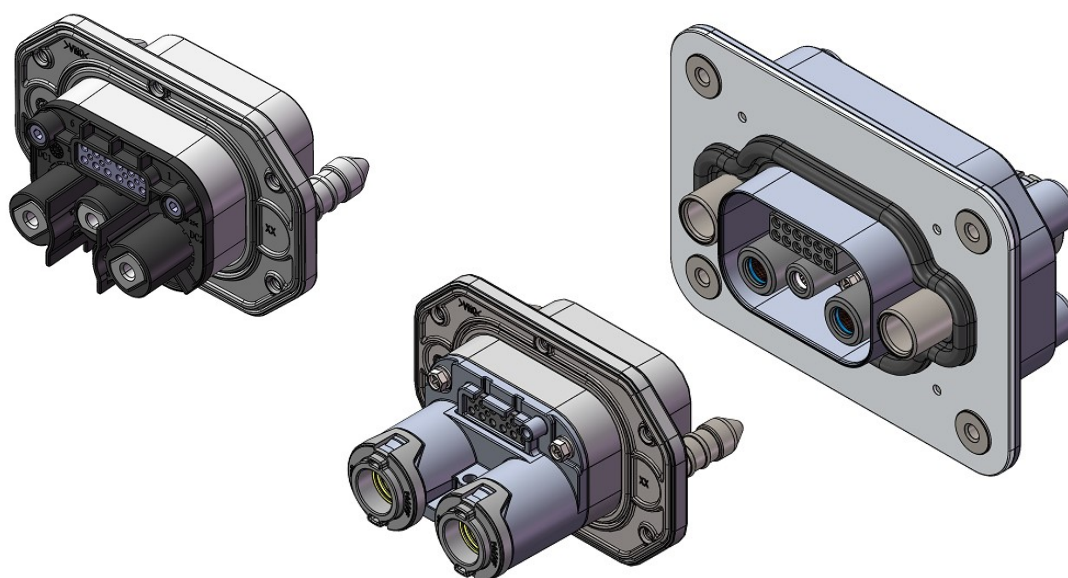


12PIN 换电连接器技术规格书（迭代款）

12PIN Battery Swap Connector Technical Specification (Iterative Version)



版本 Rev.	变更描述/变更内容 Change Description	修改日期 Revise. Date	编制 Prepared By	批准 Approved By
V13.0	更新产品参考视图 Update product reference view	2024. 11. 13	崔龙啸 Longxiao.Cui	马海兵 Haibing.Ma
V14.0	新增铜柱款单座防水状态 Add single-base waterproof status for copper column type	2025. 05. 22	崔龙啸 Longxiao.Cui	马海兵 Haibing.Ma
V15.0	增加产品温升曲线&降额曲线 Add product temperature rise curve & derating curve	2025. 10. 30	崔龙啸 Longxiao.Cui	马海兵 Haibing.Ma

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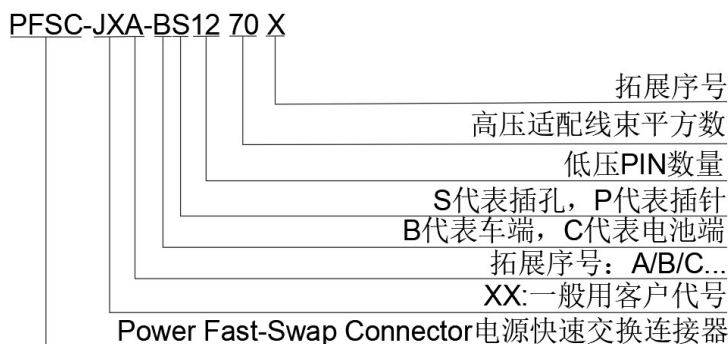
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一、产品简介 Product Introduction:

- ◆ 本系列产品主要用于电动汽车以及储能等领域，为设备之间提供稳定的功率和信号传导 This series of products is mainly used in electric vehicles and energy storage fields to provide stable power and signal transmission between devices.;
- ◆ 本系列产品外壳材料采用压铸铝合金，满足阻燃、RoHS、耐高温的要求。且与同类型换电连接器相比，具有体积小，PIN数多等特点 The shell material of this series of products is die-cast aluminum alloy, which meets the requirements of flame retardancy, RoHS and high temperature resistance. Compared with the same type of battery swap connectors, it has the characteristics of small size and more PINs;
- ◆ 本系列产品车端可以实现 X、Y 方向±5mm，Z 方向-10mm 浮动 The vehicle-side of this series of products can achieve floating of ±5mm in X and Y directions and -10mm in Z direction;
- ◆ 本系列产品接线范围为 50mm²~95mm²，额定工作电流为 200A~350A，满足客户不同电气参数的需求 The wiring range of this series of products is 50mm²~95mm², and the rated working current is 200A~350A, which meets the different electrical parameter requirements of customers;
- ◆ 本系列产品也可以根据客户需要由我司做成线缆组件，方便客户使用 This series can also be made into cable assemblies by our company according to customer requirements for easy use;
- ◆ 本系列产品可带屏蔽、高压互锁功能 This series can be equipped with shielding and high-voltage interlock functions.

二、命名规则 Naming Rules:



示例：PFSC-JXA-BS1270 中，“BS1270”代表车端、插孔、12个低压 PIN、适配 70mm² 高压线

Example: In PFSC-JXA-BS1270, "BS1270" means vehicle-side, socket, 12 low-voltage PINs, and adapted to 70mm² high-voltage wire harness

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三、常用物料型号 Common Material Models:

3.1 产品规格型号对照表 Product Specification Model Comparison Table :

序号 Serial No.	车端型号 Vehicle-side Model	电池端型号 Battery-side Model	适配线缆 Adapted Cable	适配线缆外径/mm Adapted Cable Outer Diameter	接线方式 Wiring Method	最大电流 Maximum Current
1	PFSC-JXA-BS1270	PFSC-JXA-CP1270	70mm ² (屏蔽线, Shielded Wire)	Φ 18.8mm~ Φ 20.0mm	压接 Crimping	250A
2	PFSC-JXA-BS1295	PFSC-JXA-CP1295	95mm ² (屏蔽线, Shielded Wire)	Φ 21.5mm~ Φ 22.5mm		300A
3	PFSC-JXA-BS1295E	PFSC-JXA-CP1295E		Φ 20.1mm~ Φ 20.9mm		
4	PFSC-JXB-BS1250	PFSC-JXB-CP1250	50mm ² (屏蔽线, Shielded Wire)	Φ 15.2mm~ Φ 15.8mm	超声波焊接 (主推) Ultrasonic Welding, Recommended	250A
5	PFSC-JXB-BS1250E	PFSC-JXB-CP1250E		Φ 16.7mm~ Φ 17.3mm		
6	PFSC-JXB-BS1270E	PFSC-JXB-CP1270E	70mm ² (屏蔽线, Shielded Wire)	Φ 17.4mm~ Φ 18.6mm		300A
7	PFSC-JXB-BS1270	PFSC-JXB-CP1270		Φ 18.8mm~ Φ 20.0mm		
8	PFSC-JXB-BS1295	PFSC-JXB-CP1295	95mm ² (屏蔽线, Shielded Wire)	Φ 21.5mm~ Φ 22.5mm		
9	PFSC-JXB-BS1295E	PFSC-JXB-CP1295E		Φ 19.0mm~ Φ 20.0mm		
10	PFSC-JXB-BS1295F	PFSC-JXB-CP1295F		Φ 20.1mm~ Φ 20.9mm		
11	匹配最大规格 95 平线缆 Matching Max. 95mm ² Cable	PFSC-JXA-CPTZ	/	/	铜排连接 Copper Bar Connection	350A
12		PFSC-JXB-CPTZ			铜排连接 (单座满足 IP68) Copper Bar Connection, Single Base Meets IP68	

注：与一代12PIN换电连接器可以满足互换要求 Compatible with the 1st-generation 12PIN battery swap connector .

