



250 Series Flag Positive Lock EX

1. SCOPE

1.1. Content

This specification defines performance, tests, and quality requirements for 250 SERIES FLAG POSITIVE LOCK EX CONTACT. Applicable product description and part numbers are listed in Figure 1.

Part Number	Part Description
175057-2	250 Series Flag Positive Lock EX Contact Receptacle AWG #18 – #12
2013799-1	250 Series One Touch Sleeve

Figure 1

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 4 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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

- 114-5122 Application Specification for Crimping 250 Series Flag Type Positive Lock EX Contact
- TR-102128 Test Report

2.2. Industry Documents

- EIA-364 Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Documents

- 109-1 General Requirements for Testing
- 109-197 AMP 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

Contact: Pre-tinned (0.8 µm thick, minimum) Copper Alloy
Housing: Nylon 46 (UL 94V-0)

3.3. Ratings

Voltage: 250 VAC

Current: See Figure 2 for applicable current carrying capability.

Wire Size [AWG]	Current Rating [A]
18	7
16	12
14	15
12	20

Figure 2

Temperature: -40°C to 120°C, -40°C to 150°C (Includes ambient temperature and temperature rise from application of current)



NOTE

In case of use under 150°C in pressured case, cumulative time is 500 hours (maximum).

3.4. Wire Selection

The wire sizes listed in Figure 3 are applicable to Part Number 175057-2.

Wire Size (mm ²)	Insulation Diameter (mm)
0.75 – 3.37	2.8 – 4.1

Figure 3

3.5. Performance and Test Description

Product is designed to meet the electrical, mechanical, and environmental performance requirements specified in Figure 4. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.6. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and TE Application Specification 114-5122.	EIA-364-18 Visually, dimensionally and functionally inspected per applicable quality inspection plan.
Electrical		
Termination Resistance (Low Level)	Initial: 3 mΩ (milliohms) maximum Final: 6 mΩ (milliohms) maximum	EIA-364-23 Subject mated contacts to 50 mV maximum. Open circuit at 50 mA. Subtract bulk wire resistance. See Figure 5.
Temperature Rise	30°C maximum when subject to specified current indicated in Figure 2.	EIA-364-70, Method 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. Contacts to be crimped and mated with tab. Probe with use of thermocouple. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C.

Figure 4 (continued)

Mechanical			
Wire Crimp Tensile Strength	Wire Size [mm²/AWG]	Crimp Tensile (minimum) [N/kgf]	EIA-364-8 Operation speed: 100 mm/min. Apply an axial pull force to the crimped wire. Contact to be secured on the tester. Insulation barrel to be disabled.
	0.75 / #18	49.0 / 5	
	1.25 / #16	117.6 / 12	
	2.0 / #14	215.6 / 22	
	3.0 / #12	392.0 / 40	
Contact Mating Force	48.0 N [4.9 kgf] maximum		EIA-364-13, Method A Operation speed: 100 mm/min.
Contact Unmating Force	Initial: 10.98 N – 41.16 N [1.12 kgf – 4.2 kgf] 6 th Unmating: 8.23 N – 34.3 [0.84 kgf – 3.5 kgf]		EIA-364-13, Method A Operation speed: 100 mm/min Measure the force required to unmate the contact while unlocked.
Contact Locking Strength	78.4 N [8 kgf]		Operation speed: 100 mm/min Measure the minimum load which causes the lock mechanism to fail or the contact to be disengaged from the tab because of breakage. Engage tab with a contact having approximately 100 mm of wire length with a cross-sectional area of more than 1.25 mm ² and is crimped, locked and secured to the tab. Pull the contact in the direction of the working axis of the tab.
Sinusoidal Vibration (Low Frequency)	No electrical discontinuity greater than 1 μ s shall occur. Final LLCR: 6 m Ω (milliohms) maximum No physical damage.		EIA-364-28, Test Condition I Subject mated connectors to 10-55-10 Hz frequency range traversed over 1 minute at an amplitude of 1.5 mm. Apply for 2 hours in X and Y axis. (See Figure 6). 100 mA applied electrical load
Environmental			
Steady-State Humidity	Final LLCR: 6 m Ω (milliohms) maximum No physical damage.		EIA-364-31, Method II Subject mated connectors to 90 – 95% RH at 40°C for 96 hours. Measurements to be recorded after specimens are held for 3 hours at ambient temperature and humidity.
Thermal Shock	Final LLCR: 6 m Ω (milliohms) maximum No physical damage.		EIA-364-32, Test Condition I Subject mated specimens to 25 cycles between –40°C and 120°C with 30 minute dwell time at temperature extremes and 5 minute (maximum) transition between temperatures. This measurement is taken after specimens are held at ambient room temperature for 3 hours.
Salt Spray	Final Termination Resistance: 6 m Ω (milliohms) maximum No physical damage.		EIA-364-26, Condition A Subject mated connectors to 5 \pm 1% salt concentration for 96 hours. Measurement is taken after removing the salt. Specimens dried per the specification.

