

PowerLok™ 10.0 二/三芯直头插头组装规范

PowerLok™ 10.0 2/3POS 180D Plug Assembly Manual



PL182(X)-30(1)-XX
PL182(X)-30(1)-XX-5
PL482(X)-30(1)-XX
PL482(X)-30(1)-XX-5



PL183(X)-30(1)-XX
PL183(X)-30(1)-XX-5
PL483(X)-30(1)-XX

PL 18 2Y - 301 - 70 (-5, H+S cable)

产品类型 Product Type		插头类型 Plug Type		键位&颜色 Key & Color		系列 Series		线束尺寸 Cable Size	
PL	PowerLok™	18	插头连接器， 直头，屏蔽 Plug connector, Straight, Shield	2X	2芯, X 键位 橙色 2POS, Key "X" Orange	300	300 Series 300系列	35	35mm ²
				2Y	2芯, Y 键位 黑色 2POS, Key "Y" Black				
				3X	3芯, X 键位 橙色 3POS, Key "X" Orange	301	带高压互锁 的300系列 300 Series With HVIL	50	50mm ²
				3Y	3芯, Y 键位 黑色 3POS, Key "Y" Black				

安装步骤 Assembly Instruction

步骤1：取出连接器，如图示拆开零件
Step1：Take out the connector and take it apart as the picture shown below



- ① 尾盖End Cap×2
- ② 胶圈Rubber Ring×2
- ③ 铜环1 Copper Ring1 ×2
- ④ 铜环2 Copper Ring2 ×2
- ⑤ R4 holder ×2
- ⑥ 绝缘套 Insulation Sleeve×2
- ⑦ 绝缘筒 Insulation Housing×2
- ⑧ 合金外壳 Alloy Shell×1

注意：图示为二芯配件，三芯的配件数量为：三芯合金外壳×1，①尾盖×3，②胶圈×3，③铜环1×3，④铜环2×3，⑤R4 holder ×3，⑥绝缘套×3，⑦绝缘筒×3，三芯安装方式与二芯安装方法相同

Note: Picture above shows all parts of 2pos connector. Parts of 3POS connector are: 3pos alloy shell × 1 ①end cap ×3 ②rubber ring ×3 ③copper ring1 ×3 ④copper ring1 ×3 ⑤R4 holder ×3 ⑥insulation sleeve ×3 ⑦insulation housing ×3, 3pos connector has the same assembly method as 2pos connector

步骤2：选取合适线缆(参考手册最后的附录)，按照表1尺寸剥离绝缘皮和外皮
Step2：Select the right cable(refer to the appendix), prepare the cable according to the sketch and Table 1 below

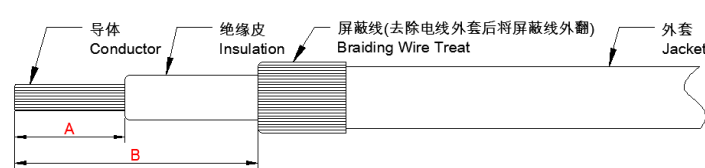


表1：剥皮尺寸
Table 1: Strip length

线材尺寸 Cable Size	A (mm)	B (mm)
35mm ²	18±1	27 ±1
50mm ²	18±1	27 ±1
70mm ²	18±1	27 ±1

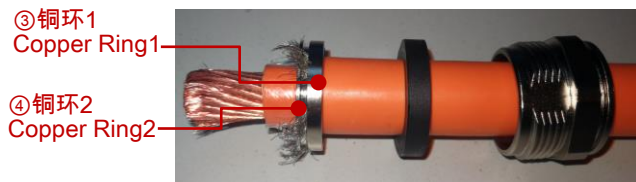
步骤3：取各1pcs的①尾盖，②胶圈和③铜环1，依次穿过线缆

Step3：Take 1pcs of ①end cap, ②rubber ring and ③copper ring 1 and make them through the cable in the right order as the picture shown below



