

PL28X-301-XX-5-9K 单芯弯头插头组装规范

PL28X-301-XX-5-9K 1POS 90D Plug Assembly Manual



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第一部分：产品介绍

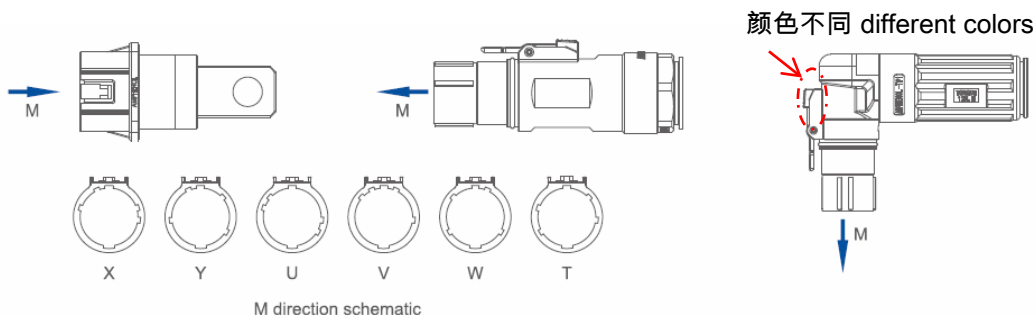
Part 1 : Introduction to products

1 : 料号信息 Part number information

PL28(X)-30(X)-XX-5-9K

Key&Color		高压互锁	线缆大小	线缆类型
键位	Color	0 : 无	Cable Size mm2	
X 键	OR	1 : 有		
Y 键	BK	HVIL		
U 键	YL	0 : NO	50	5 : HS cable
V 键	GN	1 : WITH	70	
W 键	RE			
T 键	BL			

2 : 键位及颜色区分 Key and color differentiation



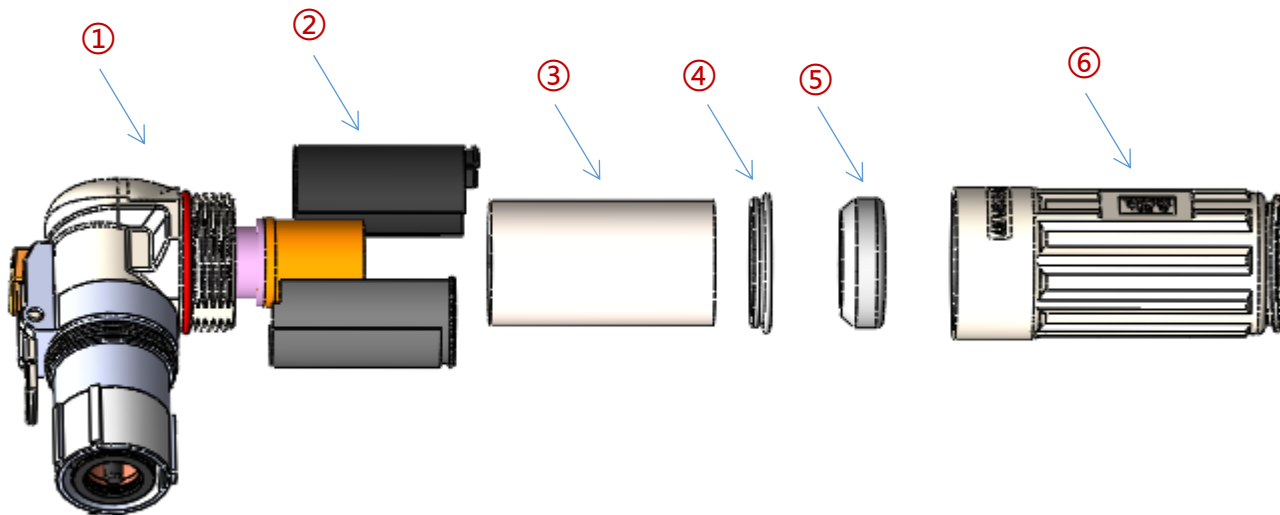
3 : 对配头型号 Mating receptacle: PL00(X)-30(1)-10XX

4 : 主要参数 Major Spec

- 4.1 工作温度 Operating temperature: -40 °C ~+125°C
- 4.2 额定电压 Operating voltage: 1000 VDC
- 4.3 防护等级 Protection class: IP67 & IP2X & IP6K9K
- 4.4 带自动二次锁扣 Automatic secondary lock
- 4.5 尾部接线方向可正反转向90° Rotate function of wire
- 4.6 额定电流 Current rating(Connector Only):
50mm²-200A, 70mm²-250A
- 4.7 详情请参照产品图 Please refer to the product drawing for details

第二部分：产品示意图

Part 2 : Exploded View



- ① 接头主体 Connector body ×1
- ② 一套绝缘套 A set of Insulation Sleeve ×1
- ③ 金属套 Metal Sleeve ×1
- ④ 金属环 Metal Gasket ×1
- ⑤ 密封圈 cable Seal ×1
- ⑥ 金属后壳 Back Shell ×1

本文件中后面的图片部份与实物不同，仅供参考。

The later pictures in this document are different from the actual objects and are for reference only.

