Crown Edge Connector System

1 SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics Crown Edge Connector System.

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.

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 Documents

109-197: Test Specification (Tyco Electronics Test Specifications vs EIA and IEC Test Methods)

2.2. Industry Document

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

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.

3.3. Ratings

- Voltage: 250 volts AC
- Current: 35A @ 30℃ T-rise, 2 adjacent contacts.
  29A @ 30℃ T-ri se, 4 contacts (2x2)
- Temperature: -55 to 105℃
  Insulation resistance: 5,000 MΩ minimum at 500V for 2 minutes

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. 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 requirements of product drawing and Application.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low Level Contact Resistance (LLCR).	Power contact: 1 milliohms maximum initial. 1.5 milliohms maximum final. Signal contact: 15 milliohms maximum initial. 20 milliohms maximum final.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1000 volts AC at sea level. Test between adjacent contacts of mated specimens.
Temperature rise vs current, power contacts.	30℃ maximum temperature rise.	EIA-364-70, Method 2 . Stabilize at a single current level until 3 readings at 5 minute intervals are within 1℃. Test with single energized contact and with 2 and 4 adjacent power contacts energized. Record data over a range 20 to 50℃ temperature rise. Document 30℃ temperature rise current.
MECHANICAL		
Random vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition V, Condition Letter C. Subject mated specimens to 9.26 G's rms between 50 to 2000 Hz. 120 minutes in each of 3 mutually perpendicular planes.

Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens with retention features activated for 25 cycles at a maximum rate of 500 cycles per hour.
Durability, preconditioning.	See Note.	EIA-364-9. Mate and unmate specimens for 5 cycles at a maximum rate of 500 cycles per hour.
Mating force.	27N maximum for one pair power contact	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm per minute.
Unmating force.	3.5N minimum for one pair power contact	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm per minute.
Reseating.	See Note.	Unmate and mate specimen 1 time.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32, Test Condition II. Subject mated specimens to 25 cycles between -65 and 105℃ with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65℃ at 80 to 100% RH.
Temperature life, 1000 hours.	See Note.	EIA-364-17, Method A, Test Condition 4, Test Time Condition D. Subject mated specimens to 105℃ for 1000 hours.
Temperature life, 500 hours.	See Note.	EIA-364-17, Method A, Test Condition 4, Test Time Condition C. Subject mated specimens to 105℃ for 500 hours.
Temperature life, preconditioning.	See Note.	EIA-364-17, Method A. Subject mated specimens to 90℃ for 360 hours.

Mixed flowing gas, unmated.	See Note.	EIA-364-65, Class IIA (4 gas). Subject specimens to environmental Class IIA for 14 days (7 days unmated, LLCR, followed by 7 days mated).
Mixed flowing gas, mated.	See Note.	EIA-364-65, Class IIA (4 gas). Subject specimens to environmental Class IIA for 14 days (7 days mated, LLCR, followed by 7 days mated).

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 para. 3.6*

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)						
	1	2	3	4	5	6	7
	Test Sequence (b)						
Initial examination of product	1	1	1	1	1	1	1
LLCR	2,4,6,8	2,4,6,8,10,12,14	2,5,7,9	2,4,6,8,10	2,4,6,8,10		2,6,8,10
Withstanding voltage		3,13					
Temperature rise vs current							4,9
Random vibration			8				7
Mechanical shock			6				
Durability		5					
Durability, preconditioning	3		3	3	3		3
Mating force						2	
Unmating force						3	
Reseating	7	11		9	9		
Thermal shock		7					
Humidity/temperature cycling		9					
Temperature life, 1000 hours	5						
Temperature life, 500 hours							5
Temperature life, preconditioning			4	5	5		
Mixed flowing gas, unmated				7			
Mixed flowing gas, mated					7		
Final examination of product	9	15	10	11	11	4	11

NOTE

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

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. Each test group shall consist of a minimum of 5 specimens.

B. Test Sequence

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

4.2. 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.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of 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.

4.4. 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.