步骤4：取1pcs的④铜环2穿过线缆，与③铜环1按压在一起，并剪去突出的线头

Step4：Take 1pcs of ④copper ring 2 and make it through the cable, and clip the braid between ④copper ring 2 and ③copper ring 1 cut off any excessive braid



步骤5：取1pcs的⑤R4 holder 穿上线缆，并压接在其上(规格参照手册最后的附录,附录数据仅供参考)

Step5：Take 1pcs of ⑤R4 holder and crimp it with the cable conductor, as the picture shown below.(please refer to the appendix at the end of this manual for more crimping information)



端子压接高宽度尺寸，“W”：为压接宽度，“H”为压接高度（相应线径的压接高宽度尺寸及拉力标准参考手册后的附录）
Terminal crimping quality depends on 2 parameters: "W" crimping width and "H" crimping height.(Please refer to the appendix at the end of this manual for details)

(1) 建议使用附录中的线材，如果要使用客户定制的电材，请联系当地销售，让他们提供延伸的产品

Cables written in the appendix are highly recommended for crimping, please contact our local sales for help if you want to use other cables out of this table

(2) 客户需要重新确认压接区域横截面和拉力测试，这两项达到压接的质量标准

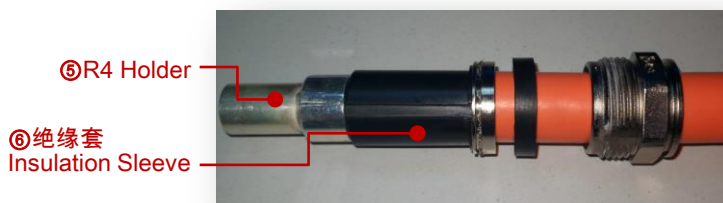
A good crimping process is determined by 3 factors: W、H and tensile test result, please confirm these 3 targets specified are met after crimping

(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 shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

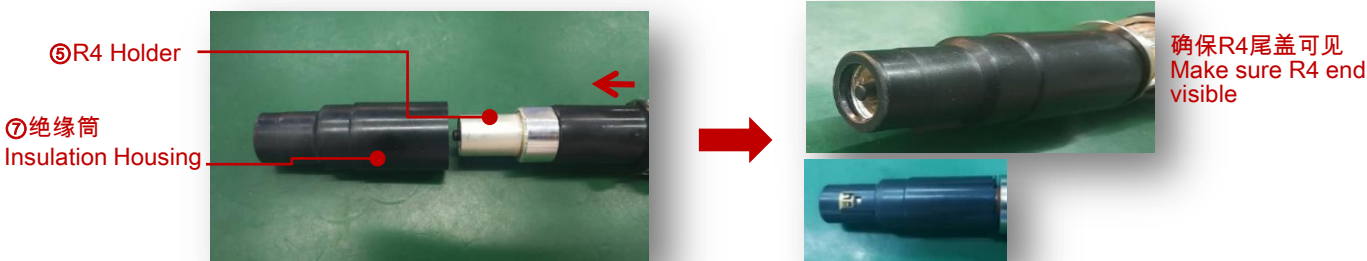
步骤6：组装⑥绝缘套到R4 holder脖颈处的沟槽

Step6：Take 1 pair of ⑥insulation sleeve and buckle up together to the neck groove of ⑤R4 holder



步骤7：插入⑥R4 holder到⑦绝缘筒上，转动使其触底

Step7：Bring ⑦insulation housing through ⑥R4 holder and rotate ⑦insulation housing until it arrives at a stop position



步骤8：插入⑦绝缘筒到⑧合金外壳，转动使其触底；固定外壳与电缆，以10~12N•M拧紧①尾盖，完成此端线束组装

Step8：Put ⑦insulation housing into ⑧alloy shell, rotate the cable to make ⑦insulation housing arrive at a stop position then screw up ①end cap with a torque of 10~12N.m to finish the assembly as the picture shown below



步骤9：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

Step9：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

9-1 绝缘电阻测试

9-1 Insulation Resistance Test

位置 Positions	测试电压 Test Voltage	测试时间 (推荐) Test Time (recommended)	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

