



LP6.2 Connector Product Specification LP6.2 连接器产品规格书

1. SCOPE 适用范围

1.1. Content 内容

This specification covers performance, tests, and quality requirements for LP6.2 connector.

The LP6.2 connector product is a wire-to-board and mass terminated using crimp termination technology on 6.2mm centerlines. It is available in 3 positions and designed to be terminated to 14 AWG to 18 AWG wire. For the header assembly, it provides vertical type with through hole mounted.

本规格覆盖了 LP6.2 连接器的产品性能，测试方法和质量要求。LP6.2 连接器是一种线对板产品，在 6.2mm 的中心间距上使用压接端子技术，它目前有 3 位产品，适用于 14AWG 到 18AWG 线规。对于公端产品，它是立式 PCB 板穿孔式产品。

1.2. Qualification 验证

When tests are performed on the subject product line, procedures specified in Figure 2 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

当在目标产品上进行试验时，应使用表 2 规定的标准。所有样品检查均应依据适用的检查计划和产品图纸进行。

1.3. Qualification Test Results 验证结果

Successful qualification testing on the subject product line was completed. The Qualification Test Report number for this testing is 501-161444.

产品验证测试已经成功完成，测试结果请参考 TE 测试报告 501-161444。

1.4. Revision Summary 修订归纳

Revisions to this specification include: 文件的修改包括:

- Initial release of specification.
初版发行。

2. APPLICABLE DOCUMENTS AND FORMS 适用文件和表格

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

以下文件在本文规定的范围内构成本规格书的一部分。除非另有规定，否则文件的最新版本适用。如果本规格的要求与产品图纸之间存在冲突，应以产品图纸为准。如果本规格的要求与参考文件之间存在冲突，应以本规格书为准。

2.1. TE Connectivity Specifications TE 连接器规格书

114-160996	Application Specification 应用规格书
501-161444	Qualification Test Report 产品验证报告

2.2. Commercial Standards and Specifications 商业标准和规格书

IEC 60695	International Standard – Fire Hazard Testing 国际标准 – 火灾危险性测试
EIA-364	Electrical Connector/Socket Test Procedures Including Environmental Classifications 电气连接器/插座测试程序，包括环境分类

2.3. Reference Documents 参考文件

- 109-1 General Requirements for Testing 试验的一般要求
102-950 Qualification of Separable Interface Connectors 可分离接口连接器的验证

3. REQUIREMENTS 要求

3.1. Design and Construction 设计和结构

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

产品的设计、结构和物理尺寸应符合相应产品图纸的规定。

3.2. Materials 材料

Materials used in the construction of this product shall be as specified on the applicable TE drawing.

产品的材料应符合相应产品图纸的规定。

3.3. Ratings 工作参数

A. Voltage Rating: 600V AC/DC

额定电压: 600V AC/DC

B. Current Rating: 14A Max.

额定电流: 14A Max.

Refer to Figure 1 for maximum allowable current to be applied.

最大允许电流见表1。

No. of circuit 位数	Maximum Allowable Current (A) 最大允许的电流 (A)		
	14AWG	16AWG	18AWG
3	14	9	8

Figure 1 (表 1)



NOTE 备注

These currents are expected to produce an initial 30°C temperature rise (maximum) at the contacts. The temperature rise at the end of consecutive sequential testing (i.e. humidity-temperature cycling, temperature life, and vibration) may be higher.

这些电流预计在端子处会产生初始温升 30°C（最大值）。在后续的顺序测试（比如湿热循环，高温和振动）结束后温升可能会更高。

C. Temperature Rating: -40°C to +90°C

工作温度: -40°C 到 +90°C

3.4. Performance Requirements and Test Description 性能要求和测试描述

The product should meet the electrical, mechanical and environmental performance requirements specified in Figure 2. All tests shall be performed at ambient environmental conditions otherwise specified.