第三部分：组装说明

Part 3 : Assembly Instruction

步骤1：选取合适线缆，按照要求的长度切线与剥外被。

Step1 : Select the right cable, Cut and stripping the cable as required length.



表1：剥皮尺寸
Table 1: Strip length

线材尺寸 Cable Size	线材OD Cable OD	A (mm)	线材型号 Cable PN
50mm ²	14.9±0.3	27 ±1	H+S 84096257
70mm ²	17.0±0.3	27 ±1	H+S 84100298

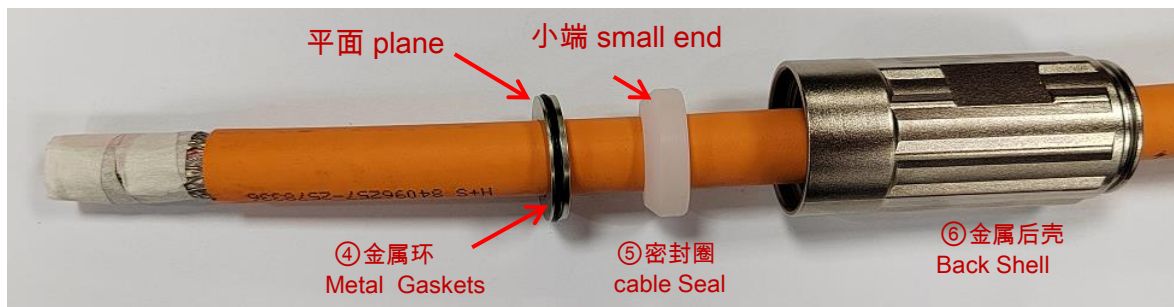
步骤2：将编织均匀打散，反折固定在外被上，按图示长度剥芯线。

Step2 : Break the braid evenly, fix it on the outer jacket, and strip the insulation according to the length shown.



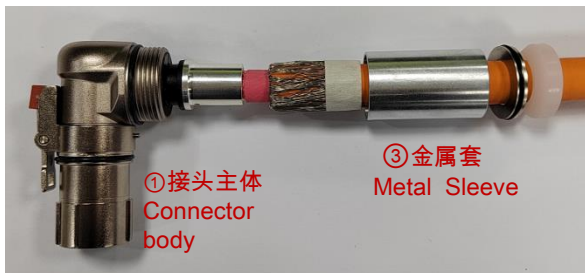
步骤3：将编织如图所示处理，再将零件按下图套在剥好的电线上。

Step3 : Process the braid as shown in the figure, and then put the parts on the stripped wire according to the figure below.



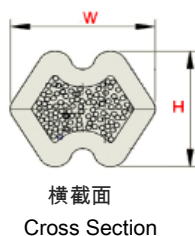
步骤4：将编织再次反折固定如图示，再在线材上先后穿入金属环与接头主体。

Step4 : Fold the braid again and fix it as shown in the figure, and then insert the metal ring and the connector body successively on the cable.



步骤5：调试好机器与模具，将端子压接在芯线上，模具与压接规格参照手册最后的附录。

Step5 : Adjust the machine and tool, crimp the terminal on the conductor, tool and crimp specifications refer to the appendix at the end of the manual.



高宽度为居中量测的最小值
Height and width are the
minimum values measured
in the center of the
crimping area

(1) 建议使用安费诺指定线材（型号详见手册后附录），如果客户选用其它电缆，请联系安费诺业务，协商订制零配件

Recommend to use assigned cable. (See appendix for details.) If you need to use customized cable, Please contact local sales for product extensions

(2) 压接高度和拉拔力需要配合压接截面的金相分析，客户才能判断压接质量合格，芯线压缩比要求为 80~90%。

Customers need to reconfirm cross section on crimping area and pull out force test to confirm the quality of crimp process, Terminal crimping must meet the compression ratio of conductor requirements: 80~90%.

(3) 横截面仅供参考（其他举例：等边六变形的横截形状），客户负责采购压接工具或刀模。

Cross section only reference tooling geometry (other ex. Hexagon dimensions), customer will take liability for sourcing tools or dies.

步骤6：如图示将绝缘套装在接头主体的沟槽上，注意后工序编织避免散落在图示区域。

Step6 : Assemble the insulation sleeve on the groove of the connector body as shown in the figure, and pay attention to avoid braid falling in the area as shown in the continuous process.



