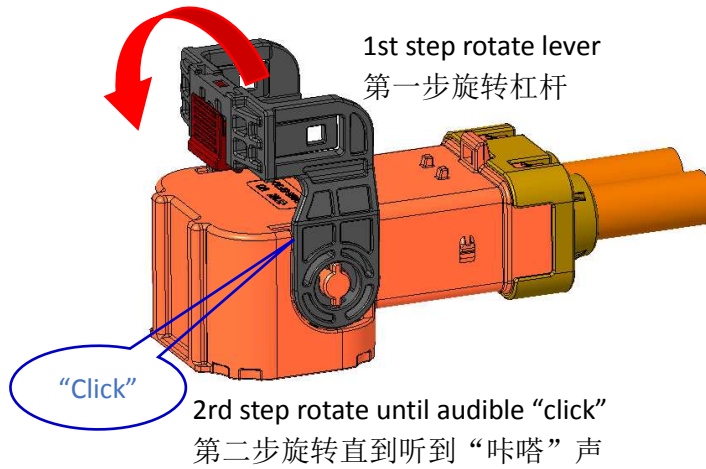


Figure 14: rotate into plug position

7.4 Mating of connector 连接器公母端互配

1st step. Press straight downward
 第一步向下直压 plug

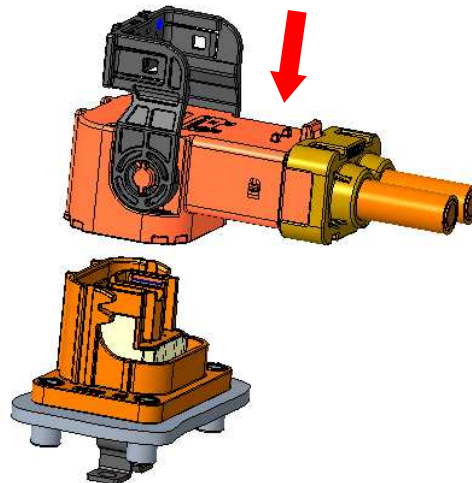
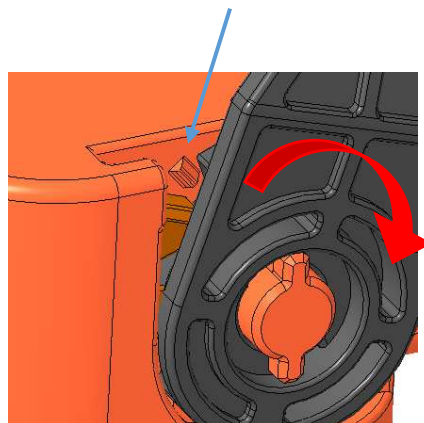


Figure 15: press plug downward

2nd step. Press plug until the lever hooks pass over the housing bumps.
 第二步继续下压 plug, 杠杆自动旋转, 直到杠杆卡钩越过塑胶卡点



3rd step. Rotate lever to CPA position
第三步旋转杠杆到 CPA 位置

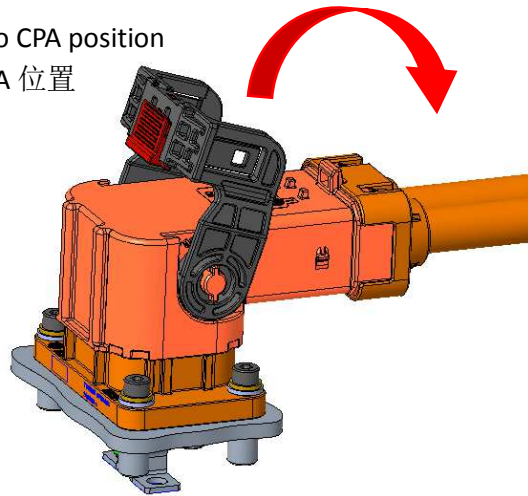


Figure16: Rotate lever

4th step. Lever holes onto Bumps
第四步杠杆槽扣到卡点上

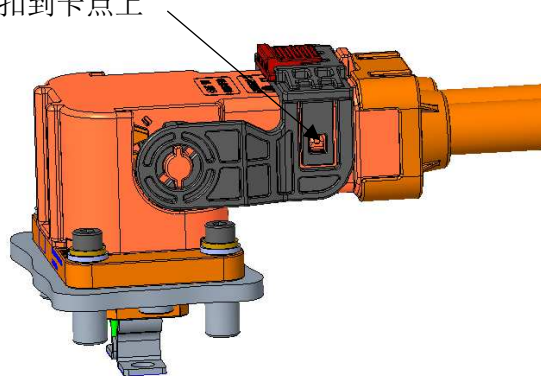
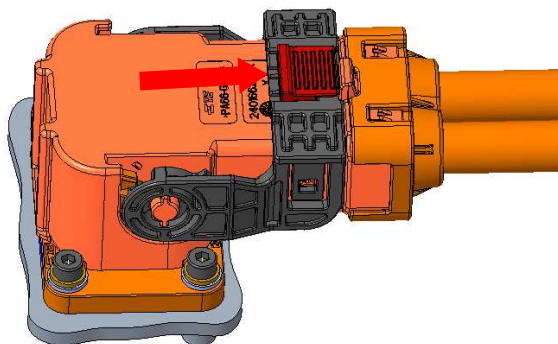


Figure 17: Lock CPA

5th step. Press lever and push CPA to lock position
第五步下压 CPA 并推到终锁位

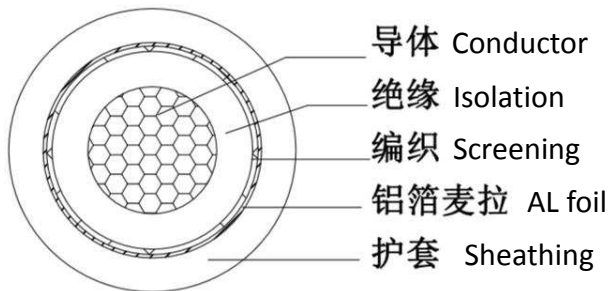


8. APPENDIX 附录

8.1 Data sheets 数据表

8.1.1 Force shield cable 10 to 25mm² 福斯 10 到 25 平方屏蔽线

No. QBP21-E-SIR 600/1000 V(FHLR2GCB2G) 10mm² to 25mm² shield cable for CSJ1200 connector.
 CSJ1200连接器采用物料编号QBP21-E-SIR 600/1000 V(FHLR2GCB2G) 10mm²~25mm²屏蔽线



Region	Outer diameter(mm)		
	10mm ²	16mm ²	25mm ²
Conductor	Max.4.5	Max.5.8	Max.7.2
Isolation	5.4~6.0	6.6~7.2	8.2~8.8
Sheathing	8.2~8.8	9.6~10.2	11.6~12.2

The cable which have not defined in the release list , need to vailitation and get TE approve before release.
Cable 供应商需经过该产品相关验证并得到TE 认可方可用于量产。