所用产品需满足表 2 中列出的电气、机械和环境要求。除非另有指定，所有试验均在室温环境下进行。

3.5. Test Requirements and Procedure Summary 性能要求和试验方法

Test Description 试验描述	Requirement 规格值	Procedure 试验方法
Initial Examination of Product 初态样品检查	Meets requirements of product drawing and Application Specification 114-160996. 符合产品图纸和应用规格书 114-160996	EIA-364-18. Visual and dimensional inspection per product drawing. 按照图纸进行目视和尺寸检查
Final Examination of Product 终态样品检查	Meets visual requirements. 符合目视检查要求	EIA-364-18. Visual examination. 目视检查
Electrical 电气性能		
Low Level Contact Resistance (LLCR) 低电平接触电阻	7 milliohms maximum initial. 10 milliohms maximum final. 初态 7m Ω 最大 末态 10 m Ω 最大	EIA-364-23. Subject specimens to 10 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 4. 样品在最大 10mA 电流和最大 20mV 开路电压条件下测试，参见表 4.
Insulation Resistance 绝缘阻抗	1000 megaohm minimum initial. 500 megaohm minimum final. 初态 1000 M Ω 最小 末态 500 M Ω 最小	EIA-364-21 500 volts DC for one minute hold. Test between the outer surface of the housing and the contact and also between adjacent contacts. 施加 500V DC 直流电压 1 分钟，在相邻端子之间和端子与塑壳之间进行测量。
Withstanding Voltage 绝缘耐压	One minute hold with no breakdown or flashover. 5.0 milliamperes maximum leakage current. 施加 1 分钟没有击穿或者放电电弧出现。 漏电电流 5mA 最大。	EIA-364-20, Condition I. Initial: 2000 VAC Final: 2000 VAC Test between the outer surface of the housing and the contact and also between adjacent contacts. 初态: 2000VAC 末态: 2000VAC 在相邻端子之间和端子与塑壳之间进行测量。
Temperature Rise vs. Current 温升	30°C maximum temperature rise. 温升最大 30°C	EIA-364-70, Method 1. Test current specific in Figure 1 apply to mate specimens. Stabilize until 3 readings at 5 minutes intervals are within 1°C. 施加表 1 指定的电流，直到间隔 5 分钟的 3 个读数都稳定在 1°C 以内。

Test Description 试验描述	Requirement 规格值		Procedure 试验方法
Mechanical 机械性能			
Vibration 振动	No discontinuities of 1 microsecond or longer duration. See Note. 电路断开时间不得大于 1 微秒，见备注。		EIA-364-28, Test Condition I. Subject mated specimens to 10 to 55 to 10Hz traversed in 1 minute with 1.5 mm maximum total excursion. Two hours in each of 3 mutually perpendicular planes. The test current of 100mA shall be applied. 对样品施加 1.5mm 振幅的振动，其频率在 1 分钟内 10-55-10Hz 循环, 在 3 个相互垂直的平面上每个方向扫频循环 2 小时。测试电流 100mA。
Durability 插拔耐久	See Note. 见备注		EIA-364-9. Mate and un-mate specimens for 50 cycles at a maximum rate of 500 cycles per hour. 在最大每小时 500 次的速率下，插入和拔出样品 50 次。
Connector Mating Force 连接器插入力	29.4N Max. 29.4N 最大		EIA-364-13, Method A. Measure force necessary to mate specimens fully from point of initial contact at a maximum rate of 25.4 mm/min with latch disengaged. 去除壳体的锁扣，测量连接器以最大每分钟 25.4mm 的速度从初始接触点到完全装入的力。
Connector Un-mating Force 连接器拔出力	6.0N Min. at Initial 初态 6.0N 最小		EIA-364-13, Method A. Measure force necessary to un-mate specimens at a maximum rate of 25.4 mm/min with latch disengaged. 去除壳体的锁扣，测量连接器以最大每分钟 25.4mm 的速度拔出的力。
Connector Un-mating Force 10 th 10 次后连接器拔出力	4.5N Min. at 10 th 10 次后 4.5N 最小		EIA-364-13, Method A. Measure force necessary to un-mate specimens at a maximum rate of 25.4 mm/min with latch disengaged. 去除壳体的锁扣，测量连接器以最大每分钟 25.4mm 的速度拔出的力。
Crimp Tensile Strength 压接强度	Wire Size (AWG) 线规	Crimp Tensile (minimum) (N) 强度（最小）	EIA-364-8 Operation Speed: 25.4 mm/min Pulling load shall be applied between the correctly crimped contact and a wire. The load required to pull the wire out of the contact or break the wire shall be measure. 在线和压接端子之间施加力，直到线被拉脱端子或者线被拉断。
	18	78.4	
	16	98.0	
	14	147	