9-2 耐压测试 (测试说明参照第6页)

9-2 Dielectric Withstand Voltage Test (Test not refer to page 6)

位置 Positions	测试电压 Test Voltage	测试时间 (推荐) Test Time (recommended)	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	500 VDC	1S	<5mA

产品类型 Product Type		插头类型 Plug Type		键位&颜色 Key & Color		系列 Series		线束尺寸 Cable Size	
PL	PowerLok™	48	插头连接器, 直头, 非屏蔽 Plug, straight, Un- shielding	2X	2芯, X 键位 橙色 2POS, Key "X" Orange	300	300系列 300 Series	35	35mm ²
				2Y	2芯, Y 键位 黑色 2POS, Key "Y" Black			50	50mm ²
				3X	3芯, X 键位 橙色 3POS, Key "X" Orange	301	带高压互锁的300 系列 300 Series With HVIL	70	70mm ²
				3Y	3芯, Y 键位 黑色 3POS, Key "Y" Black				

安装步骤 Assembly Instruction

步骤1：取一套产品，拆包零件

Step1：Unpack all parts as the picture shown below



- ① 尾盖 End Cap×2
- ② 胶圈 Rubber Ring×2
- ③ 铜环 Copper Ring ×2
- ④ 绝缘套 Insulation Sleeve×2
- ⑤ R4 holder ×2
- ⑥ 绝缘筒 Insulation Housing×2
- ⑦ 合金外壳 Alloy Shell×1

注意：图示为二芯配件，三芯的配件数量为：三芯合金外壳×1 ①尾盖 ×3，②胶圈×3，③铜环×3，④绝缘套×3，⑤R4 holder ×3，⑥绝缘筒 ×3
三芯安装方式与二芯安装方法相同

Note: Picture above shows all parts of 2pos connector. Parts of 3pos connector are: 3pos alloy shell × 1 ①end cap ×3 ②rubber ring ×3 ③copper ring ×3 ④insulation sleeve ×3 ⑤R4 holder ×3 ⑥insulation housing ×3, 3pos connector has the same assembly method as 2pos connector

步骤2：选取合适线缆(参考手册最后的附录)，按照表2尺寸剥离绝缘皮

Step2：Select the right cable(refer to the appendix), prepare the cable according to the sketch and Table 2 below

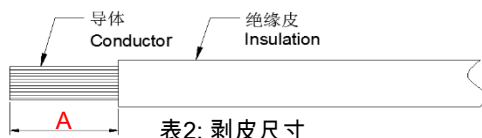


表2: 剥皮尺寸
Table 2: Strip length

线材尺寸 Cable Size	A (mm)
35mm ²	18±1
50mm ²	18±1
70mm ²	18±1

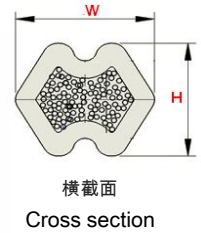
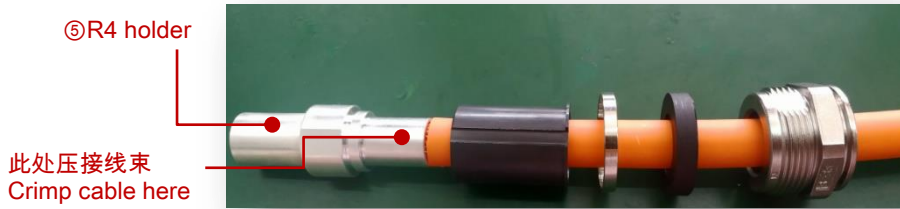
步骤3：取各1pcs的①尾盖，②胶圈，③铜环和④绝缘套，从右边依次穿过线缆

Step3：Take 1pcs of ①end cap, ②rubber ring and ③copper ring and make them through the cable in the right order as the picture shown below



步骤4：取1pcs的⑤R4 holder 自左端穿上线缆，并压接在其上(规格参照手册最后的附录,附录数据仅供参考)

