
IEEE 1394 External Serial Bus Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics IEEE 1394 External Serial Bus Connector which consists of a 6 position shielded cable plug with soldered terminations which mate to a board mounted receptacle. Both the plug and receptacle are shielded by formed metal shields. The plug assembly is covered by a molded cover.

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 on 17Apr06. The Qualification Test Report number for this testing is 501-633. This documentation is on file at and available from Engineering Practices and Standards (EPS).

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. Tyco Electronics Documents

- 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)
- 501-633: Qualification Test Report (IEEE 1394 External Serial Bus Connector)

2.2. Industry Standard

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: 40 volts AC
- Current: Signal application only, 1.5 amperes maximum
- Temperature: -55 to 85°C

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 per EIA-364.

3.5. Test Requirements and Procedures Summary

| Test Description | Requirement | Procedure |
|---------------------------------|---|---|
| Initial examination of product. | Meets requirements of product drawing. | 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. | 30 milliohms maximum initial. ΔR 10 milliohms maximum. | EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3. |
| Insulation resistance. | 100 megohms minimum. | EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts and between contacts and shell of mated specimens. |
| Withstanding voltage. | One minute hold with no breakdown or flashover. | EIA-364-20, Condition I. 500 volts AC at sea level. Test between adjacent contacts and between contacts and shell of mated specimens. |
| Shield to braid resistance. | 50 milliohms maximum. | EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 4. |
| MECHANICAL | | |
| Solderability, dip test. | Solderable area shall have a minimum of 95% solder coverage. | EIA-364-52, Category 3. Subject contacts to solderability. |

Figure 1 (continued)

| Test Description | Requirement | Procedure |
|------------------------|--|---|
| Vibration, sinusoidal. | No discontinuities of 1 microsecond or longer duration. See Note. | EIA-364-28, Test Condition III. Subject mated specimens to 10 2000 to 10 Hz traversed in 1 minute with 1.5 mm [.06 in] maximum total excursion. Four hours in each of 3 mutually perpendicular planes. See Figure 5. |
| Mechanical shock. | No discontinuities of 1 microsecond or longer duration. See Note. | EIA-364-27, Condition G. Subject mated specimens to 100 G's sawtooth shock pulses of 6 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 6. |
| Durability. | See Note. | EIA-364-9. Mate and unmate specimens for 1500 cycles at a maximum rate of 600 cycles per hour. |
| Unmating force. | 9.8 N [2.2 lbf] minimum. 39.2 N [8.8 lbf] maximum. | EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute. |

ENVIRONMENTAL

| | | |
|-------------------------------|-----------|--|
| Thermal shock. | See Note. | EIA-364-32, Test Condition I. Subject specimens to 10 cycles between -55 and 85°C. |
| Humidity-temperature cycling. | See Note. | EIA-364-31, Method III. Subject specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH. |
| Temperature life. | See Note. | EIA-364-17, Method A, Test Condition 4, Test Time Condition B. Subject mated specimens to 105°C for 250 hours. |
| Mixed flowing gas. | See Note. | EIA-364-65, Class IIA (4 gas). Subject 3 mated specimens to environmental Class IIA for 14 days. Subject 2 unmated specimens to environmental Class IIA for 1 day and then mate for the remaining 13 days. |

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.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

| Test or Examination | Test Group (a) | | | | |
|--------------------------------|-------------------|------|------|-----|---|
| | 1 | 2 | 3 | 4 | 5 |
| | Test Sequence (b) | | | | |
| Initial examination of product | 1 | 1 | 1 | 1 | 1 |
| Low level contact resistance | 2,6 | 2,4 | 2,4 | | |
| Insulation resistance | | | | 2,6 | |
| Withstanding voltage | | | | 3,7 | |
| Shield to braid resistance | 7 | | | | |
| Solderability, dip test | | | | | 2 |
| Vibration, sinusoidal | 4 | | | | |
| Mechanical shock | 5 | | | | |
| Durability | 3 | | | | |
| Unmating force | 8 | | | | |
| Thermal shock | | | | 4 | |
| Humidity-temperature cycling | | | | 5 | |
| Temperature life | | 3(c) | | | |
| Mixed flowing gas | | | 3(c) | | |
| Final examination of product | 9 | 5 | 5 | 8 | 3 |

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition specimens with 10 durability cycles.

Figure 2

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 Figure 2.

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.

