



Positive Lok MK III, .250" (6.35mm) srs

1. SCOPE

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of "Positive Lock MK III, .250 series Contacts and Housings" Tyco P/N's 1380087; 1380088; 1380089; 1380095; 521120 and 1380042.

These terminals mate with tab size .250" (6.35mm) series with hole and that is according to the commercial standard IEC 760. These terminals and housings are suitable for Consumer Goods applications in which low insertion forces are needed.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed in May of 2002. The Qualification Test Report number for this testing is 501-160891.

2. APPLICABLE DOCUMENTS AND FORMS

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 Specifications

114-2074	Application Specification
501-160891	Qualification Test Report

2.2. Commercial Standards and Specifications

IEC 61984	International Standard – Safety Requirements and Tests
IEC 60335	International Standard – Safety of Household and Similar Appliance
IEC 60512	International Standard – Connectors for Electronic Equipment – Tests and Measurements
IEC 60695	International Standard – Fire Hazard Testing
UL 1977	Safety Standards – Component Connectors for Use in Data, Signal, Control, and Power Applications
EIA-364	Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Documents

109-1	General Requirements for Testing
102-950	Qualification of Separable Interface Connectors

3. REQUIREMENTS

3.1. Design and Construction

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

The Positive Lock Terminal has a sectioned part along their rolled body that helps to reduce the insertion force. The own concept of the connection also helps in the reduction of the insertion force.

3.2. Materials

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

- A. Housing: PA66 according to UL94V2 and UL94 V0
- B. Contacts: Brass, Temper H04, tin plated and unplated.

3.3. Ratings

- A. Voltage Rating: 240 v AC
- B. Current Rating: See tab below.

Wire Range (mm ²)	Max. Ø – outside (mm)	Current Max.
0,20	2,30	2,0 A
0,35	2,30	3,0 A
0,50	2,30 / 2,70	5,0 A
0,75	2,70	6,5 A
1,00	2,70	8,0 A
1,50	3,70	10,0 A
2,00	3,70	14,0 A
2,50	3,70	16,5 A
4,00	4,50	23,5 A

- C. Temperature Rating: –55°C to +105°C

3.4. Performance Requirements and Test Description

The product should meet the electrical, mechanical, and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions otherwise specified.

3.5. Test Requirements and Procedure Summary

Item	Test Description	Requirement	Procedure
3.5.1	Confirmation of product and visual examination	Product shall be conforming to the requirements of applicable product drawing and application specification, without any visible damage, cracking or defect when the product is new and even after environmental, mechanical and electric tests.	- Visually, dimensional, and functionally inspected per applicable quality inspection plan. - Visual inspection.

Electrical																							
3.5.2	Low Level Contact Resistance	4.7 mΩ max. (Initial) 7.0 mΩ max. (Final)	- Subject mated contacts assembled in a housing to 20mV Max open circuit at 100mA. Measure resistance of each circuit and subtract the resistance of the wire. Procedure according to IEC 60512-2, test 2a.																				
3.5.3	Termination Resistance, Specified Current (According to item 3.3, item B)	4.7 mΩ max. (Initial) 7.0 mΩ max. (Final)	- Subject mated contacts assembled in a housing at current specified to each wire size. Measure resistance of each circuit and subtract the resistance of the wire. Procedure according to IEC 60512-2, test 2b.																				
3.5.4	Temperature Rise vs Current	Temperature rise of any individual termination shall not exceed 30° C. (T-rise = T. of Conn. – Room T.).	- Apply current per each cable and measure the temperature according to EIA 364-70B.																				
3.5.5	Current Cycling	After 24 cycles and at completion of 500 cycles, the following requirements shall be met: <ul style="list-style-type: none"> - Termination Resistance shall not exceed the final limits of the items 3.5.2 and 3.5.3 - Temperature Rise of each termination shall not exceed 85°C. 	- Subject mated contacts to 500 cycles at 200% rated current for: 45 minutes “ON”; 15 minutes “OFF”. - Test shall be performed in accordance with Tyco 109-51, Condition D, Method 4.																				
3.5.6	Dielectric Withstanding Voltage	4 Kv AC per 1 minute.	- Test between adjacent terminals of mated connector assemblies. - According to EIA 364-20B.																				
3.5.7	Insulation Resistance	1000 MΩ min. initial.	- Test between adjacent terminals of mated connector assemblies. - According to EIA 364-21C.																				
Mechanical																							
3.5.8	Contact Insertion Force	See Drawing.	- Apply a force in axial direction. - Operation speed of 25 mm/min. - According to IEC 60512-7, test 13a.																				
3.5.9	Contact Extraction Force	See Drawing.	- Apply a force in axial direction. - Operation speed of 25 mm/min. - According to IEC 60512-7, test 13a.																				
3.5.10	Contact Retention Force	40 N min.	- Apply an axial pull-out load to crimped wire. Operation speed of 12.7mm/min. EIA-364-29.																				
3.5.11	Terminal Tensile Strength	<table border="1"> <thead> <tr> <th>Wire Size (mm²)</th> <th>Force (N min)</th> </tr> </thead> <tbody> <tr><td>0,20</td><td>25</td></tr> <tr><td>0,35</td><td>35</td></tr> <tr><td>0,50</td><td>60</td></tr> <tr><td>0,75</td><td>80</td></tr> <tr><td>1,00</td><td>110</td></tr> <tr><td>1,50</td><td>160</td></tr> <tr><td>2,00</td><td>195</td></tr> <tr><td>2,50</td><td>240</td></tr> <tr><td>4,00</td><td>270</td></tr> </tbody> </table>	Wire Size (mm ²)	Force (N min)	0,20	25	0,35	35	0,50	60	0,75	80	1,00	110	1,50	160	2,00	195	2,50	240	4,00	270	- Determine crimp tensile. - Operation speed of 25 mm/min. - According to EIA-364-08B.
Wire Size (mm ²)	Force (N min)																						
0,20	25																						
0,35	35																						
0,50	60																						
0,75	80																						
1,00	110																						
1,50	160																						
2,00	195																						
2,50	240																						
4,00	270																						