步骤7：屏蔽处理

7-1 自右向左推动金属套盖住绝缘套

7-2 外翻屏蔽线，将其覆盖到金属套上，剪切屏蔽线，保留长度约15mm

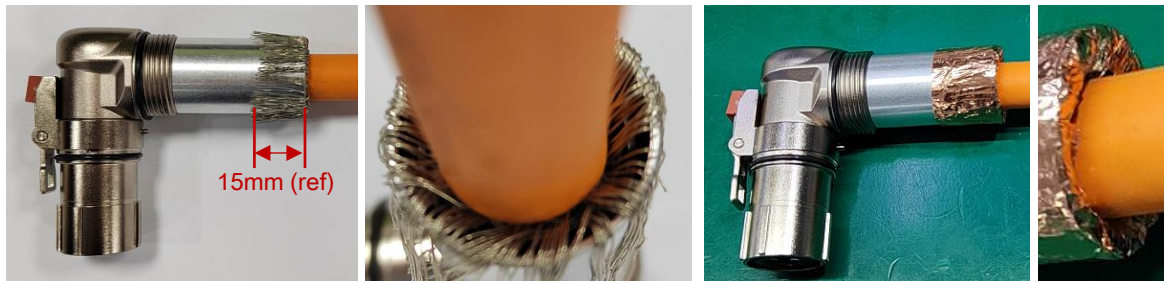
7-3 剪切尺寸约120mm*25mm的铜箔，包裹住屏蔽线，确保尾端被包紧

Step7 : Shielding braid preparation

7-1 Push the metal sleeve from right to left over the insulation sleeve.

7-2 Flip over the braid, cover it to the metal sleeve, cut the braid to the length of about 15mm.

7-3 wrap the shielding braid with a piece of copper foil of 120mm*25mm, ensuring that the end is tightly wrapped.

**步骤8：组装金属后壳****Step8 : Assemble the Back shell**

8-1 将金属环与密封圈前移，紧靠金属套。

8-1 Move the metal gasket and cable seal forward, close to the metal sleeve.



8-2 转动前移金属后壳至底部如图所示。

8-2 Turn forward metal back shell to bottom as shown in figure.

8-3 将接头固定在治具T007-7上如图所示。

8-3 Fix the connector on the mold T007-7 as shown in figure.



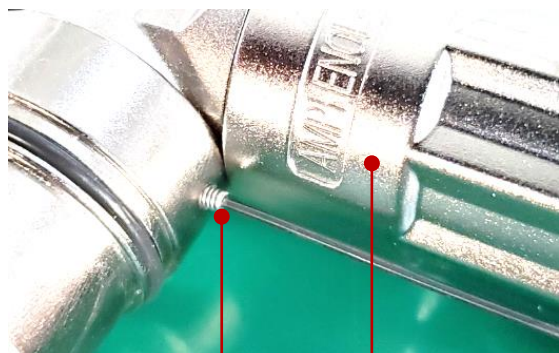
8-4 锁紧金属后壳完成组装，铁壳锁紧力矩为10~12 N.m。

8-4 Screw up the shell with a torque of 10-12N.m to finish the assembly.



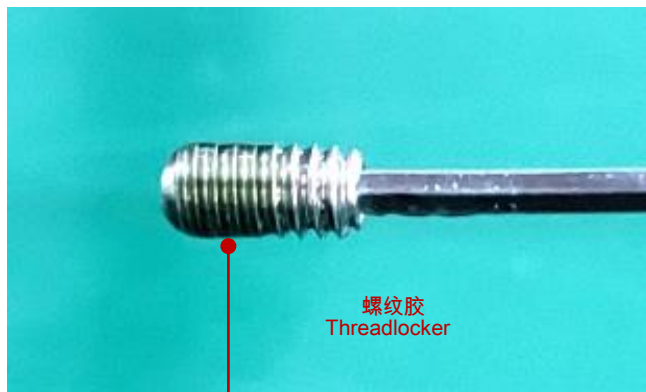
步骤9：使用0.9mm内六角扳手拧下顶丝，涂抹螺纹胶；重新拧紧顶丝，直至外壳固定

Step9：Use 0.9mm hexagon wrench to unscrew the fastening screw and apply the threadlocker; Retighten the fastening screw until the shell is fixed.