Step4 : Take 1pcs of ⑤R4 holder and crimp it with the cable conductor, as the picture shown below. (please refer to the appendix at the end of this manual for more crimping information)



端子压接高宽度尺寸，“W”：为压接宽度，“H”为压接高度（相应线径的压接高宽度尺寸及拉力标准参考手册后的附录）
Terminal crimping quality depends on 2 parameters: "W" crimping width and "H" crimping height. (Please refer to the appendix at the end of this manual for details)

(1) 建议使用附录中的线材，如果要使用客户定制线材，请联系当地销售，让他们提供延伸的产品

Cables written in the appendix are highly recommended for crimping, please contact our local sales for help if you want to use other cables out of this table

(2) 客户需要重新确认压接区域横截面和拉力测试，这两项达到压接的质量标准

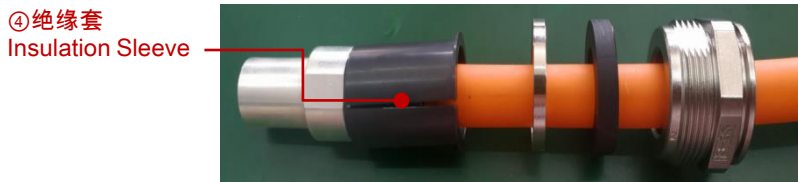
A good crimping process is determined by 3 factors: W、H and tensile test result, please confirm these 3 targets specified are met after crimping

(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 shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

步骤5：组装④绝缘套到R4 holder 脖颈处的沟槽

Step5 : Take 1 pair of ④insulation sleeve and buckle up together to the neck groove of ⑤R4 holder



步骤6：向左依次推动①尾盖,②胶圈,③铜环,使之靠齐④绝缘套

Step6 : Push ①end cap, and make all parts in line be in touch with each other as the shown below



步骤7：插入⑥R4 holder到⑥绝缘筒上, 转动使其触底

Step7 : Bring ⑥insulation housing through ⑤R4 holder and rotate ⑥insulation housing until it arrives at a stop position



确保R4尾部可见
Make sure R4 end visible

步骤8：插入⑥绝缘筒到⑦合金外壳，转动使其触底；固定外壳与电缆，以10~12N•M拧紧①尾盖，完成此端线束组装
 Step8：Put ⑥insulation housing into ⑦alloy shell, rotate the cable to make ⑦alloy shell arrive at a stop position then screw up ①end cap with a torque of 10~12N.m to finish the assembly as the picture shown below



步骤9：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

Step9：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

9-1 绝缘电阻测试

9-1 Insulation Resistance Test

位置 Positions	测试电压 Test Voltage	测试时间 (推荐) Test Time (recommended)	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

9-2 耐压测试

9-2 Dielectric Withstand Voltage Test

位置 Positions	测试电压 Test Voltage	测试时间 (推荐) Test Time (recommended)	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	500 VDC	1S	<5mA

9-3 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。

9-3 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.

PL 48 2X - 301 - 70 - 5 (H+S cable)

产品类型 Product Type		插头类型 Plug Type		键位&颜色 Key & Color		系列 Series		线束尺寸 Cable Size	
PL	PowerLok™	48	插头连接器， 直头，非屏蔽 Plug, straight, Un- shielding	2X	2芯，X 键位 橙色 2POS, Key "X" Orange	300	300系列 300 Series	35	35mm ²
				2Y	2芯，Y 键位 黑色 2POS, Key "Y" Black	301	带高压互锁的300 系列 300 Series With HVIL	50	50mm ²
								70	70mm ²

安装步骤 Assembly Instruction

步骤1：取一套产品，拆包零件

Step1 : Unpack all parts as the picture shown below



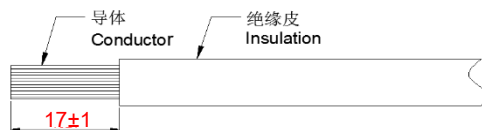
- ① 尾盖 End Cap Assy ×2
- ② 密封圈 Seal ×2
- ③ 金属垫圈 Metal Gasket ×2
- ④ 绝缘套 Insulation Sleeve ×2
- ⑤ 端子组件 Terminal Assy ×2
- ⑥ 绝缘筒 Insulation Housing ×2
- ⑦ 外壳组件 Shell Assy ×1