备注:

- 1、该系列连接器车端和电池端默认在瑞可达公司生产为线束出货，具体线束要求和我司技术确认 The vehicle-side and battery-side of this series are default shipped as wire harnesses produced by Recodeal; confirm specific wire harness requirements with our technical team;
- 2、防尘盖不包含在连接器内，需单独购买（见3.2物料对照表） Dust covers are not included in the connector and need to be purchased separately; see 3.2 Material List;

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3、本产品接线方式包含压接、铜牌螺钉锁附和超声波焊接三种，推荐超声波焊接，载流能力更好 Wiring methods include crimping, copper plate screw locking and ultrasonic welding; ultrasonic welding is recommended for better current-carrying capacity;

4、最大载流350A实现,需头座同时匹配95平焊接线缆规格 To achieve max. current 350A, the plug and socket must be matched with 95mm² welded cables.

注：本文描述规格使用线缆芯线材质均为铜芯线 All cables described in this document use copper core wires.

3.2 物料对照表 Material List

(1) 下表为电池低压明细清单 Battery Low-Voltage Material List:

序号 Serial No.	名称 Name	料号 Part Number	图例 Matching Quantity	配套数量 Remarks	备注 Remarks
1	低压互锁插针 φ3 短针 (适配 0.5-1.0mm ²) Low-voltage Interlock Pin φ3 (Short, Adapts to 0.5-1.0mm ²)	7.744.107028.04		2	单独购买 Purchased Separately
2	低压插针 φ3 长针 (适配 0.5-1.0mm ²) Low-voltage Pin φ3 (Long, Adapts to 0.5-1.0mm ²)	7.744.107027.04		10	单独购买 Purchased Separately
3	低压互锁插针 φ3 短针 (适配 0.5-1.0mm ²) Low-voltage Interlock Pin φ3 (Short, Adapts to 0.5-1.0mm ²)	7.744.107181.04		2	单独购买 (适配 PFSC-JXB-CPTZ) Purchased Separately (Adapts to PFSC-JXB-CPTZ)
4	低压插针 φ3 长针 (适配 0.5-1.0mm ²) (适配 0.5-1.0mm ²) Low-voltage Pin φ3 (Long, Adapts to 0.5-1.0mm ²)	7.744.107180.04		10	单独购买 (适配 PFSC-JXB-CPTZ) Purchased Separately (Adapts to PFSC-JXB-CPTZ)
5	盲堵 Blind Plug	8.070.180004.08 (标准件料号 Standard Part No. : 7.114.000015)		/	单独购买 Purchased Separately

备注：此处仅为示例，插针、盲堵可根据插针使用实际需求购买 Note: This is for reference only. Pins and blind

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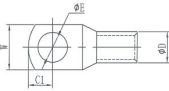
plugs can be purchased according to actual needs.。

(2) 下表为车端低压明细清单 Vehicle-side Low-Voltage Material List:

序号 Serial No.	名称 Name	料号 Part Number	图例 Matching Quantity	配套数量 Remarks	备注 Remarks
1	低压插孔 (适配 0.5-1.0mm ²) Low-voltage Socket (Adapts to 0.5-1.0mm ²)	7.746.107030		12	单独购买 Purchased Separately
2	低压插孔 (适配 1.5mm ²) Low-voltage Socket (Adapts to 1.5mm ²)	6.604.107133		12	单独购买 Purchased Separately
3	盲堵 Blind Plug	8.070.180004.08 (标准件料号: 7.114.000015)		/	单独购买 Purchased Separately

备注：此处仅为示例，插孔、盲堵可根据插针使用实际需求购买 Note: This is just an example. Jacks and blind plugs can be purchased according to the actual needs of pin usage.。

(3) 下表为 PE 端推荐明细清单 Recommended PE-side Material List:

序号 Serial No.	名称 Name	料号 Part Number	图例 Matching Quantity	配套数量 Remarks	备注 Remarks
1	螺钉 Screw	满足紧固作用即可 推荐料号 8.902.406011		1	M6X16
2	OT 端子 OT Terminal	满足线束接线即可 It is sufficient to meet the wiring harness connection requirements. 推荐料号 Recommended Part No.: 7.731.674 推荐料号 Recommended Part No.: 7.731.652		1	35-6 25-6

备注：PE 端物料未在连接器 BOM，需线束添加物料 PE-side materials are not in the connector BOM and need to be added to the wire harness.。

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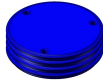
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(4) 下表为防尘盖明细清单 Dust Cover Material List:

序号 Serial No.	名称 Name	料号 Part Number	图例 Matching Quantity	配套数量 Remarks	备注 Remarks
1	车端防尘盖 Vehicle-side Dust Cover	8.934.107004		1	单独购买 Purchased Separately
2	电池端防尘盖 Battery-side Dust Cover	8.934.107005		1	单独购买 Purchased Separately

(5) 下表为高压堵头清单:

序号 Serial No.	名称 Name	料号 Part Number	图例 Matching Quantity	配套数量 Remarks	备注 Remarks
1	高压盲堵 High-pressure blind plugging	8.683.107368		2	适配迭代款 For Iterative Version

四、技术参数 Technical Parameters :

4.1 环境性能要求 Environmental Performance Requirements:

技术要求 Technical Requirement	性能指标 Performance Index
工作温度 Operating Temperature	-40℃~+125℃
使用相对湿度 Operating Relative Humidity	25℃时, 5%~95%
耐盐雾 Salt Spray Resistance	720h (中性盐雾, 满足试验后不影响功能、性能; 720h Neutral Salt Spray, no impact on function/performance after test)
防护等级 Protection Level	IP67 (配合后 After Mating); IP6K9K (配合后 After Mating)
针脚防护等级 Pin Protection Level	IPXXB (高压公端 High-voltage Male Terminal)
海拔高度 Altitude	≤5000 m

备注: 连接器使用环境, 空气中不宜含有腐蚀金属、破坏绝缘、导电和爆炸介质 The connector should be used in an environment without air-borne substances that corrode metal, damage insulation, conduct electricity or are explosive.