Environmental			
3.5.12	Thermal Shock	Termination Resistance \leq Requirement Final (m Ω).	<ul style="list-style-type: none"> - Subject mated terminals to 25 cycles between -55°C and 85°C. - Test the biggest wire range of each terminal. - According to EIA 364-32C, (Table 2, Test Condition I).
3.5.13	Temperature – Humidity Cycling	Termination Resistance \leq Requirement Final (m Ω).	<ul style="list-style-type: none"> - Subject mated terminals to 10 temperature-humidity cycles. between 25°C and 65°C at 95% R.H. - According to EIA 364-31B, method III, condition B, less steps 7a and 7b. - Measure resistance initial, 3, 5, 7 and 10 cycles.
3.5.14	Temperature Life	Termination Resistance \leq Requirement Final (m Ω).	<ul style="list-style-type: none"> - Subject mated terminals to 250 hours at 85°C. - According to EIA 364-17B (Test Condition 3 and Test Time Condition B).
3.5.15	Salt Spray Corrosion	Termination Resistance \leq Requirement Final (m Ω).	<ul style="list-style-type: none"> - Subject tin-plated mated terminals to 96 hours in salt spray solution. - According to EIA 364-26B (Test Condition A).

Figure 1



NOTE

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 2.

3.6. Product Qualification and Requalification Test Sequence

ITEM	TEST OR EXAMINATION	TEST GROUP (a)											
		A	B	C	D	E	F	G	I	J	K	L	
		TEST SEQUENCE (b)											
3.5.1	Confirmation of Product	1,5	1, 5	1,3	1,3	1,4	1,3	1,3	1,6	1,6	1,5	1,5	
3.5.2	Low Level Contact Resistance	2	2						5	5	4	4	
3.5.3	Termination Resistance, current specified	3	3						4	4	3	3	
3.5.4	Temperature Rise x Current	4											
3.5.5	Current Cycling		4										
3.5.6	Dielectric Withstand Voltage			2									
3.5.7	Insulation Resistance				2				3	3			
3.5.8	Contact Insertion force					2							
3.5.9	Contact Extraction Force					3							
3.5.10	Contact Retention Force						2						
3.5.11	Terminal Tensile Strength							2					
3.5.12	Thermal Shock								2				
3.5.13	Humidity-Temperature cycling									2			
3.5.14	Temperature Life										2		
3.5.15	Salt Spray Corrosion											2	

Figure 2



NOTE

(a) See paragraph 4.2.

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

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 shown in Figure 3.

Temperature	15°C – 35°C
Relative Humidity	20% – 80%
Atmospheric Pressure	86.6 – 106.6 kPa

Figure 3

4.2. Qualification Testing

A. Specimen Selection

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

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.3. Requalification Testing

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.

4.4. Acceptance

Acceptance is based on verification that the product meets the requirements in Figure 1. 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.

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.