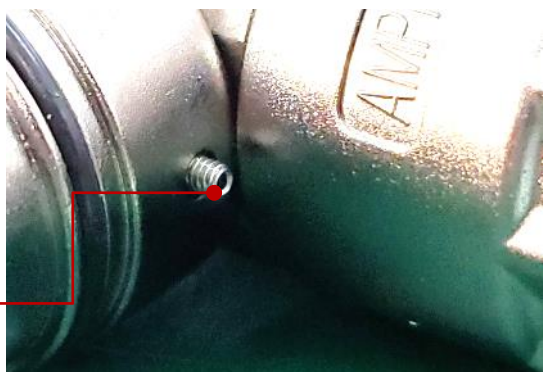


顶丝
Fastening Screw

⑥金属后壳
Back Shell



螺纹胶
Threadlocker



顶丝
Fastening Screw

(i) 建议使用低强度螺纹胶 乐泰222

It is recommended to use low strength threadlocker LOCTITE 222

步骤10：建议客户参考下面的测试参数，对线束进行绝缘电阻测试和耐压测试。

Step10：Insulation resistance and dielectric withstand voltage tests are obligated to be done according to below test parameters to guarantee the good electric performance of the whole harness.

10-1 绝缘电阻测试

10-1 Insulation Resistance Test

位置 Positions	测试电压/时间 Test Voltage/Time	绝缘电阻 Insulation Resistance
电缆芯线到壳体 Cable(power) to shell	1000 VDC / 5S	> 500 MΩ
电缆芯线到高压互锁 Cable(power) to HVIL	1000 VDC / 5S	> 500 MΩ
高压互锁到壳体 HVIL to shell	1000 VDC / 1S	> 100 MΩ

10-2 耐压测试

10-2 Dielectric Withstand Voltage Test

位置 Positions	测试电压/时间 Test Voltage / Time	漏电流 Leakage Current
电缆芯线到壳体 Cable(power) to shell	5000 VDC / 10S	<5mA
电缆芯线到高压互锁 Cable(power) to HVIL	5000 VDC / 10S	<5mA
HVIL to shell 高压互锁到壳体	500VDC / 1S	<5mA

10-3 测试说明:

警告:建议的电气测试及其参数应根据终端应用要求进行审查，以确保安全性并防止损坏其他部件。提供的参数是基于PowerLok连接器和其峰值1000VDC额定。提供的测试参数可能超出电缆组件或设备上使用的其他部件/材料的限制。

10-3 Test note:

caution: Recommended electrical tests and their parameters should be reviewed against end application requirements to ensure safety and to prevent damage to other components. Parameters provided are based on the PowerLok connectors and their peak 1000VDC rating. Test parameters provided may exceed the limit of other components/materials used on the cable assembly or device.

附录 APPENDIX

线缆压接的参考规范
Reference specification for cable crimping

接头类型 Connector Type	电线尺寸 Cable Size	导体结构 (mm) Conductor	导体外径 (mm) Conductor OD	电线外径 (mm) Wire OD	压接高度 H(mm) Crimping height	压接宽度 W(mm) Crimping Width	参考保持力 Retention Force	刀模编号 Crimping Tool No.
PL28X-30*- 50-5-9K	50mm ²	385*0.41	9.4 Max	14.90±0.3	12.2±0.3	13.3±0.3	2800N	L119135150D50
PL28X-30*- 70-5-9K	70mm ²	360*0.51	11.6 Max	17.00±0.3	13.26±0.3	15.38±0.3	3400N	L132153150D70

接头装配说明
Connector Installation instructions

1：接头对插与拔出方法参照 8P1249：G1 PowerLok 单芯插头安装规范。

For details about how to insert and remove the connector, see the 8P1249：PowerLok G1 One POS Plug General Installation instructions.

2：线束固定要求参照8P1249：G1 PowerLok 单芯插头安装规范。

Refer to the 8P1249: PowerLok G1 One POS Plug General Installation instructions for securing cable harnesses.

参考文件
Reference Documents

1：IPC/WHMA-A-620D 线缆及线束组件的要求与验收。

IPC/WHMA-A-620D Requirements and Acceptance for cable and wire harness Assemblies.

2：端子拉力标准参照 IEC-60512-16-4。

Terminal tensile strength test refer to IEC-60512-16-4.

3：端子金相分析参照 SAE/USCAR-21 Rev 4。

The cross-section analysis is referred to SAE/USCAR-21 Rev 4.

版本记录 Revision history

序号 Number	变更内容 Content of change	日期 Date
01	新出 New issue	20250212



Amphenol Technical Products International provides the above product specifications for the standard PowerLok™ series of connectors to assist users in identifying the correct product for the system to which the connectors may be applied. Specifications are subject to change without notice. Contact your nearest Amphenol Corporation Sales Office for the latest specifications. All statements, information and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements of suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. Specifications are typical and may not apply to all connectors. Note that these specifications are derived from relevant global standards used in the automotive and industrial transportation markets, but they are not a substitute for system level design validation testing, which is the sole responsibility of the system designer and/or end user.

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