4.2 电气性能要求 Electrical Performance Requirements:

技术要求	性能指标
额定电压 Rated Voltage	1000V/DC (高压 High-voltage) 60V/DC (低压信号 Low-voltage Signal) 60V/DC (辅助电源 Auxiliary Power Supply)
最大电流 Maximum Current	350A (高压 High-voltage) @75℃ (焊接线缆 95mm ² , 初态温升满足 ≤50K) (95mm ² Welded Cable, Initial Temperature Rise ≤50K) 150A (接地 Grounding) 2A (低压信号 Low-voltage Signal)

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	8A (辅助电源 Auxiliary Power Supply)
短时过电流能力 Short-time Overcurrent Capacity	300A@50mm ² , 60s 初始冲击电流; 60s Initial Inrush Current 400A@70mm ² , 60s 初始冲击电流; 60s Initial Inrush Current 500A@95mm ² , 60S 初始冲击电流; 60s Initial Inrush Current
绝缘电阻(针与壳体) Insulation Resistance, Pin to Shell	≥200MΩ/1000V/DC(高压, 正常状态) (High voltage, normal state); ≥20MΩ/1000V/DC(高压, 湿热试验后) (High voltage, after damp heat test); ≥100MΩ/500V/DC(低压、辅助电源, 正常状态) (Low voltage, auxiliary power supply, normal state); ≥20MΩ/500V/DC(低压、辅助电源, 湿热试验后) (Low voltage, auxiliary power supply, after damp heat test);
介电强度(针与壳体) Dielectric Strength, Pin to Shell	高压: 3000V/AC, 60s, 无击穿闪弧, 漏电流≤2mA (不含线缆) 低压、辅助电源: 1500V/AC, 60s, 无击穿闪弧, 漏电流≤2mA (不含线缆) High voltage: 3000V/AC, 60s, no breakdown or flashover, leakage current ≤2mA (excluding cables) Low voltage and auxiliary power supply: 1500V/AC, 60s, no breakdown or flashover, leakage current ≤2mA (excluding cables)
高压互锁 High-voltage Interlock	有 Yes
接地要求 Grounding Requirement	车端及电池端外壳需接地 Vehicle-side and battery-side shells must be grounded
电磁屏蔽 Electromagnetic Shielding	高压/低压 360° 独立屏蔽 360° Independent Shielding for High/Low Voltage
温度检测 Temperature Detection	DC+/DC-带温度检测功能 DC+/DC- with Temperature Detection Function
温升(常温) Temperature Rise, Normal Temperature	插头和插座的接触对温升≤50K(初态) The temperature rise of the contact pair between the plug and socket is ≤ 50K
接触电阻 Contact Resistance	正常条件 (Normal Condition): 功率接触对 (Power Contact Pair) ≤1mΩ, 信号接触对 (Signal Contact Pair) ≤5mΩ; 振动、冲击、环境老化后 (After Vibration/Impact/Environmental Aging): 功率接触对 (Power Contact Pair) ≤5mΩ, 信号接触对 (Signal Contact Pair) ≤10mΩ

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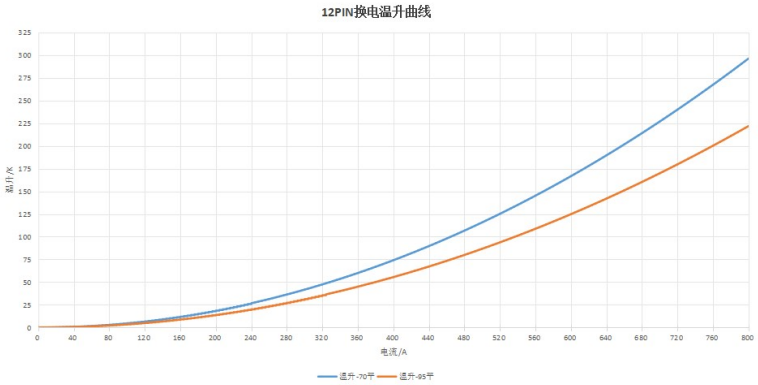
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温升曲线 Temperature Rise Curve

(理论计算值仅做参考, 以实际测试为准)

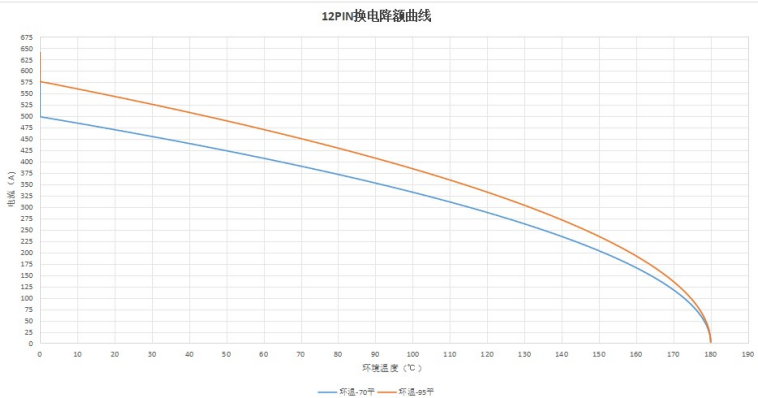
Theoretical values are for reference only;
actual test results shall prevail



降额曲线 Derating Curve

(理论计算值仅做参考, 以实际测试为准)

Theoretical values are for reference only;
actual test results shall prevail



4.3 机械性能要求 Mechanical Performance Requirements:

技术要求 Technical Requirement	性能指标 Performance Index
高压针数量 High-voltage Pin Quantity	2 个; 2 Pcs
接地针数量 Grounding Pin Quantity	1 个; 1 Pcs
低压针数量 Low-voltage Pin Quantity	12 个(含高压互锁(默认 11#/12#孔)与辅助电源); 12 Pcs, including High-voltage Interlock (Default Holes 11#/12#) and Auxiliary Power Supply)
机械寿命 Mechanical Life	≥10000 次(空载插拔, 按手册维护实现; ≥10000 Cycles of No-load Plugging/Unplugging, achieved via maintenance per manual)
密封圈寿命 Seal Ring Life	与连接器质保时间相同按手册维护实现(具体维护更换参照质量协议) Same as connector warranty period, achieved via maintenance per manual; refer to quality agreement for maintenance/replacement)
浮动 Floating	X、Y 向(X/Y Direction): +5/-5mm; Z 向(Z Direction): +0/-10mm; 角度(Angle): ≤2°
插拔力 Plugging Force	≤400N(对中插拔, Centered Plugging/Unplugging)
高压/低压保持力	高压(High-voltage): ≥2400N(70mm ² 超声波焊接时, When 70mm ²

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High/Low Voltage Retention Force	Ultrasonic Welding) ; 低压 / 辅助电源 (Low-voltage/Auxiliary Power) : $\geq 80N$
高压/低压端子保持力 High/Low Voltage Terminal Retention Force	高压 (High-voltage) : $\geq 300N$; 低压 / 辅助电源 (Low-voltage/Auxiliary Power) : $\geq 50N$
耐振动 Vibration Resistance	QC/T 413 3.12; Complies with QC/T 413 3.12
耐冲击 Impact Resistance	ISO16750-3 4.2.2; Complies with ISO16750-3 4.2.2

4.4 连接器的包络面尺寸及重量要求 Connector Envelope Dimension & Weight Requirements:

