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PowerLok™ 10.0 二/三芯弯头插头组装规范
PowerLok™ 10.0 2/3POS 90D Plug Assembly Manual

PL 28 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™	28	插头连接器，弯头，非屏蔽 Plug connector, right angle, shielding	2X	2芯，X 键位 橙色 2POS , Key "X" Orange	300	300系列 300 Series	35	35mm²
				2Y	2芯， Y 键位 黑色 2POS , Key "Y" Black			50	50mm²
				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		
				3Y	3芯， Y 键位 黑色 3POS , Key "Y" Black			70	70mm²

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 尾端扣盖 Tail Cap ×3

② 橡胶密封圈 Rubber Seal ×3

③ 壳体部件 Housing Shell ×1

④ O型圈 O-ring ×3

⑤ 一套绝缘套 A set of Insulators ×3

⑥ 端子组件Terminal Component ×3

⑦ 塑料挡板 Baffle×3

注意：图示为三芯配件，二芯的配件数量为：二芯壳体部件×1，①尾端扣盖×2，②橡胶密封圈×2，④O型圈 ×2，⑤一套绝缘套 ×2，⑥ 端子组件 ×2，⑦塑料挡板×2，二芯安装方式与三芯安装方法相同

Note: Picture above shows all parts of 3pos connector. Parts of 2pos connector are: 2pos housing shell ×1 ①tail capx2, ②rubber sealx2, ④O-ringx2, ⑤Insulatorsx2, ⑥terminal component x2, ⑦bafflex2，2pos 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), then prepare the cable according to the sketch and Table 1 below

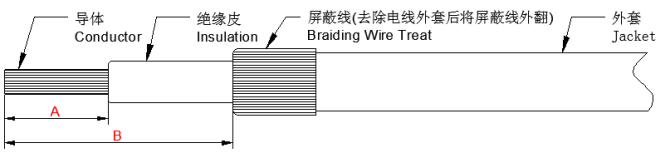
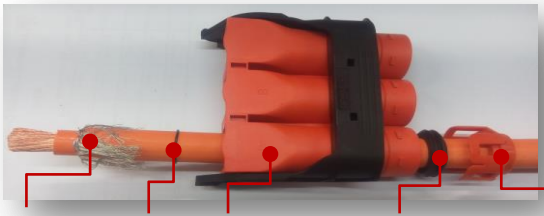


表1：剥皮尺寸

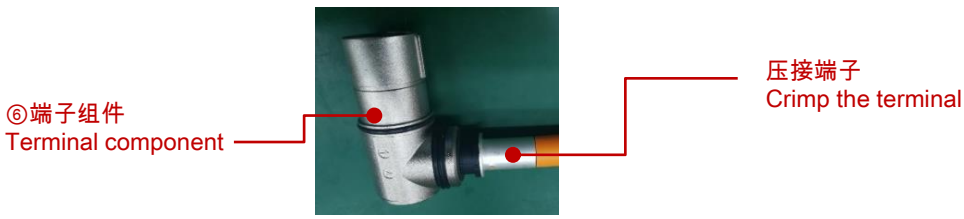
Table 1: Strip length

线材尺寸 Cable Size	A (mm)	B (mm)
35mm²	18±1	25 ±1
50mm²	18±1	25 ±1
70mm²	18±1	25 ±1

步骤3：按图示将线缆依次穿过尾端①扣盖、②橡胶密封圈、③壳体部件、④O型圈
Step3：Take 1pcs of ① end cap, ②rubber seal, ③ housing shell and ④O- Ring and make them through the cable in the right order as the picture shown below



步骤4：取1pcs的⑥ 端子组件自左端穿上线缆，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 ⑥terminal component 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

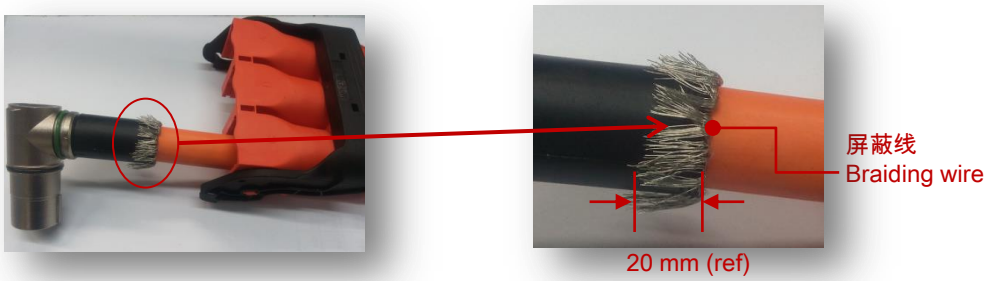
(3) 横截面仅供参考（其他举例：等边六变形的横截形状），客户负责采购压接工具或刀模
Cross section shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

