
Industrial 1394 series Connector

Design Objectives

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, TE Connectivity makes no representation or warranty, express or implied that the product will comply with these requirements. Further, TE Connectivity may change these requirement based on the results of additional testing and evaluation. Contact TE Connectivity Engineering for further details.

1. Scope**1.1 Contents**

This specification covers the requirements for product performance, test methods and quality assurance provisions of 1394(IEEE std 1394-1995: High Performance Serial Bus) Series Connectors.

2. Applicable Documents :

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence.

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2.1 TE Specifications:

A. 501-106127: Qualification Test Report

2.2 Commercial Standards and Specifications:

A. EIA364 series

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:

A. Contact :

Material: Copper alloy

Finish: Gold plating on contact area, Tin or Tin-Lead plating on solder tail over
Nickel plating all over

B. Housing:

Material: High Temperature Thermo plastic, Glass Filled

Flammability: UL94 V-0

C. Shell:

Material: Copper alloy

Finish: Nickel plating

3.3 Ratings:

A. Voltage Rating : 30 V AC (rms)

B. Current Rating: 1A Max. per contact

C. Temperature Rating : -40°C to +85°C

3.4 Performance Requirements and Test Descriptions :

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.1.

3.4.1 Test Environment

All tests shall be performed in the environmental conditions listed below,
Unless otherwise specified.

Temperature: 15°C to 35°C

Humidity: 25% to 85% RH

Atmospheric Pressure: 86KPa to 106 KPa

3.5 Test Requirements and Procedures Summary

Para	Test Items	Requirements	Procedures
3.5.1	Examination of Product	Meets requirements of product drawing.	Visual inspection No physical damage.
3.5.2	Plating Thickness Measurement	Shall be confirmed by using proper measuring instrument	No injurious appearance Thickness shall be meet the drawing
Electrical Requirements			
3.5.3	Contact Resistance (Low Level)	30 mΩMax. (Initial) 30 mΩMax. (After Test)	Subject mated contacts assembled in housing to 20mV Max open circuit at 100mA on per EIA364-23
3.5.4	Insulation Resistance	100MΩMin.	500V DC for 1minute between adjacent circuits of mated connectors. EIA364-21C
3.5.5	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Leak current: 0.5mA Max.	500V AC for 1minute between adjacent circuits of mated connectors. EIA364-20 Method B
3.5.6	Continuity-housing (Shell)	50 mΩMax. (Initial) 50 mΩMax. (After Test) Change from initial	Measured with Milliohms Meter Subject mated braid to socket shell 5VAC maximum open circuit at 100mA maximum EIA364-06
3.5.7	Electrostatic Discharge	No evidence of discharge to ant of the six contacts; discharge to shield is acceptable	1 to 8 KV in 1KV step Use 8mm ball probe, test unmated IEC 801-2
3.5.8	Temperature Rising	30°C Max. under loading rating current	Measure temperature rising by energized current EIA364-70
Mechanical Requirements			
3.5.9	Vibration (Random)	No electrical discontinuity greater than 1μsec shall occur. No physical damage	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. EIA364-28
3.5.10	Physical Shock	No electrical discontinuity greater than 1μsec shall occur. No physical damage	Accelerated Velocity : 100G Saw tooth shock pulses of 6 ms duration Number of drops: 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops. EIA364-27 Test Condition G

Para	Test Items	Requirements	Procedures
3.5.11	Durability (Repeated Mate/Un-mating)	See note.	Operation Speed :500cycles/hour No. of Cycles: 1500cycles. EIA364-09
3.5.12	Connector Mating & Un-mating Force	9.8 N Min. 39.2 N Max.	Operation speed: 25mm/min. Measure force necessary to mate samples. EIA364-13
3.5.13	Cable Axial Pull Test	No electrical discontinuity greater than 1μsec shall occur. No jacket tears or visual exposure of shield No jacket movement greater than 1.5mm at point of exit Remark: Only for cable assembly	Apply axial load of 48N to the cable for 1 minute
3.5.14	Cable Flexing	No electrical discontinuity greater than 1μsec shall occur. No jacket tears or visual exposure of shield No jacket movement greater than 1.5mm at point of exit Remark: Only for cable assembly	Holding point dimension X=3.7xcable diameter Bending angle: ±90° Bending radius: Natural R Cycles:100 cycles in each of two plane Remark: X=from nearest end of external cable clamp to the bending roller
Environmental Requirements			
3.5.15	Thermal Shock	See note.	Mated connector -55°C / 30 min. +85°C / 30 min. Making this a cycle, repeat 10 cycles. EIA364-32
3.5.16	Humidity (I) (Steady State)	See note.	Mated connector 90-95% Relative Humidity 40°C±2°C 96 hours EIA364-31, Method II, test condition A
Fig.1 (CONT.)			

Para	Test Items	Requirements	Procedures
3.5.17	Humidity (II) (Cycling)	See note.	Mated connector 90-95% Relative Humidity 25°C to +65°C 10 cycles(10 days) EIA364-31, Method III
3.5.18	Temperature Life (Heat Aging)	See note.	Mated connector 105°C, 250 Hours EIA364-17, Method A, Condition A
3.5.19	Mixed Flowing Gas	See note.	Expose half of samples unmated for 7days then mated for 7 additional days and expose other half of samples mated for full 14 days per EIA 364-65,Class 2A
3.5.20	Resistance to Soldering Heat	See note.	1) For wave soldering MIL-STD-202F,Method 210A,Test Condition B Pre-heat:80°C,60 seconds Temperature:260±5°C Immersion duration:10±1 sec. 2) For manual soldering : MIL-STD-202F,Method 210A,Test Condition A Pre-heat: No Temperature:350±10°C Immersion duration: 3.5±0.5 sec. 3) For reflow soldering: EIA-364-56 Pre-heat: 150~200°C, 60~ 180 sec. Peak temperature:260 +0/5°C Duration: 20~40 sec.

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 shown in Figure 2.

Fig. 1 (END)

3.6 Product Qualification Test Sequence

Test Examination	Test Group											
	1	2	3	4	5	6	7	8	9	10	11	12
	Test Sequence(a)											
Examination of Product	1								1,4	1		
Plating Thickness	2							1	2			
Low level Contact Resistance	3,5,7	1,3,5		1,4,7,9	2,5							
Insulation Resistance			4,6				5					
Dielectric withstanding Voltage			1,3				4					
Continuity-housing				2,5,10	3,6							
Electrostatic Discharge							1					
Temperature Rising										2		
Random Vibration	4											
Physical Shock	6											
Durability				3		2						
Mating & Un-mating Force					1,7	1,3						
Cable Axial Pull Test							2					
Cable Flexing							3					
Thermal Shock		2	2									
Humidity (I)		4										
Humidity (II)			5	8								
Temperature Life(Heat Aging)					4(b)							
Mixed Flowing Gas				6								
Resistance to Soldering Heat									3			
Numbers of Test samples	5											

FIG.2

- (a) Numbers indicate sequence in which tests are performed.
- (b) Precondition samples with 10 cycle's durability.

4. QUALITY ASSURANCE PROVISIONS

4.1 Qualification Testing

A. Specimen Selection

Plugs and jacks shall be prepared in accordance with applicable Instruction Sheet and shall be selected at random from current production. Each test group shall consist of a minimum of 5 specimens unless otherwise stated.

B. Test Sequence

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

4.2 Requalification testing

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

4.3 Acceptance

Acceptance is based on verification that the product meets the requirements of 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 samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

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.

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