项目 Item	要求 Requirement
电池端最大轮廓尺寸 Max. Outline Dimension of Battery-side	151*96*130mm
电池端最大重量 Max. Weight of Battery-side	1.02kg
车端最大轮廓尺寸 Max. Weight of Battery-side	196*141*116
车端最大重量 Max. Weight of Vehicle-side	1.69kg
车端与电池端配合后最大总高度 (不含线缆) Max. Total Height of Mated Vehicle & Battery Sides, Excluding Cable	197mm

4.5 引脚及适配线缆 Pins & Adapted Cables:

连接器针脚号 Connector Pin No.	信号 Signal	信号描述 Signal Description	导线截面积 Wire Cross-sectional Area
DC1	主正 Main Positive	电源主正极 Main Positive of Power Supply	50mm ² / 70mm ² / 95 mm ²
DC2	主负 Main Negative	电源主负极 Main Negative of Power Supply	50mm ² / 70mm ² / 95 mm ²
PE	接地 Grounding	接地 Grounding	25mm ² / 35mm ²
1	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~ 1.5mm ²
2	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~ 1.5mm ²
3	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~ 1.5mm ²
4	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~ 1.5mm ²

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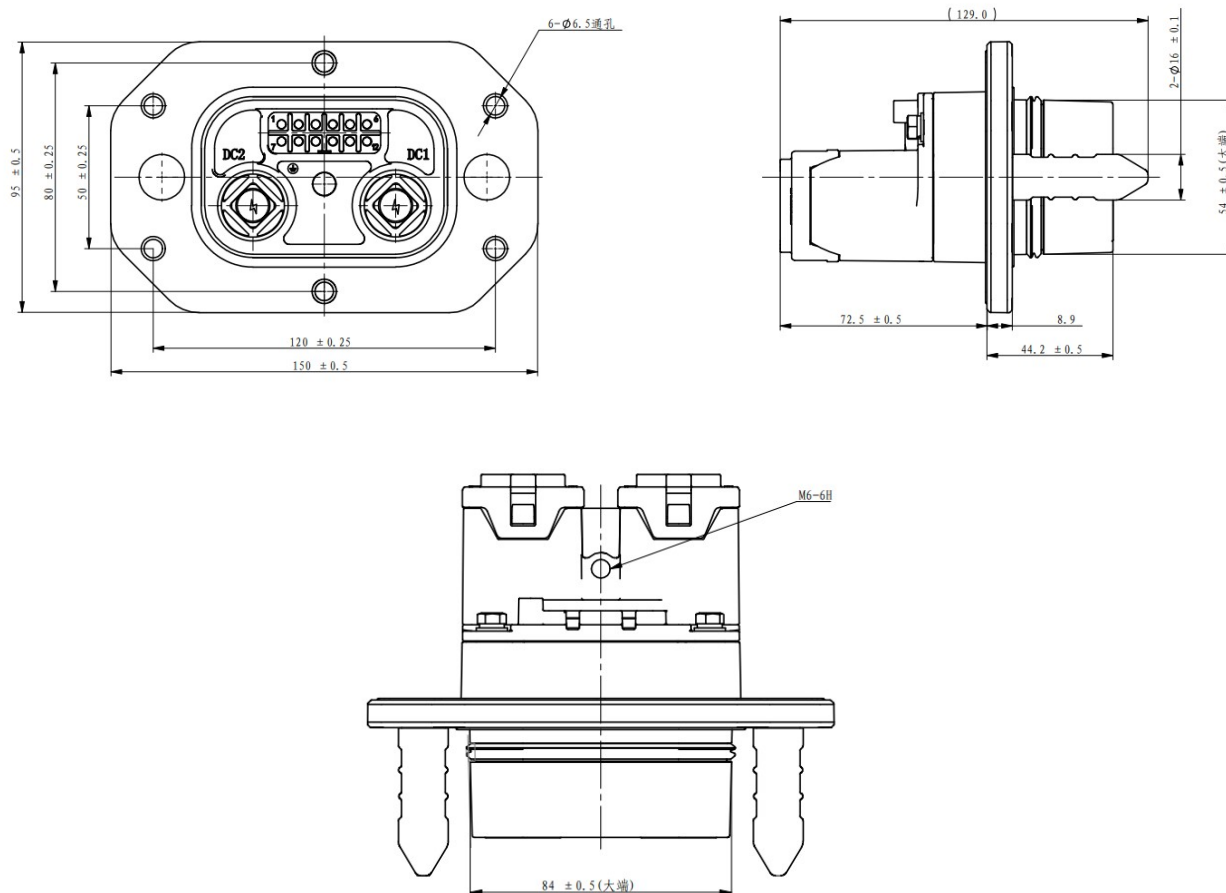
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5	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
6	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
7	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
8	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
9	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
10	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
11	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²
12	客户自行定义 Customer-defined	客户自行定义 Customer-defined	0.5mm ² ~1.5mm ²

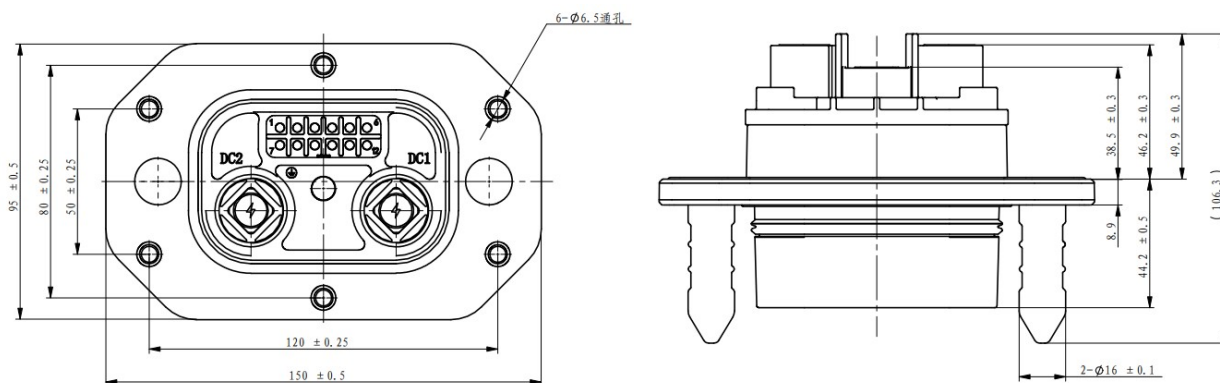
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五、外形尺寸图 Outline Dimension Drawings:

5.1 电池端接线状态外形尺寸 Outline Dimension of Battery-side in Wiring State:



5.2 电池端铜柱外形尺寸（常规款与单座防水款外形尺寸一致） Outline Dimension of Battery-side Copper Column (Same for Regular & Single-base Waterproof Versions):