步骤5：将绝缘筒安装在端子压紧区，安装时注意绝缘套凸台方向，然后将线缆上的 O型圈套在绝缘套上的凹槽处
Step5：Take 1 pair of ⑤insulators and buckle up together on ⑥terminal component then bring ④O-ring into the groove of ⑤insulators

步骤6：屏蔽处理
Step6：Shielding braid processing

6-1 将屏蔽线捋顺翻回至O型圈外，并修剪保留长度约20mm

6-1 Take all braid outside of ⑤insulators and cut it into a length about 20mm

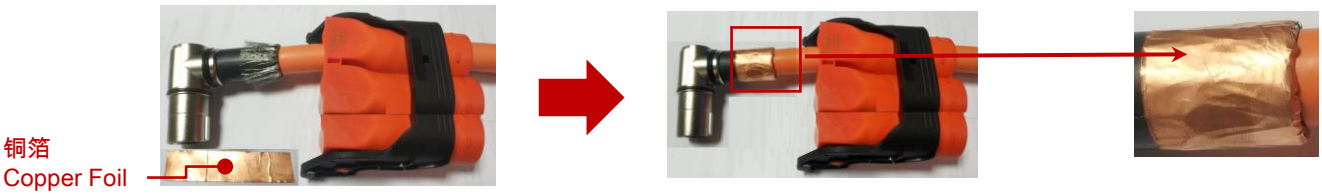


6-2 取尺寸约120mm*25mm的铜箔

6-2 Prepare a piece of copper foil of 120mm*25mm

6-3 将铜箔紧紧包裹住屏蔽线, 捏紧尾部

6-3 Wrap the braid tightly with the copper foil as the shown below

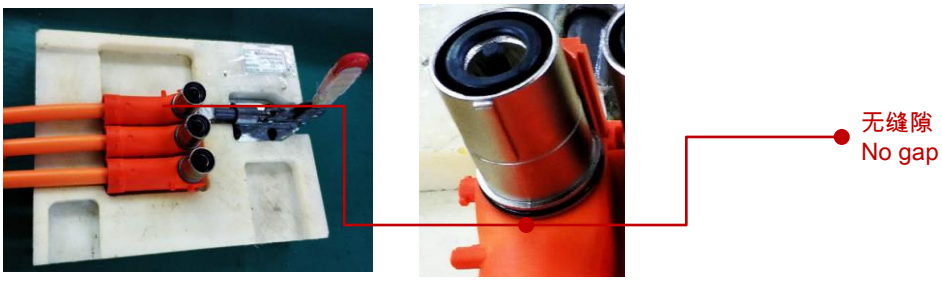


备注：根据线材类型变化，选择使用铜箔的用量. 厚屏蔽结构的线不要求包铜箔

Note: Copper foil can vary depending on different cables, copper foil wrapping may not be necessary for thick Shielding layers

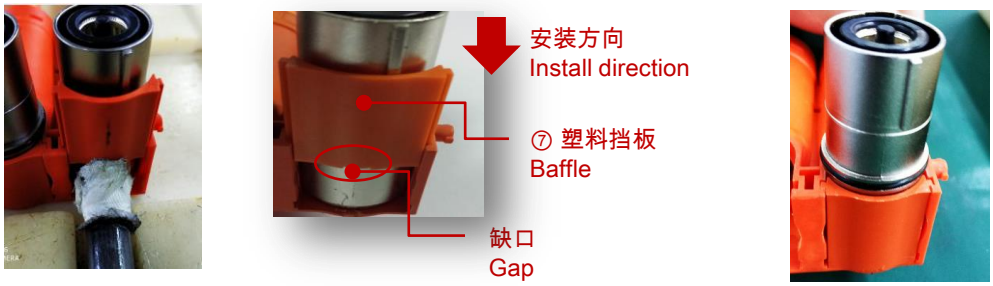
步骤7：组装塑料挡板
Step7：Baffle assembling

7-1 拆下摇杆，将产品放入治具（T0162）中，缓慢推动快速夹顶住端子组件⑥，使端子组件⑥与壳体③无缝隙 Remove the Press Latch，put the product into the fixture（T0162），Slowly push the fast clamp against the terminal component ⑥，so that the terminal component ⑥ and the shell ③ have no gaps