Test Description 试验描述	Requirement 规格值	Procedure 试验方法
Contact Insertion Force 母型端子插入力	11.8N Max. 11.8N 最大	EIA-364-5 Operation Speed: 25.4 mm/min. The load required to insert the crimped contact into the housing shall be measured. 操作速度每分钟 25.4mm。 压线端子插入塑壳的力。
Contact Retention Force 母型端子拔出力	53.9N Min. 53.9N 最小	EIA-364-29, Method C Operation Speed: 25.4 mm/min. The load required to pull the contact out of the housing shall be measured. 操作速度每分钟 25.4mm。 压线端子拔出塑壳的力。
Housing Locking Strength 塑壳锁扣强度	50N Min. 50N 最小	EIA-364-98. Measure the mate connector locking retention strength at a rate of 12.7 mm/min without receptacle terminals. 不带母端子，测量壳体以最大每分钟 12.7mm 的速度分离时锁扣的破坏力。
Pin Contact Retention Force 针型端子的保持力	20N Min. 20N 最小	EIA-364-29, Method C Measure the pin contact retention at a maximum rate of 25.4 mm per minute. 以最大每分钟 25.4mm 的操作速度，测量针型端子被顶出壳体的力。
Resistance to Soldering Heat 耐焊接热	See Note. 见备注	The specimens shall be mounted on a PCB and subjected to a resistance to soldering heat test of the following conditions. Solder: Sn-3.0Ag-0.5Cu Flux: Activation flux Solder Temperature: 260±5°C Immersion Period: 5±0.5 seconds 样品按照在 PCB 板上，浸入以下条件的锡炉中。 焊锡：Sn-3.0Ag-0.5Cu 助焊剂：活性助焊剂 锡炉温度：260±5°C 浸入时间：5±0.5 秒

Test Description 试验描述	Requirement 规格值	Procedure 试验方法
Solderability 可焊性	Wet Solder Coverage 95% Min. 沾锡覆盖率 95% 最小	TEC-109-11 Method A The fluxed soldering section of the specimen shall be dipped in solder of the following conditions. Solder: Sn-3.0Ag-0.5Cu Flux: Activation flux Solder Temperature: 245±3°C Immersion Period: 3±0.5 seconds 样品的焊脚浸入以下条件的锡炉中。 焊锡: Sn-3.0Ag-0.5Cu 锡炉温度: 245±3°C 浸入时间: 3±0.5 秒
Environmental 环境性能		
Humidity 湿热	See Note. 见备注	The Specimen shall be placed in humidity chamber of the following conditions. Temperature: 40±2°C Relative humidity: 90 to 95% Period: 96h 样品放置以下条件的湿热箱中。 温度: 40±2°C 相对湿度: 90 to 95% 时间: 96 小时
Heat Aging 耐高温	See Note. 见备注	EIA-364-17, Method A, Test Condition 5, Test Time Condition A. Subject mated specimens to 125±3°C for 96 hours. 将配对连接的样品放置在 125±3°C 温度下 96 小时。
Thermal Shock 冷热冲击	See Note. 见备注	EIA-364-32, Method A Test Condition VII. Subject mated specimens to 25 cycles between -55±3°C and 85±3°C with 30 minutes dwells at temperature extremes and 5 minutes transition between temperatures. 将配对连接的样品在 -55±3°C /30 分钟和 85±3°C /30 分钟为 1 个循环中进行 25 个循环, 温度之间的转换时间为 5 分钟。