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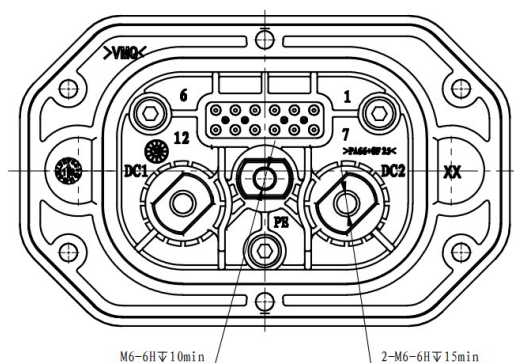
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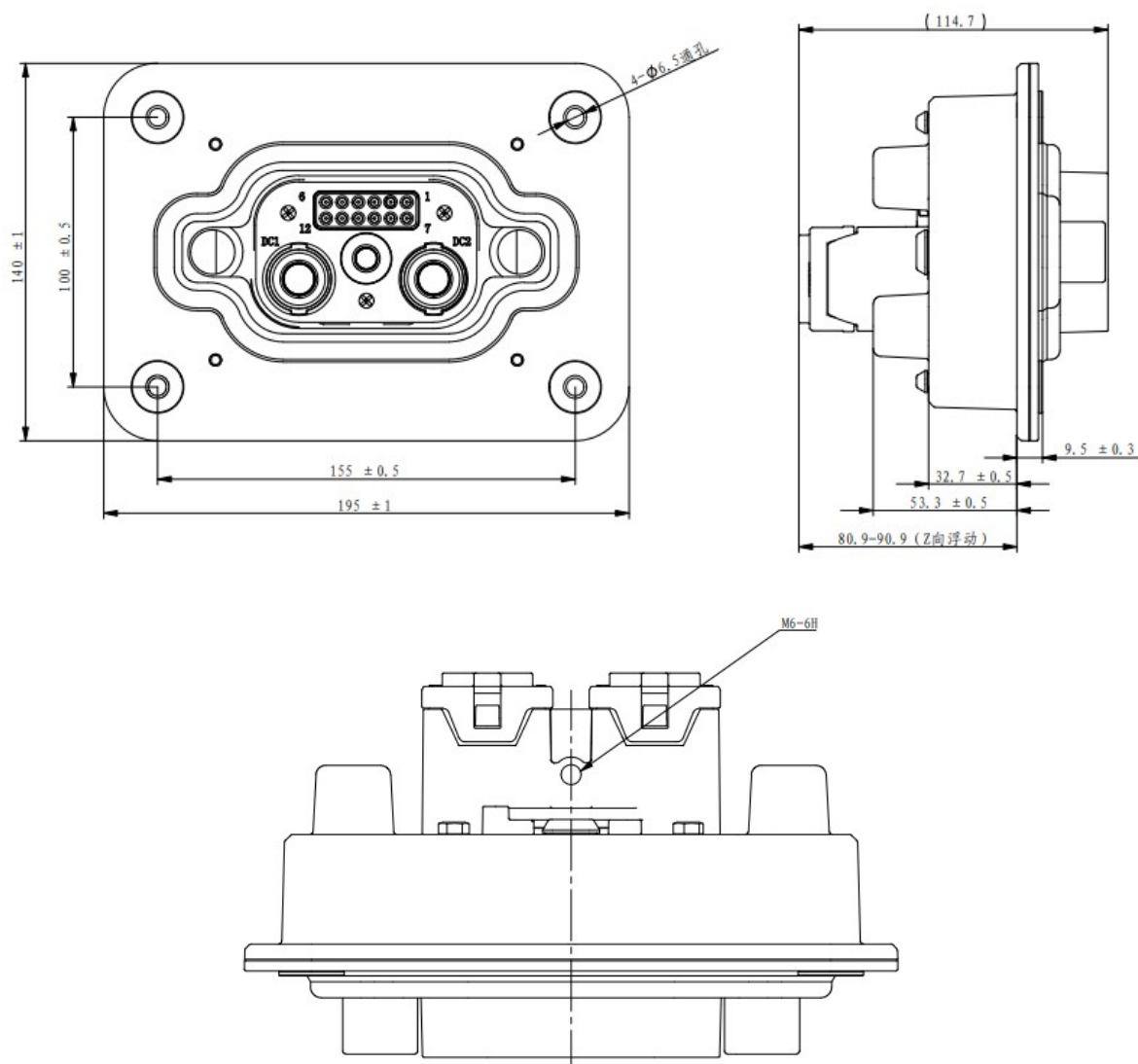


电池端孔位定义
(对插面)
Battery-side Pin
Definition
(Mating Surface):

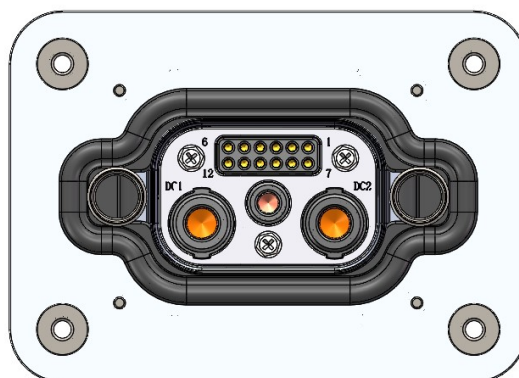


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5.3 车端接线状态外形尺寸 Outline Dimension of Vehicle-side in Wiring State:



车端孔位定义
(对插面)
Vehicle-side Pin
Definition
(Mating Surface):



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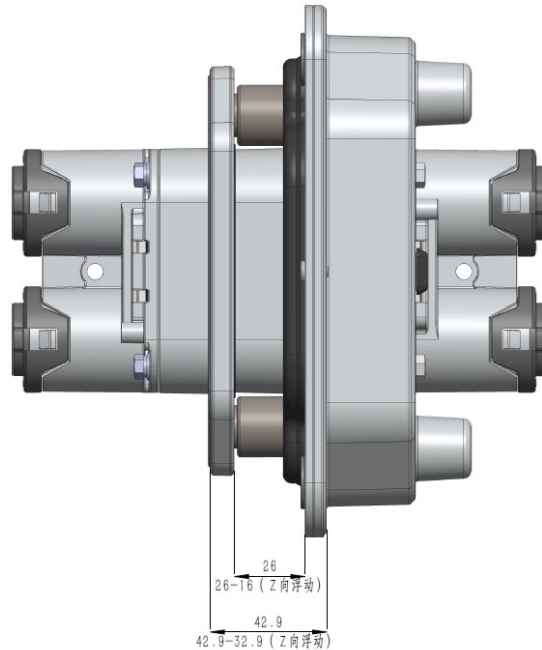
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5.4 配合后外形尺寸 Outline Dimension After Mating



说明:

(1). 如上图所示, 连接器整体 Z 向满足浮动量为 0mm~10mm 即如上图浮动间距为 26mm~16mm, 为确保整车和电池包的有效连接推荐整车设计插合时电池端法兰距离车端前端面距离为 21mm (如上图显示 26mm 设计取值 21mm 值, 此时连接器浮动端为压缩 5mm 状态, 满足这个位置需要的匹配力值需要整车换电机构具体核算确定, 必要时同步和瑞可达技术确认)。

As shown in the figure above, the overall Z-direction floating range of the connector is 0mm~10mm (i.e., floating distance 26mm~16mm); to ensure effective connection between the vehicle and battery pack, it is recommended that the distance between the battery-side flange and the vehicle-side front surface be 21mm during vehicle mating design (26mm in the figure is adjusted to 21mm, with the connector floating end compressed by 5mm); the matching force required for this position shall be calculated by the vehicle battery swap mechanism, and confirmed with Recodeal technical team if necessary).