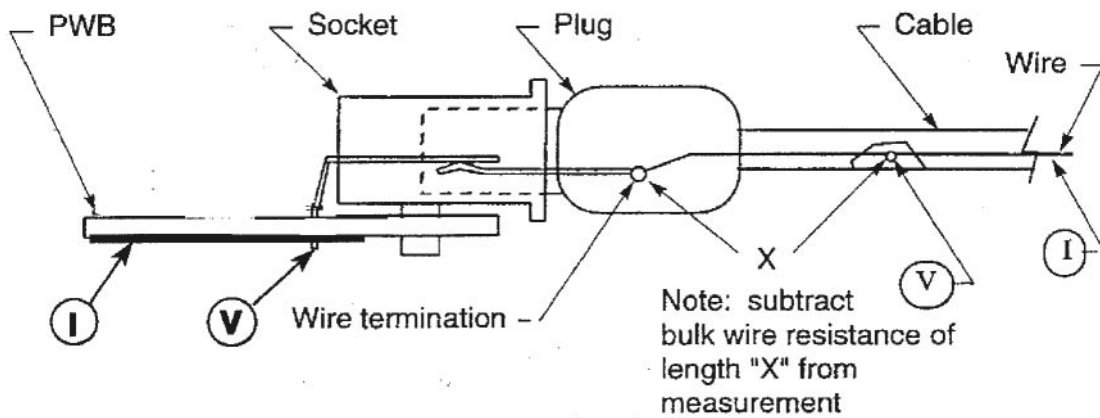


Figure 3
Low Level Contact Resistance Measurement Points

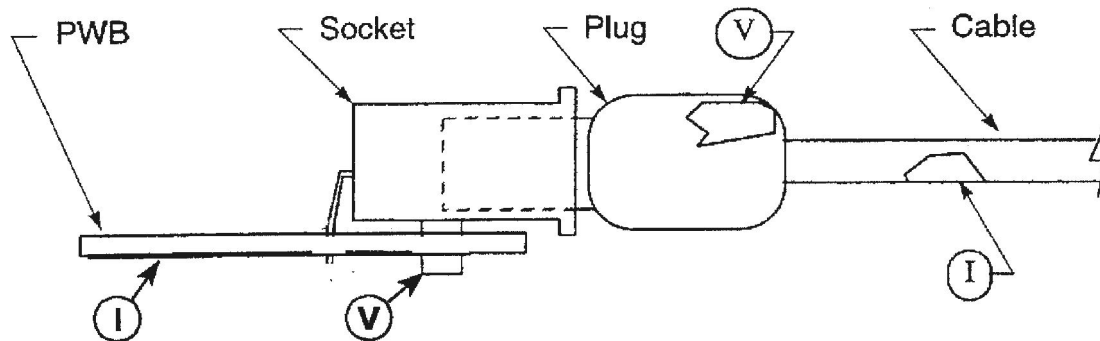


Figure 4
Shield to Braid Resistance Measurement Points

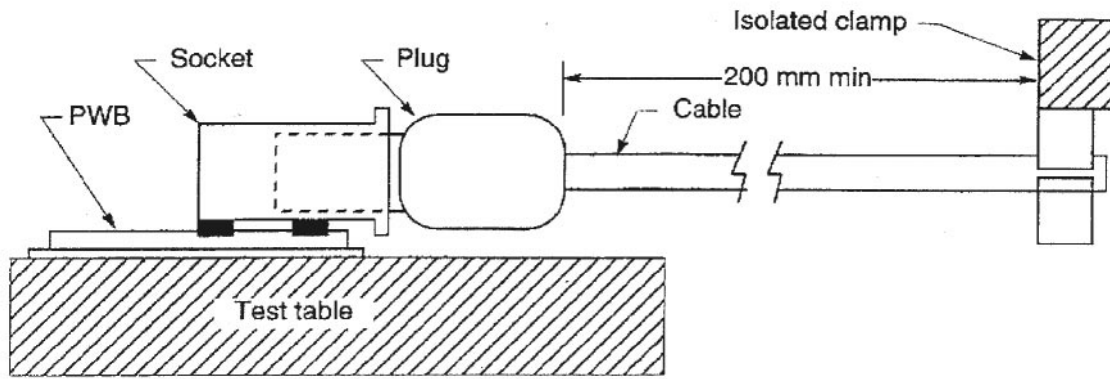


Figure 5
Vibration Test Fixture

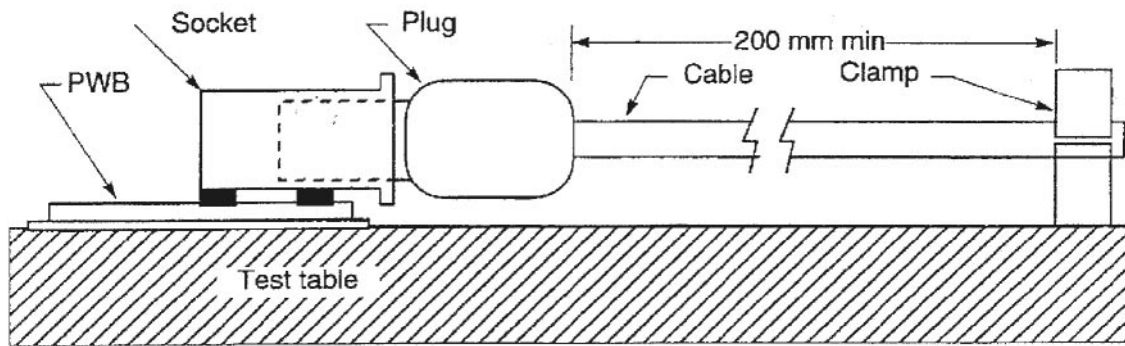


Figure 6
Mechanical Shock Test Fixture