注意：图示为二芯配件，三芯的配件数量为：三芯外壳组件×1，①尾盖 ×3，② 密封圈×3，③金属垫圈 ×3，④绝缘套×3，⑤端子组件×3，⑥ 绝缘筒 ×3，三芯安装方式与二芯安装方法相同

Note: Picture above shows all parts of 2pos connector. Parts of 3pos connector are: 3pos shell Assy× 1 ①end cap Assy×3 ②seal ×3 ③ metal gasket ×3 ④insulation sleeve ×3 ⑤ terminal Assy ×3 ⑥insulation housing ×3, 3pos connector has the same assembly method as 2pos connector

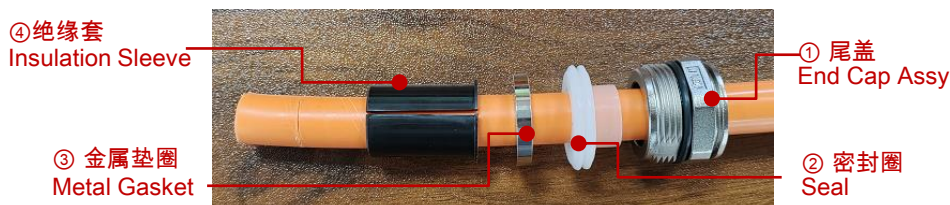
步骤2：选取合适线缆(参考手册最后的附录)，按照图示尺寸准备线材。

Step2 : Select the right cable(refer to the appendix), prepare the cable according to the sketch.



步骤3：取各1pcs的①尾盖，②密封圈，③金属垫圈和④绝缘套，如图示依次穿过线缆。

Step3 : Take 1pcs of ①end cap Assy, ②seal, ③metal gasket, and ④insulation sleeve, make them through the cable in sequence as the picture shown below.



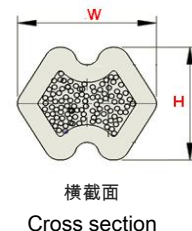
步骤4：取1pcs的⑤端子组件穿上线缆，并压接在其上(规格参照手册最后的附录,附录数据仅供参考)

Step4 : Take 1pcs of ⑤terminal Assy and crimp it with the cable conductor, as the picture shown below.

(please refer to the appendix at the end of this manual for more crimping information)

⑤端子组件
Terminal Assy

此处压接
Crimp here



端子压接高宽度尺寸，“W”：为压接宽度，“H”为压接高度（相应线径的压接高宽度尺寸及拉力标准参考手册后的附录）
Terminal crimping quality depends on 2 parameters: "W" crimping width and "H" crimping height.(Please refer to the appendix at the end of this manual for details)

(1) 建议使用附录中的线材，如果要使用客户定制线材，请联系当地销售，让他们提供延伸的产品

Cables written in the appendix are highly recommended for crimping, please contact our local sales for help if you want to use other cables out of this table

(2) 客户需要重新确认压接区域横截面和拉力测试，这两项达到压接的质量标准

A good crimping process is determined by 3 factors: W、H and tensile test result, please confirm these 3 targets specified are met after crimping

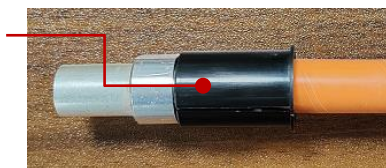
(3) 横截面仅供参考（其他举例：等边六变形的横截形状），客户负责采购压接工具或刀模

Cross section shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

步骤5：组装④绝缘套到端子组件脖颈处的沟槽

Step5 : Assemble the ④ insulating sleeve to the groove at the neck of the terminal assembly.