下表为弹簧预压三个状态的参考力值定义

The following table defines the reference force values for three spring pre-compression states:

车端和电池端接插过程, Z 向浮动范围推荐施加力值定义	0mm (未预压状态弹簧 550N)
	-5mm (预压 5mm 状态弹簧 760N)
	-10mm (预压 10mm 状态弹簧 1000N)

(2). 线束要求:

为保证整车端浮动部位运行正常, 实际在线束固定时, 应对线束尾端给出足够活动量, 不允许任何因线束固定不当而引起浮动异常情况 (To ensure normal operation of the vehicle-side floating part, sufficient movement space shall be reserved for the wire harness end during fixing; abnormal floating caused by improper fixing is not allowed).

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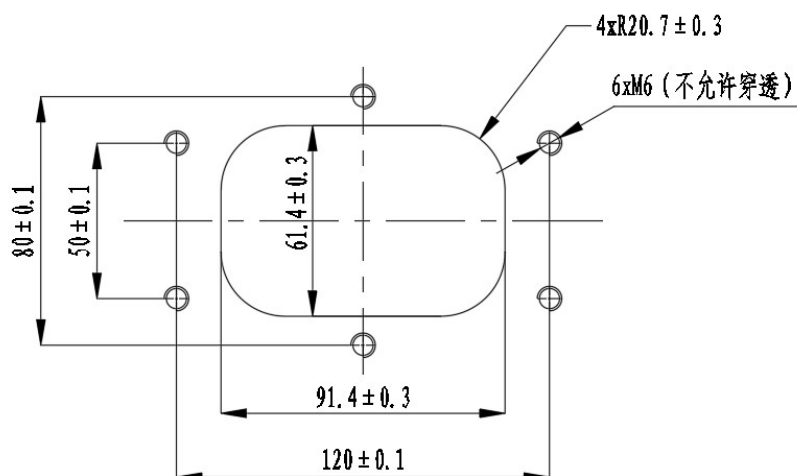
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5.5 电池端推荐开孔尺寸 Recommended Hole Dimension for Battery-side :



注：安装螺纹孔为 M6 盲孔（满足连接器配合后达到 IP67，Mounting threaded holes are M6 blind holes to ensure IP67 after connector mating）；

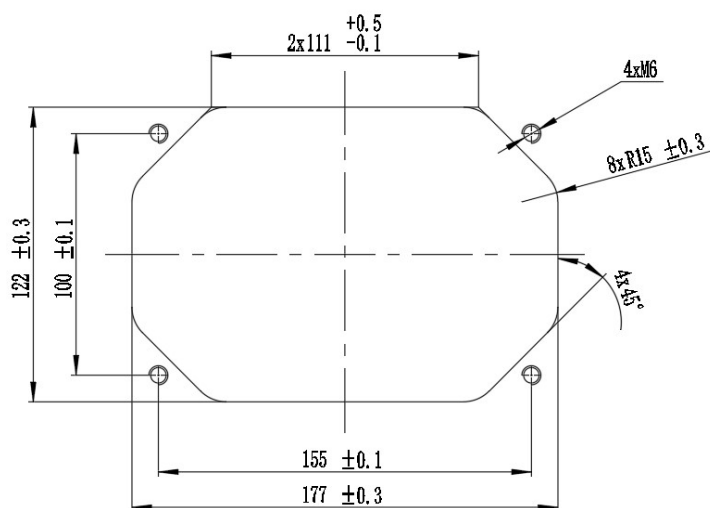
a. 未注公差尺寸推荐参照 GB/T 1804-c 级执行（Undimensioned tolerances are recommended to comply with GB/T 1804-Class C）；

b. 为保证 IP67 防护要求，面板粗糙度应不低于 1.6，平面度不低于 0.2，推荐面板厚度 $\leq 3\text{mm}$ （To ensure IP67 protection, the panel roughness shall be ≥ 1.6 , flatness ≥ 0.2 , and panel thickness $\geq 3\text{mm}$ is recommended）；

c. 安装所使用的螺钉为 M6 螺钉，锁紧力矩推荐值为 $9.5\text{N}\cdot\text{m} \sim 10.5\text{N}\cdot\text{m}$ （M6 screws are used for mounting; recommended tightening torque is $9.5\text{N}\cdot\text{m} \sim 10.5\text{N}\cdot\text{m}$ ）

5.6 车端推荐开孔尺寸 Recommended Hole Dimension for Vehicle-side:

（注意：安装面板需承受 1500N（最小）无塑性变形，推荐面板厚度 $\leq 3\text{mm}$ （The mounting panel shall withstand 1500N (min) without plastic deformation; panel thickness $\geq 3\text{mm}$ is recommended）



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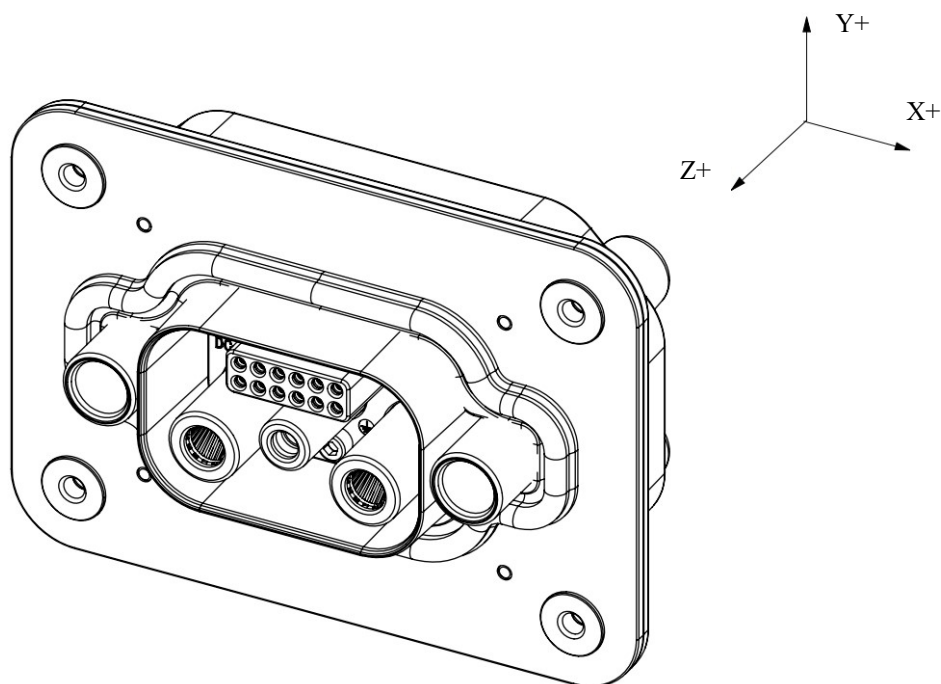
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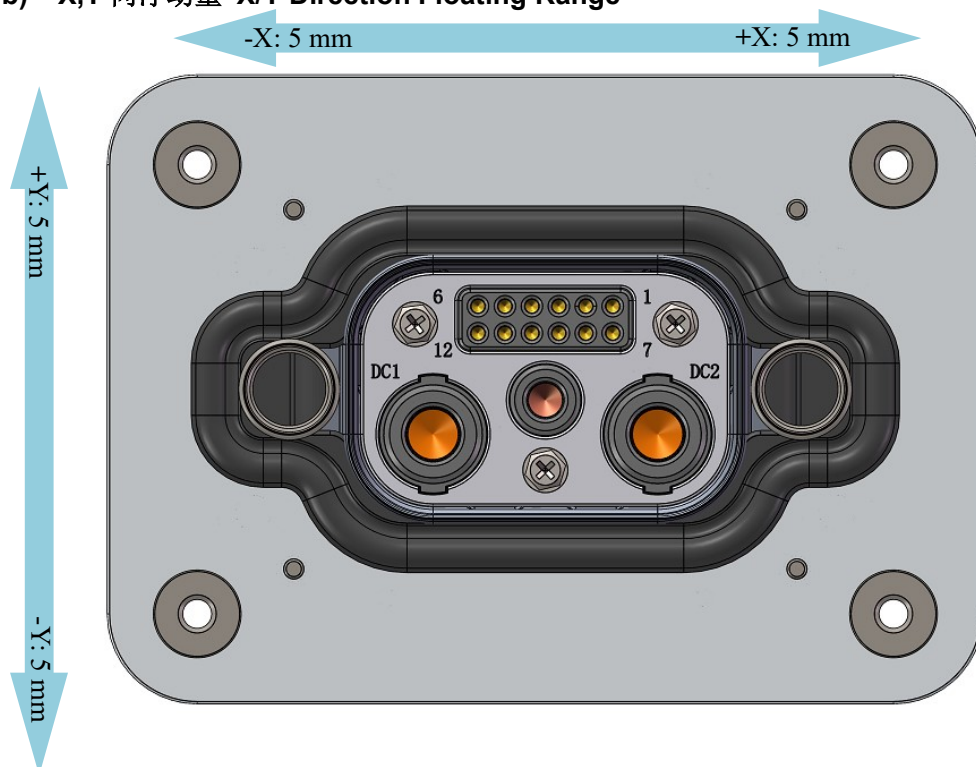
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六、浮动说明 Floating Description

