



POD-LOK Connector

1. SCOPE

1.1. Content

This specification defines performance, tests, and quality requirements for POD-LOK Connector, including 250 and 187 series. These connectors consist of a receptacle body that is paired with an insulated housing. Applicable product descriptions and part numbers are specified in Appendix 1.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in 3.5 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing. All contacts must be crimped to comply with Application Specification 114-106262 using the appropriate TE Applicator or Hand Tool as specified in the document.

2. APPLICABLE DOCUMENTS

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.

2.1. TE Connectivity (TE) Documents

114-106262 Application Specification
501-106262 Qualification Test Report
TE Product Drawings (Customer Drawings)

2.2. Industry Documents

UL 310 Standard for Electrical Quick Connect Terminals
EIA-364 Electrical Connector/Socket Test Procedures Including Environmental Classifications
IEC 60251 Standard for Connectors for Electronic Equipment

2.3. Reference Documents

109-197 Test Specification (TE Test Specifications vs. EIA and IEC Test Methods)

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

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

Contact: Copper Alloy

Housing: 6/6 Nylon, UL94V-0

Tabs (for test purposes): Brass, temper 2 CDA 26000 complies with UL 310 Para 5.2

Wire (for test purposes): Complies with UL 310 Para 7.3, 600 volt rating

3.3. Ratings

Voltage: 600 volts AC
 Current: 3 – 20 Amps
 Temperature: -40°C to 105°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical, and environmental performance requirements specified in 3.5. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial Examination of Product	Meets the requirements of product drawing; no defective abnormalities such as cracks, breakage, damages, loose of parts, rust and fusion that are detrimental to connector functions, shall be present.	EIA-364-18 Visually and tactually inspect parts for appearance in accordance with applicable Q.I.P (Quality Inspection Procedure) and product drawing for presence of stated defects.
Final Examination of Product	After testing, no physical damage such as cracks, breakage, damages, loose of parts, rust and fusion that are detrimental to connector functions, shall be present.	EIA-364-18 Visually and tactually inspect parts for appearance in accordance with applicable Q.I.P (Quality Inspection Procedure) and product drawing for presence of stated defects.

Electrical

Termination Resistance	Initial: 3 milliohms (mΩ) maximum Final: 6 milliohms (mΩ) maximum	EIA-364-23 Subject the circuit (including the mated contacts, assembled in housings) to 1A (DC) current. After temperature has stabilized, probe 2 points on the mated tab contact that with one point 75 mm from the wire crimp. Calculate resistance after deducting bulk wire resistance. See Figure 1.												
Insulation Resistance	1000 MΩ minimum	EIA-364-21 Apply 500 volts DC ± 10% between contact and ground and hold for 1 minute. The measurements shall be made immediately after a 2 minute period of uninterrupted test voltage. If the instrument reading indicates that an insulation resistance meets the specified limit, and is steady or increasing, the test may be terminated before the end of the specified period. See Figure 2.												
Temperature Rising	<table border="1"> <thead> <tr> <th>Wire Size (AWG)</th> <th>Test Current (Amps)</th> <th>Temperature Rise (°C)</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>3</td> <td>30</td> </tr> <tr> <td>22</td> <td>3</td> <td>30</td> </tr> <tr> <td>20</td> <td>5</td> <td>30</td> </tr> </tbody> </table>	Wire Size (AWG)	Test Current (Amps)	Temperature Rise (°C)	24	3	30	22	3	30	20	5	30	UL 310 and IEC 60512-5-1 Measure the temperature rise above ambient created by the energizing current. Measurement must be taken at a place where there is no influence from air convection. Stabilize temperature at a single current level until 3 readings at 5 minute intervals are within 1°C. The
Wire Size (AWG)	Test Current (Amps)	Temperature Rise (°C)												
24	3	30												
22	3	30												
20	5	30												

	<table border="1"> <tr> <td>18</td> <td>7</td> <td>30</td> </tr> <tr> <td>16</td> <td>10</td> <td>30</td> </tr> <tr> <td>14</td> <td>15</td> <td>30</td> </tr> <tr> <td>12</td> <td>20</td> <td>30</td> </tr> </table>	18	7	30	16	10	30	14	15	30	12	20	30	probing point shall be soldered to stabilize the measurement reading.
18	7	30												
16	10	30												
14	15	30												
12	20	30												
Dielectric Withstanding Voltage	One-minute hold with no creep discharge or flashover.	UL 1977-2007 2200 volts AC at sea level for 1 minute. Test wired terminals in number 12 lead shot after coating end with insulation material.												
Durability	Final Terminal Resistance: 6 milliohms (mΩ) maximum	Mate and unmate connector assemblies (tab) for 6 cycles at a maximum rate of 600 cycles per hour.												