④绝缘套
Insulation Sleeve



步骤6：向左依次推动金属垫圈与密封圈，使之靠齐绝缘套，将⑥绝缘筒插入线材，转动使其触底。

Step6 : Push the metal gasket and seal to the left, make it close to the insulation sleeve, Insert the ⑥ insulation housing into the cable and rotate it to make it touch the bottom.

⑥绝缘筒
Insulation Housing



步骤7：取一根处理好的半成品线材，将绝缘筒HVIL端子处对准金属外壳的凹槽插入底，用平口工具将密封圈推到底。

Step7 : Take a processed semi-finished cable, insert it into the bottom of the shell Assy PinA, then push the seal to the end with a flat mouth tool.



⑦外壳组件
Shell Assy



步骤8： 将尾盖前移并以10~12N•M拧紧，完成PinA组装，按以上步骤依次完成PinB与PinC组装。

Step8： Move the end cap forward and tightening it use 10~12N•M, PinA is assembled, then finish PinB and PinC assembly according to the steps above.



步骤9： 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

Step9： 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

9-1 绝缘电阻测试

9-1 Insulation Resistance Test

位置 Positions	测试电压 Test Voltage	测试时间 (推荐) Test Time (recommended)	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

9-2 耐压测试

9-2 Dielectric Withstand Voltage Test

位置 Positions	测试电压 Test Voltage	测试时间 (推荐) Test Time (recommended)	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	500 VDC	1S	<5mA

9-3 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。

9-3 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

线缆类型 Cable Type	电线尺寸 Cable Size	导体结构 (mm) Conductor	导体外径 (mm) Conduct or 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.
屏蔽线 Shielding cable	35mm ²	3071*0.12	8.10	14.50±0.50	9.5±0.3	11.0±0.5	2300N	L095109150D35
	35mm ²	273*0.41	7.9	12.7±0.3	9.5±0.3	11.0±0.5	2300N	L095109150D35
	50mm ²	4403*0.12	9.50	17.00±0.50	11.5±0.3	13.3±0.5	2800N	L1145150150D50
	50mm ²	385*0.41	9.4	14.9±0.3	12.2±0.3	13.3±0.5	2800N	L119135150D50
	70mm ²	3876*0.15	11.80	19.50±0.50	13.0±0.3	15.0±0.5	3400N	L134152150D70
	70mm ²	360*0.51	11.6	17.0±0.3	13.1±0.3	15.2±0.5	3400N	L132153150D70
非屏蔽线 Un-shielding Cable	35mm ²	3071*0.12	8.10	11.50±0.30	9.5±0.3	11.0±0.5	2300N	L095109150D35
	35mm ²	273*0.41	7.9	11.35±0.3	9.5±0.3	11.0±0.5	2300N	L095109150D35
	50mm ²	4403*0.12	9.50	13.60±0.30	11.5±0.3	13.3±0.5	2800N	L1145150150D50
	50mm ²	385*0.41	9.4	13.25±0.3	12.2±0.3	13.3±0.5	2800N	L119135150D50
	70mm ²	3876*0.15	11.80	15.50±0.30	13.0±0.3	15.0±0.5	3400N	L134152150D70
	70mm ²	360*0.51	11.6	15.20±0.3	13.1±0.3	15.2±0.5	3400N	L132153150D70

“-5”的系列产品用的是 H+S 带屏蔽线材，上表中单根芯线较粗的线材。

The series products of “-5” use H+S shielded cable, the cable with large diameter core wire in the upper table.



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.

Asia Pacific

ChangZhou, China
Tel: +86 519-8981 9713
Add: No.11 Fengxiang Road, New District, Changzhou, Jiangsu
P.C: 213001

Asia Pacific

GuangZhou, China
Tel: +86 20-3210 6099
Add: 9th Floor, No. 10, the 4th Street, Kehui Jingu, Luogang District, Guangzhou ,Guangdong
P.C: 510663

North America

Winnipeg, Canada
Tel: +1 204 697 2222
Add: 2110 Notre Dame Avenue

Europe

Milano, Italy
Tel: +39 02 932541
Add: Via Barbaiana 5, 20020 Lainate(MI)

Email: info@Amphenol-GEC.com