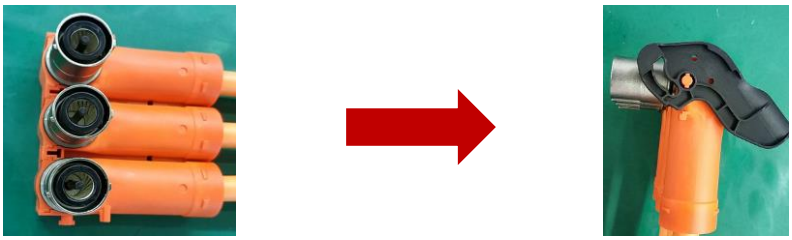
7-2 将塑料挡板缺口朝下，预插入壳体③中，然后松开快速夹，用手将塑料挡板完全按到位

Pre-Insert the baffle into the shell ③，then release the fast clip and put it completely in place by hand



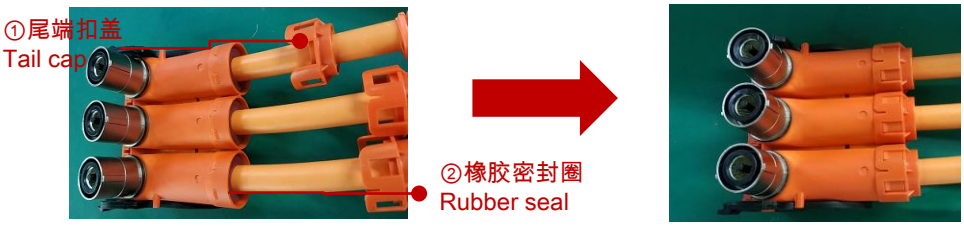
步骤8 按照以上步骤将其余塑料挡板安装完，然后重新安装摇杆

Step8：Follow the steps above to assemble other baffles，then reassemble the press latch



步骤9：按照图示将线缆上的橡胶密封圈及尾端扣盖装配到位

Step9：Push ②rubber seal and ①tail cap to buckle them up together as shown below



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
电缆到壳体 Cable(power) to shell	1000 VDC / 5S	> 500 MΩ
电缆到高压互锁 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
高压互锁到壳体 HVIL to shell	500 VDC / 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.

PL 58 2X - 301 - 70

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™	58	插头连接器，弯头，非屏蔽 Plug connector, right angle , Unshielding	2X	2芯，X 键位 橙色 2POS , Key "X" Orange	300	300系列 300 Series	35	35mm²
				2Y	2芯， Y 键位 黑色 2POS , Key "Y" Black			50	50mm²
				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		
				3Y	3芯， Y 键位 黑色 3POS , Key "Y" Black			70	70mm²

安装步骤 Installation Steps

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 塑料挡板 Baffle ×2

② 端子组件 Terminal Assy ×2

③ 壳体部件 Housing shell ×1

④ 一套绝缘套 A set of Insulators ×2

⑤ 金属垫片 Metal Gasket ×2

⑥ 橡胶密封圈 Rubber seal ×2

⑦ 尾端扣盖 Tail cap ×2

注意：图示为二芯配件，三芯的配件数量为：①塑料挡板×3，②端子组件×3，③壳体部件×1，④一套绝缘套 ×3 ，⑤金属垫片 Metal Gasket ×3，⑥橡胶密封圈 ×3，⑦尾端扣盖 ×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 3 pos connector are: ① Baffle ×3, ② Terminal Assy ×3, ③3 pos housing shell ×1, ④A set of Insulators ×3, ⑤Metal Gasket ×3, ⑥ Rubber seal ×3, ⑦ Tail cap ×3, the installation method of three POS is the same as that of 2pos.

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), then prepare the cable according to the sketch and Table 2 below