Mechanical

Contact Insertion Force	27 N maximum	UL 310, Para 6.4 Operation Speed: 25.4 mm/min Measure the force required to mate the tab to receptacle terminal.																
Contact Retention Force	1 st withdrawal (locked): 89 N minimum without housing	UL 310, Para 6.4 Operation Speed: 25.4 mm/min Apply an axial pull force to release the tab from the receptacle																
Wire Crimp Tensile Strength	<table border="1"> <thead> <tr> <th>Wire Size (AWG)</th> <th>Crimp Tensile (min.) (N)</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>22.3</td> </tr> <tr> <td>22</td> <td>36</td> </tr> <tr> <td>20</td> <td>58</td> </tr> <tr> <td>18</td> <td>89</td> </tr> <tr> <td>16</td> <td>133</td> </tr> <tr> <td>14</td> <td>223</td> </tr> <tr> <td>12</td> <td>311</td> </tr> </tbody> </table>	Wire Size (AWG)	Crimp Tensile (min.) (N)	24	22.3	22	36	20	58	18	89	16	133	14	223	12	311	UL 310, Para 6.3 Operation Speed: 25.4 mm/min Apply an axial pull force to the crimped wire. Crimp tensile strength is determined when the wire is broken or is pulled off. Exclude insulation crimp.
Wire Size (AWG)	Crimp Tensile (min.) (N)																	
24	22.3																	
22	36																	
20	58																	
18	89																	
16	133																	
14	223																	
12	311																	
Sinusoidal Vibration (Low Frequency)	No electrical discontinuity greater than 1 μs shall occur. Final Termination Resistance: 6 mΩ (maximum)	EIA-364-28, Test Condition I Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52 mm amplitude maximum total excursion, 2 hours each in 2 axial direction.																
Contact Extraction Force	60 N minimum, 250 Series. 45N minimum, 187 Series.	EIA-364-29 Operation Speed: 25.4 mm/min Apply an axial pull force to the crimped wire while the housing is secured. Contact extraction force is determined when the contact is dislodges from housing.																

Environmental

Humidity Steady-State	Final Termination Resistance: 6 mΩ (maximum)	EIA-364-31, Condition A, Method II Subject mated contacts to environment at 40±5°C and 90-95% RH for 96 hours. Sample shall be placed in the chamber out of the path of falling water drops. Measurement shall be taken upon completion of exposure period.
Thermal Shock	Final Termination Resistance: 6 mΩ (maximum)	EIA-364-32, Test Condition VII Subject mated specimens to 5 cycles between -40°C and 105°C with 30 minute dwell time at temperature extremes and 5 minute (maximum) transition between temperatures.
Salt Spray	Final Termination Resistance: 6 mΩ (maximum)	EIA-364-26, Condition A Subject mated connectors to 5% salt concentration for 96 hours. Measurement is taken after removing the salt. Specimens dried per the specification.
Glow Wire Test	Test at 750°C (Flame duration ≤ 2 seconds) Lighted tissue paper shall not burn.	IEC 60695-2-11 and IEC 60335-1 Housings are subjected to glow wire test as described in specs above. Perform a visual check and take photos after the test.



NOTE

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

3.6. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)						
	1	2	3	4	5	6	7
	TEST SEQUENCE (b)						
Examination of Product	1, 3	1, 4	1, 3	1, 5	1, 3	1, 14	1, 3
Termination Resistance				2, 4		2, 6, 8, 10,12	
Insulation Resistance						3	
Temperature Rising						4,13	
Dielectric Withstanding Voltage			2				
Durability				3			
Contact Insertion Force		2					
Contact Retention Force		3					
Contact Extraction Force							2
Wire Crimp Tensile Strength	2						
Vibration (Low Frequency)						5	
Humidity Steady-State						7	
Thermal Shock						9	
Salt Spray						11	
Glow Wire Test					2		

- (a) See paragraph 4.2.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Prepare samples in accordance with UL 310. Fit must be sufficient to produce good thermal contact and void of free movement between thermocouple and contact. Thermocouple lead must have strain relief suitable to protect interface.

4. QUALITY ASSURANCE PROVISIONS

4.1. Test Conditions

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

Temperature	15-35°C
Relative Humidity	45-75%
Atmospheric Pressure	86.6-106.7KPa

4.2. Qualification Testing

A. Specimen Selection

The test specimens to be employed for tests shall conform to the requirements specified in the applicable product drawings. The crimped contacts shall be prepared in accordance with the requirements of applicable Specification 114-106262 and are to be selected at random from current production.

B. Applicable Wires

The wires to be used for crimping the samples for performance testing shall conform to the requirements specified in Application Specification 114-106262.

C. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in 3.6.

4.3. Re-Qualification Testing

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

4.4. Acceptance

Acceptance is based on verification that the product meets the requirements of 3.5. 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 re-submitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.5. Quality Conformance Inspection

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.