a) X,Y,Z 方向定义 X/Y/Z Direction Definition



b) X,Y 向浮动量 X/Y Direction Floating Range



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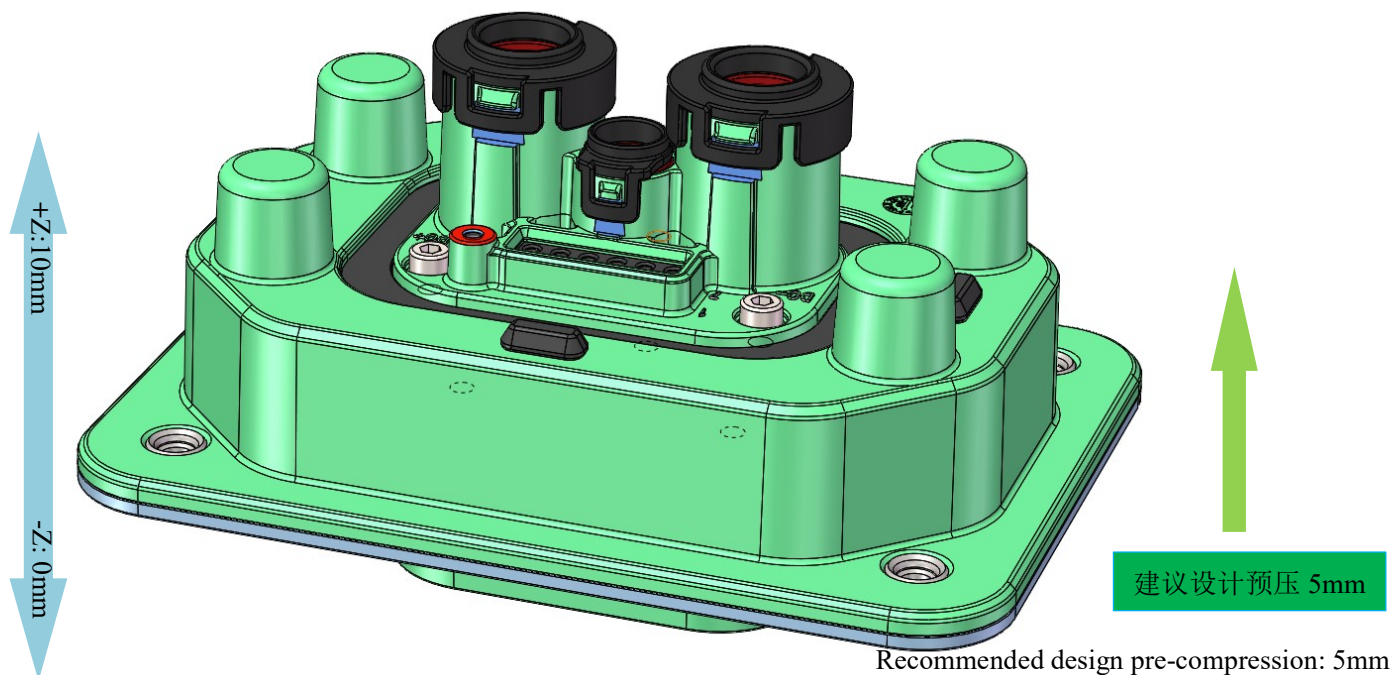
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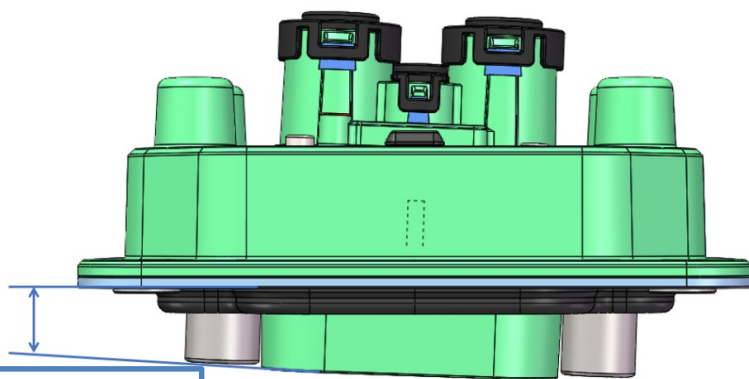
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c) Z 向浮动量 Z Direction Floating Range



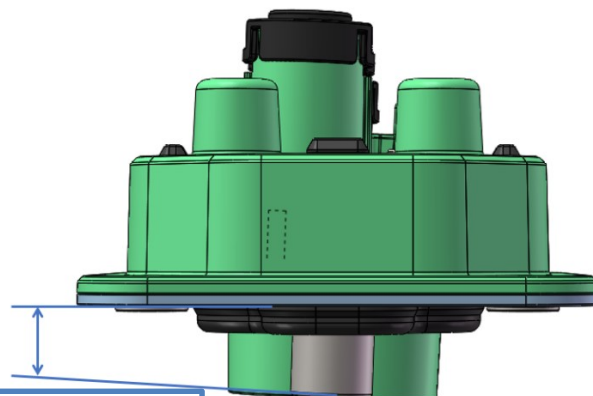
d) Z 向角度补偿极限说明 Z-direction Angle Compensation Limit Explanation