Test Description 试验描述	Requirement 规格值	Procedure 试验方法
Hydrogen Sulfide Gas 硫化氢气体	See Note. 见备注	Subject mated specimens to a hydrogen sulfide gas test of the following conditions. Concentration: 3 ± 1 ppm Temperature: $40\pm 2^{\circ}\text{C}$ Relative humidity: $80\pm 5\%$ Period: 96h 将配对连接的样品置于以下条件的硫化氢气体中。 浓度: 3 ± 1 ppm 温度: $40\pm 2^{\circ}\text{C}$ 相对湿度: $80\pm 5\%$ 时间: 96h
Salt Spray 盐雾	Meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence. 满足产品验证和重新验证试验顺序表中的额外测试。	EIA-364-26. Subject mated specimens to a salt spray test of the following conditions. Temperature: $35\pm 2^{\circ}\text{C}$ Concentration: $5 \pm 0.1\%$ Period: 48h 将配对连接的样品置于以下条件的盐雾中。 温度: $35\pm 2^{\circ}\text{C}$ 浓度: $5 \pm 0.1\%$ 时间: 48 小时
Ammonia Gas 氨气	There shall be no stress corrosion cracking. See Note. 不应有应力腐蚀开裂。 见备注。	Subject mated specimens in atmosphere that rated 25 mL/L of 3% NH_3 for 7 hours. 将配对连接的样品置于以 25 mL/L 的比例加入 3% 氨水的气体中 7 小时。

Test Description 试验描述	Requirement 规格值	Procedure 试验方法
Needle Flame Test 针焰测试	<p>After applying a 30 second needle flame test to the test sample, one of the following conditions should be met:</p> <p>a) The test sample has no flames or scorching heat, and the specified base layer or packaging paper has not ignited.</p> <p>b) After removing the needle flame, the flame or heat of the test sample and surrounding components will extinguish within 30 seconds, i.e. $t_b < 30$ seconds, and the surrounding components were not completely burned, and the specified base layer or packaging paper did not ignite.</p> <p>对测试样品进行 30 秒的针焰测试后，应满足以下条件之一：</p> <p>a) 测试样品没有火焰或灼热，指定的基层或包装纸没有点燃。</p> <p>b) 去除针焰后，测试样品和周围组件的火焰或热量将在 30 秒内熄灭，即 $t_b < 30$ 秒，周围组件没有完全燃烧，指定的基层或包装纸没有点燃。</p>	IEC 60695-11-5
Glow Wire Test 750°C and 850°C 灼热丝 750°C 和 850°C	<p>Test at 750°C.</p> <p>No flame or $T_e - T_i < 2s$.</p> <p>Test at 850°C.</p> <p>No ignition or the flame extinguishes within 30 seconds and the specified layer placed underneath the test specimen does not ignite.</p> <p>在 750° C 下进行测试。</p> <p>无火焰或 $T_e - T_i < 2s$。</p> <p>在 850° C 下进行测试。</p> <p>30 秒内没有起火或火焰熄灭，放置在试样下方的指定层没有起火。</p>	IEC 60695-2-11

Figure 2 (end) (表 2 结束)



NOTE 备注

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 3.

应该满足目视检查要求，没有物理损伤，满足产品验证和测试顺序中规定的附加测试要求，见表 3。

3.6. Product Qualification and Requalification Test Sequence 产品验证和重新验证试验顺序

TEST OR EXAMINATION 试验项目	TEST GROUP (a) 试验分组															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	TEST SEQUENCE (b) 试验顺序															
Initial Examination of Product 初态样品检查	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LLCR 低电平接触电阻	3,6									2,7	2,6	2,4	2,4	2,4		
Insulation Resistance 绝缘阻抗										3,8	3,7					
Withstanding Voltage 绝缘耐压										4,9	4,8					
Temperature Rise vs. Current 温升			2													
Vibration 振动	5															
Durability 插拔耐久	4															
Connector Mating Force 连接器插入力	2	2														
Connector Un-mating Force 连接器拔出力		3														
Connector Un-mating Force 10 th 10 次后连接器拔出力		4														
Crimp Tensile Strength 压接强度				2												
Contact Insertion Force 母型端子插入力					2											
Contact Retention Force 母型端子保持力					3											
Housing Locking Strength 塑壳锁扣强度						2										
Pin Contact Retention Force 公型端子保持力							2									
Resistance to Soldering Heat 耐焊接热								2								
Solderability 可焊性									2							
Humidity										6						