Figure 4 (continued)

Heat Aging	Final Termination Resistance: 6 mΩ (milliohms) maximum No physical damage.	EIA-364-17 Subject mated connectors to 120°C for 96 hours. This measurement is taken after specimens are held at ambient room temperature for 3 hours.
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i **NOTE** Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the product qualification and re-qualification test sequence given in Figure 2.

Figure 4 (end)

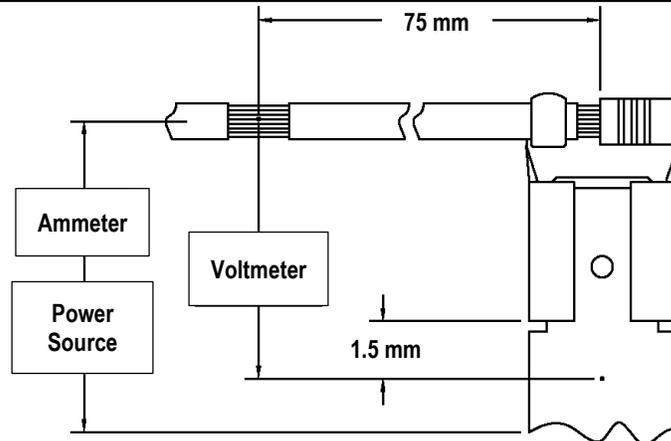


Figure 5: Termination Resistance (Low Level) Measuring Method

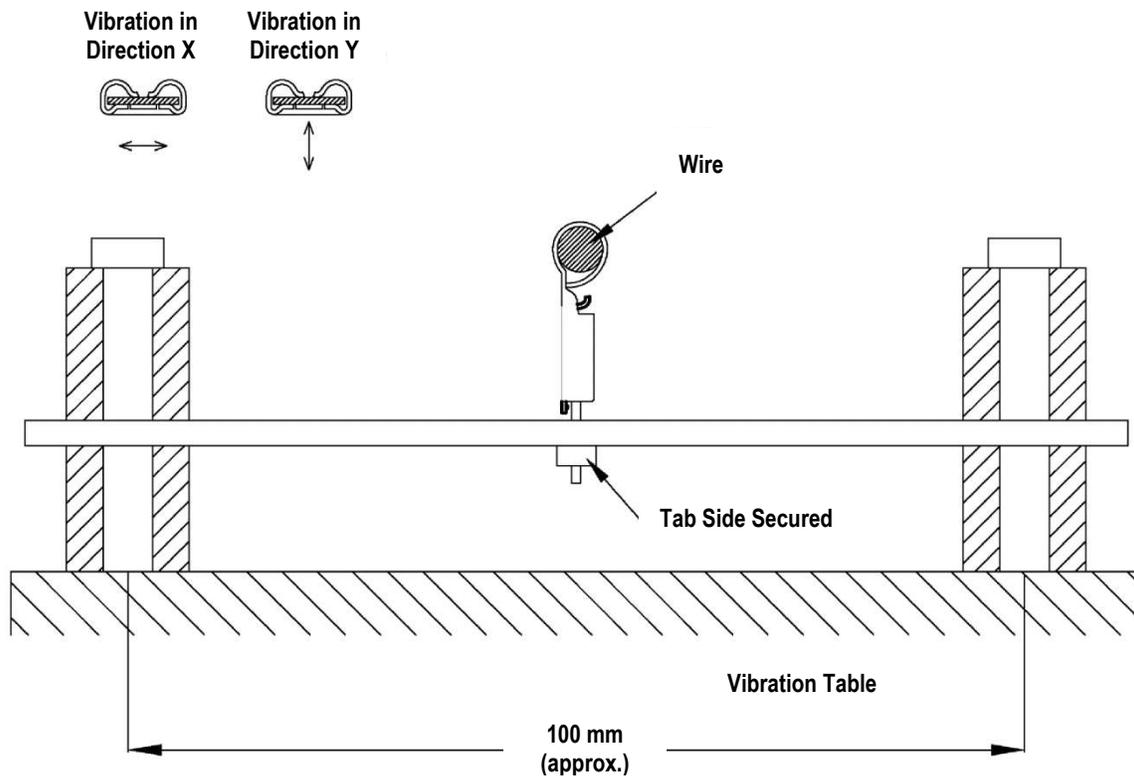


Figure 6: Sinusoidal Vibration (Low Frequency) Test Method

3.7. Product Qualification and Re-Qualification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)								
	1	2	3	4	5	6	7	8	9
	TEST SEQUENCE (b)								
Examination of Product	1,3	1,3	1,4	1,3	1,5	1,5	1,5	1,5	1,5
Termination Resistance (Low Level)					2,4	2,4	2,4	2,4	2,4
Temperature Rise	2								
Wire Crimp Tensile Strength				2					
Contact Mating Force			2						
Contact Unmating Force			3						
Contact Locking Strength		2							
Sinusoidal Vibration (Low Frequency)					3				
Steady-State Humidity							3		
Thermal Shock						3			
Salt Spray								3	
Heat Aging									3



NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.