注意 (Caution): Z 向角度补偿会减小 Z 向浮动范围; 角度补偿越大, 对 Z 向浮动范围的影响越大 (Z-direction angle compensation reduces the Z-direction floating range; the larger the angle compensation, the greater the impact on the Z-direction floating range)



Z 向角度补偿极限:
+2° / -2° (沿 X 轴)

沿 X 轴 (Along X-axis): +2° / -2°



Z 向角度补偿极限:
+2° / -2° (沿 Y 轴)

沿 Y 轴 (Along Y-axis): +2° / -2°

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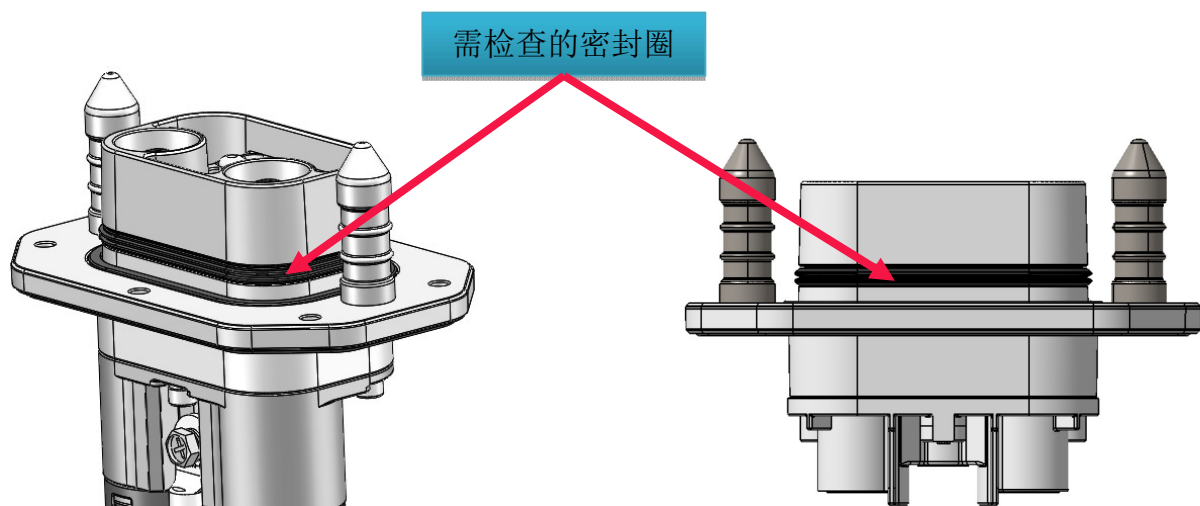
七、检查维护及保养注意事项 Inspection, Maintenance and Care Precautions:

a. 螺纹建议最大扭力 Recommended Maximum Torque for Threads

螺纹尺寸 Thread Size	扭力 Torque (N*M)
M5	6±0.5
M6	10±0.5

- b. 产品使用必须在规格书约定范围内使用，如当换电连接器插头和插座开始接触时必须保证配合范围在本规格书要求的浮动范围以内；特别是互配角度偏差会造成浮动量的减小、插拔力增大，建议使用过程中减小角度误差；When the plug and socket start to contact, the mating range must be within the floating range required by this specification; in particular, mating angle deviation will reduce the floating range and increase the plugging force, so angle error should be minimized during use;
- c. 换电过程中应配合专用的换电机构进行作业，保证连接器插拔速度 $\leq 10\text{mm/s}$ ，且速度均匀，若大于此速度插拔，会导致连接器加速磨损，减少连接器使用寿命；Special battery swap mechanism shall be used to ensure the connector plugging/unplugging speed is $\leq 10\text{mm/s}$ and uniform; speed $>10\text{mm/s}$ will accelerate wear and shorten service life
- d. 电池长时间放置时需盖防尘帽；Dust cover must be installed when the battery is stored for a long time
- e. 推荐按照维护手册进行对插界面清洁和维护，详情见维护手册；see Maintenance Manual for details;
- f. 定期检查电池端密封圈，建议每换电 1500 次后检查或更换电池端密封圈；Cleaning and maintenance of the mating interface are recommended per the Maintenance Manual; check the battery-side seal ring regularly, and inspect or replace it after every 1500 battery swaps; 在环境恶劣情况，建议增加维护频次，详情见维护手册；increase maintenance frequency in harsh environments, see Maintenance Manual for details;

Seal Rings to Be Inspected



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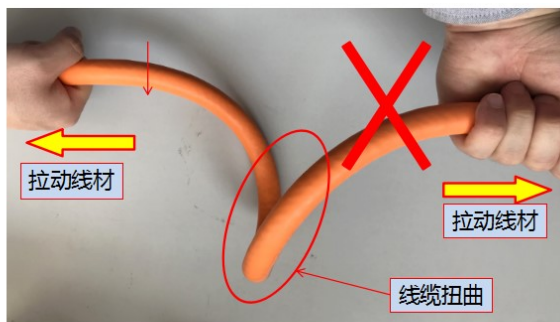
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- g. 不允许扭转线缆；Cable twisting is not allowed



不允许一端固定，一端扭转线缆

- h. 不允许扭曲线缆；Twisting the cables is not allowed.



1. 不允许扭曲线缆
2. 线缆扭曲时，拉动线缆两侧会对线缆造成严重影响！

- i. 线缆弯折半径，固定绝缘外被时: $\min. 5 \times$ 线缆外径；When fixing the insulating sheath, the minimum cable bend radius is $5 \times$ the cable outer diameter;



不允许小于线缆弯折半径弯折

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- j. 不允许通过低压任意线缆拎起线束组件；Lifting the wire harness assembly via low-voltage cables is not allowed



不允许线缆扭曲时任意方向拉扯线缆

- k. 不允许任意方向拉扯低压线缆 ($\geq 50\text{N}$)；Pulling low-voltage cables in any direction with force $\geq 50\text{N}$ is not allowed



不允许任意方向拉扯线缆

1. 不允许线缆扭曲时任意方向拉扯低压线缆；It is not allowed to pull the low-voltage cable in any direction when the cable is twisted.



不允许通过低压线缆拎起线束组件

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- m. 产品，在避免雨、雪等直接淋袭的条件下，可用任何运输工具运输；The product shall be transported by any means of transportation under conditions avoiding direct rain and snow
- n. 包装成箱的产品应在环境温度 5℃~30℃，相对湿度在 80%以下，周围空气中无酸性、碱性和其它腐蚀性气体的库房里储存。在上述条件下，储存期自生产日期起不超过 12 个月。Packaged products shall be stored in a warehouse with temperature 5℃~30℃, relative humidity ≤80%, and no acid, alkali or other corrosive gases; storage period shall not exceed 12 months from the production date

注 Note: 连接器细节使用与维护保养清洁详情见连接器维护使用说明书。For detailed usage, maintenance and cleaning of the connector, refer to the Connector Maintenance & Usage Manual

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