湿热																
Heat Aging 耐高温										5						
Thermal Shock 冷热冲击									5							
Hydrogen Sulfide Gas 硫化氢气体											3					
Salt Spray 盐雾												3				
Ammonia Gas 氨气													3			
Needle Flame Test 针焰测试														2		
Glow Wire Test 750°C and 850°C 灼热丝 750°C 和 850°C															2	
Final Examination of Product 终态样品检查	7	5	3	3	4	3	3	3	3	10	9	5	5	5	3	3

Figure 3 表 3


NOTE 备注

(a) See paragraph 4.2.

见 4.2 章节

(b) Numbers indicate sequence in which tests are performed.

数字代表每一组的测试顺序

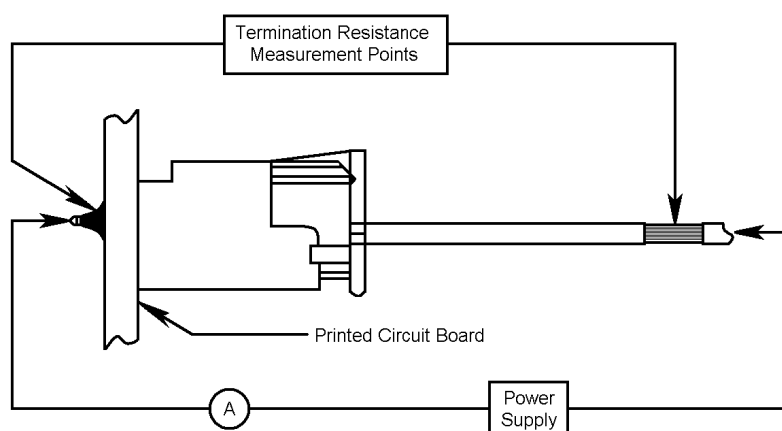


Figure 4: LLCR Measurement Points (Subtract Wire Bulk)

表 4: 低电平接触电阻测量点 (扣掉电线电阻)

4. QUALITY ASSURANCE PROVISIONS 品质保证条件

4.1. Test Conditions 试验条件

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions shown in Figure 5.

除非特殊指定，所有试验均在以下表 5 列出的环境条件下执行。

Temperature 温度	15°C – 35°C
Relative Humidity 相对湿度	45% – 75%
Atmospheric Pressure 气压	86.6 – 106.6 kPa

Figure 5 (表 5)

4.2. Qualification Testing 验证试验

A. Specimen Selection 样品选择

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

样品应从当前生产中随机选择,并且根据适用的说明书进行准备。

B. Test Sequence 试验顺序

Qualification inspection shall be verified by testing specimens as specified in Figure 3.

测试样品需要依据表 3 中的测试项目进行试验。

4.3. Requalification Testing 重新验证试验

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

如果对产品或制造过程的变更显著影响了产品形状、配合或功能，产品应重新进行验证测试，包括由产品开发、质量和可靠性工程团队确定的全部或部分原始试验顺序。

4.4. Acceptance 验收

Acceptance is based on verification that the product meets the requirements in Figure 2. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

验收基于验证产品是否满足表 2 中的要求。由于测试设备、测试设置或操作人员缺陷导致的试验失效不能说明产品不合格。如果发生试验失效，应采取纠正措施并重新提交样品进行鉴定。在重新提交之前需要进行测试以确认纠正措施。

4.5. Quality Conformance Inspection 质量一致性检查

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

适用的质量检验计划应规定可使用的抽样的质量接受水平。尺寸和功能要求应符合适用的产品图纸和本规范。