Figure 7

4. QUALITY ASSURANCE PROVISIONS

4.1. 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 7.

4.2. 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.

4.3. Acceptance

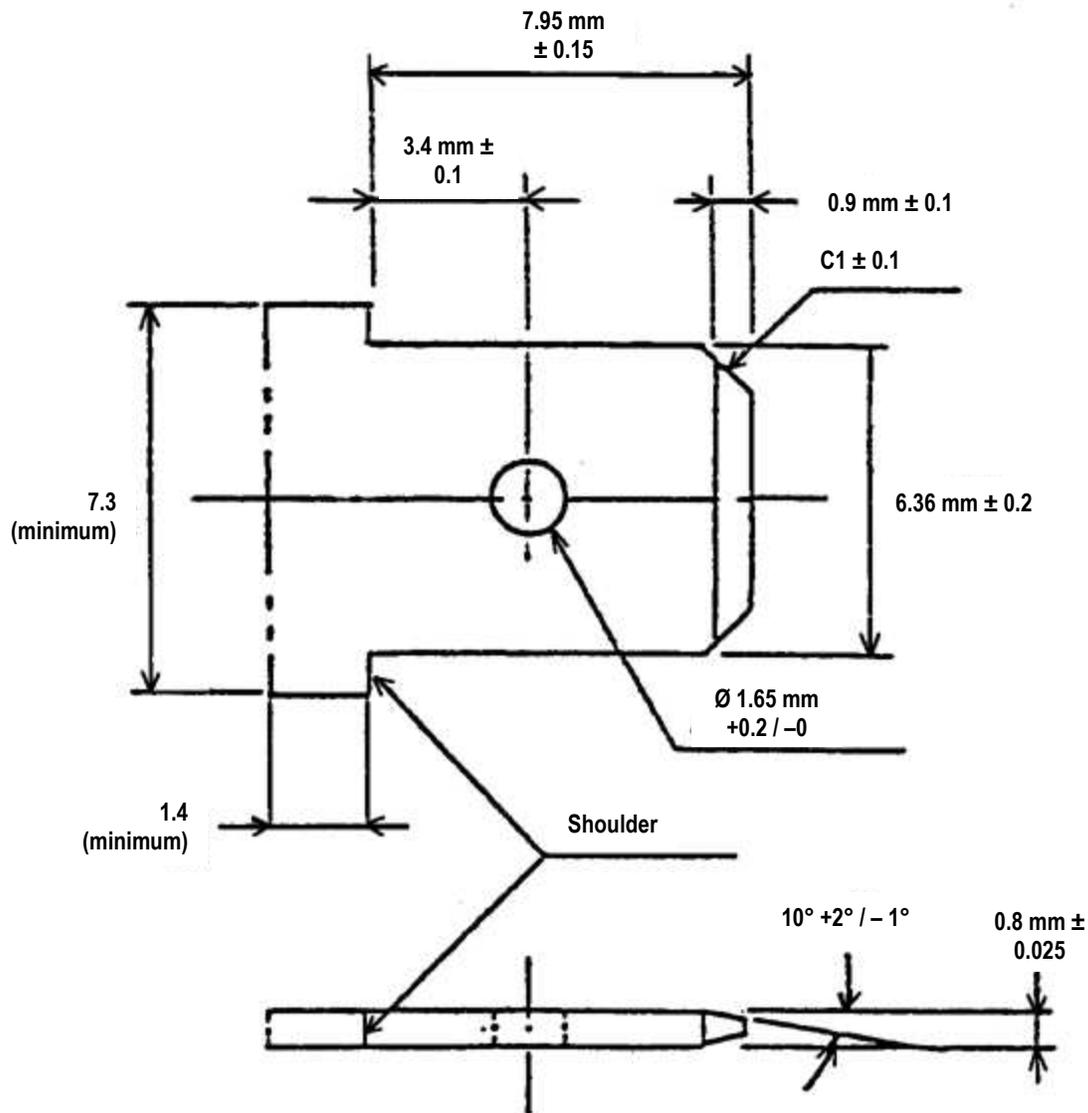
Acceptance is based on verification that the product meets the requirements of Figure 4. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens re-submitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4. 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.

4.5. Mating Tab Requirements

Tab contact for mating with the 250 Series Positive Lock Contacts must be of the design specified in Figure 8.



NOTE

- The tab material shall be 7/3 brass (JIS-H-3100 C2600P-1/2H).
- Unplated tab shall be used.

Figure 8