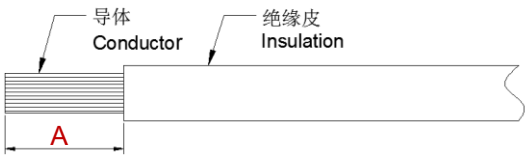


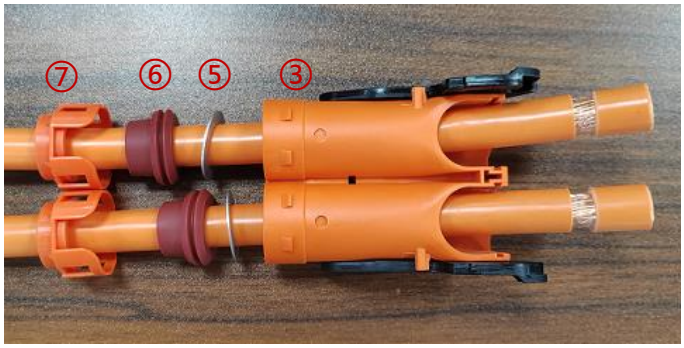
表2: 剥皮尺寸

Table 2: Strip length

线材尺寸 Cable Size	A (mm)
35mm²	18±1
50mm²	18±1
70mm²	18±1

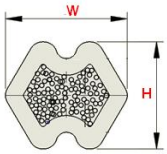
步骤3：自右端依次穿⑦尾端扣盖，⑥橡胶密封圈，⑤金属垫片， ③壳体部件到线缆上如下图示。

Step3： Make ⑦ tail cap, ⑥ rubber seal, ⑤metal gasket, ③ Housing shell through the cables in order from the right end as shown below



步骤4：将②端子组件装在剥好的芯线上，并将其压接好(压接规格参照手册最后的附录) 。

Step4：Assemble ② the terminal assembly on the stripped conductor and crimp it.(please refer to the appendix at the end of this manual for more crimping information)



横截面

cross section

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) 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 check cross section on crimping area and conduct pull-out force test to confirm the quality of crimp process，Terminal crimping must meet the conductor compression ratio 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 shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

步骤5：依次装好④绝缘套, 用力推动插头到外壳底部如图示。

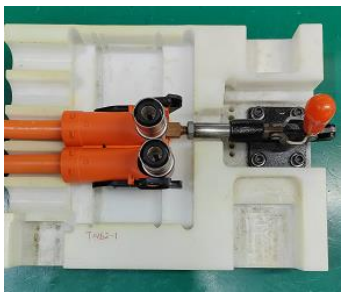
Step5：Assemble ④ the insulators in turn and push the plug to the bottom of the housing as shown in the figure.

步骤6：组装塑料挡板

Step6：Baffle assembling

6-1 将产品放入治具（T0162）中，缓慢推动快速夹顶住端子组件，使端子组件与壳体无缝隙 。

6-1 Put the product into the fixture(T0162). Slowly push the fast clamp against the terminal component , so that the terminal component and the shell have no gaps.



①

6-2 将①塑料挡板缺口朝下，预插入壳体中，然后松开快速夹，用手将塑料挡板完全按到位。

Pre-Insert ① the baffle into the shell, then release the fast clip and put it completely in place by hand.

* The fixture is for reference only. It's also available for purchasing upon request. Please contact your local Amphenol authorized distributors, RSM or ATPI for purchasing.

步骤7 按照以上步骤将其余塑料挡板安装完。

Step7：Follow the steps above to assemble other baffles.

步骤8：将金属垫片推到底，再将密封圈推到底略低于接头，将尾部扣盖扣上。

Step8：Push the metal gasket to the bottom, then push the rubber seal to the bottom just below the connector, and buckle the tail cap.

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/时间 Test Voltage/Time	绝缘电阻 Insulation Resistance
电缆到壳体 Cable(power) to shell	1000 VDC / 5S	> 500 MΩ
电缆到高压互锁 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/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
高压互锁到壳体 HVIL to shell	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) 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.
屏蔽线 Shielding cable	35mm²	3071*0.12	8.10	14.50±0.50	9.3±0.3	11.0±0.3	2300N	L095109150D35
	35mm²	273*0.41	7.9	12.7±0.3	9.3±0.3	11.0±0.3	2300N	L095109150D35
	50mm²	4403*0.12	9.50	17.00±0.50	11.5±0.3	13.3±0.3	2800N	L1145150150D50
	50mm²	385*0.41	9.4	14.9±0.3	12.2±0.3	13.3±0.3	2800N	L119135150D50
	70mm²	3876*0.15	11.80	19.50±0.50	12.6±0.3	16.3±0.3	3400N	TY-065
	70mm²	360*0.51	11.6	17.0±0.3	13.26±0.3	15.38±0.3	3400N	L132153150D70
非屏蔽线 Un-shielding cable	35mm²	3071*0.12	8.1	11.50±0.3	9.3±0.3	11.0±0.3	2300N	L095109150D35
	50mm²	4403*0.12	9.5	13.60±0.3	11.5±0.3	13.3±0.3	2800N	L1145150150D50
	70mm²	3876*0.15	11.8	15.50±0.3	12.6±0.3	16.3±0.3	3400N	TY-065

“-5” 的系列产品用的是 H+S 线材，上表中单根芯线较粗的线材。

The series products of “-5” use H+S 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.

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