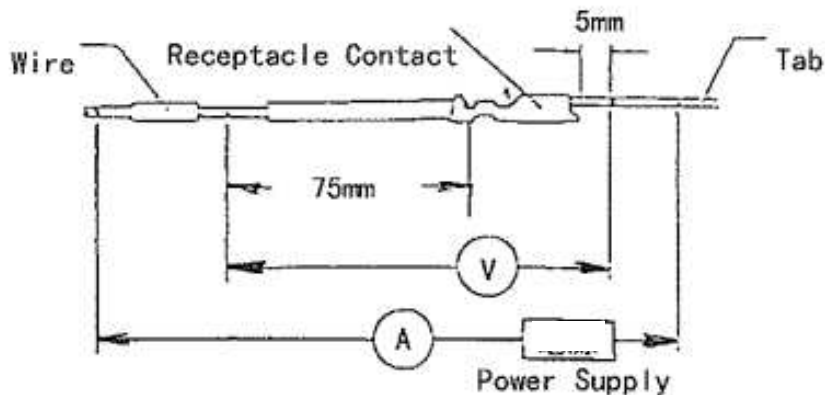


Figure 1: Termination Resistance Measurement Method

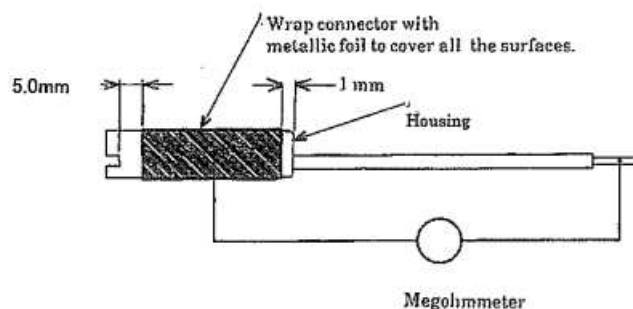


Figure 2: Insulation Resistance Measurement Method

Appendix 1

POD-LOK Assemble Part Number List

POD-LOK .250 Serie	Wire Range (AWG)	Type	Part Number	Description
Straight	22-18	Assembly	2299282-1	POD-LOK 250 STR. AWG 22-18 PTPBR GF
	18-14	Assembly	2299282-2	POD-LOK 250 STR. AWG 18-14 PTPBR GF
	14-12	Assembly	2299282-3	POD-LOK 250 STR. AWG 14-12 TPBR GF
Flag	22-18	Assembly	2299280-1	POD-LOK 250 FLAG AWG 22-18 PTPBR GF
	16-14	Assembly	2299280-2	POD-LOK 250 FLAG AWG 16-14 PTPBR GF
	14-12	Assembly	2299280-3	POD-LOK 250 FLAG AWG 14-12 TPBR GF
POD-LOK .187 Serie	Wire Range (AWG)	Type	Part Number	Description
Straight	24-20	Assembly	2299286-1	POD-LOK 187 STR. AWG 24-20 PTPBR GF
	20-16	Assembly	2299286-2	POD-LOK 187 STR. AWG 20-16 PTPBR GF
Flag	24-20	Assembly	2299287-1	POD-LOK 187 FLAG AWG 24-20 PTPBR GF
	20-16	Assembly	2299287-2	POD-LOK 187 FLAG AWG 20-16 PTPBR GF

POD-LOK Contact Part Number List

POD-LOK .250 Serie	Wire Range (AWG)	Type	Part Number	Description
Straight	22-18	Contact	2299283-2	POD-LOK 250 STR. RCPT. AWG 22-18 PTPBR
	18-14	Contact	2238099-2	POD-LOK 250 STR. RCPT. AWG 18-14 PTPBR
	14-12	Contact	2299278-2	POD-LOK 250 STR. RCPT. AWG 14-12 TPBR
Flag	22-18	Contact	2299281-2	POD-LOK 250 FLAG. RCPT. AWG 22-18 PTPBR
	16-14	Contact	2238100-2	POD-LOK 250 FLAG. RCPT. AWG 16-14 PTPBR
	14-12	Contact	2238100-7	POD-LOK 250 FLAG. RCPT. AWG 14-12 TPBR
POD-LOK .187 Serie	Wire Range (AWG)	Type	Part Number	Description
Straight	24-20	Contact	2299285-2	POD-LOK 187 STR. RCPT.AWG 24-20 PTPBR
	20-16	Contact	2299130-2	POD-LOK 187 STR. RCPT.AWG 20-16 PTPBR
Flag	24-20	Contact	2299291-2	POD-LOK 187 FLAG RCPT.AWG 24-20 PTPBR
	20-16	Contact	2299293-2	POD-LOK 187 FLAG RCPT.AWG 20-16 PTPBR