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Contact Insertion, Release and Removal Force Test Procedure for Electrical Connectors

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(Revision of EIA-364-05A)

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ELECTRONIC INDUSTRIES ALLIANCE

ENGINEERING DEPARTMENT

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This standard is based upon the major technical content of International Electrotechnical Commission standard 512-8, test 15d, contact insertion, release and extraction force, 1993-01. It conforms in all essential respects to this IEC standard.

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TEST PROCEDURE No. 05B

CONTACT INSERTION, RELEASE AND REMOVAL FORCE TEST PROCEDURE FOR ELECTRICAL CONNECTORS

(From EIA Standards Proposal No. 3981, formulated under the cognizance EIA CE-2.0 Committee on National Connector Standards.)

1 Introduction

1.1 Scope

This standard establishes a test method to determine the forces required to insert contacts into and remove contacts form their normal position in a connector.

2 Test Resources

2.1 Equipment

The test equipment shall consist of:

2.1.1 Applicable insertion and removal tools.

2.1.2 Suitable device for holding the component.

2.1.3 Suitable device for measuring the forces (force gauges, loadcells, etc.).

3 Test Specimen

3.1 Description

The specimen shall consist of a connector and associated contacts.

3.2 Preparation

3.2.1 The sealing member shall be relaxed or removed if the design permits.

3.2.2 All contacts shall be wired with cabe/wire as specified in the referencing document. All contacts shall be installed, except those to be used for the test.

3.2.3 Cable fitting and accessories shall not be mounted on the connector.

3.2.4 Where applicable, gang retention devices shall be indexed to the release position.

3.2.5 The connector shall be mounted securely in a suitable clamping device and in a position suitable for performing the measurement.

3.2.6 The force gage shall be mounted to indicate the applied force.

3.2.7 The applicable insertion and removal tools shall be adapted for use with the force gage.

4 Test Procedure

Unless otherwise specified, select 20% of the contacts (but not fewer than six contacts per connector mating half) at random for the test. For connections having six contacts or less, all contact shall be used for the test. At least one contact shall be near the periphery and one near the center of the connector.

4.1 Insertion Force

4.1.1 The plug and receptacle shall be mounted in a suitable position for the insertion of contacts.

4.1.2 The insertion tool, with the contact, shall be engaged in the approved manner.

4.1.3 Axial alignment shall be maintained and sufficient force applied to insert the contact into its normal position in the connector. This force shall be recorded.

4.2 Release and Removal Force

4.2.1 The plug and receptacle shall be mounted in a suitable position for removal of contacts. For rear release systems, the mounting shall be on a load cell, or equivalent, that indicates both compression and tension forces.

4.2.2 The removal tool shall be engaged with the contact and contact locking device in the approved manner.

4.2.3 Axial alignment shall be maintained and sufficient force applied to release the locking mechanism and effect removal of the contact (until the tool plunger has traveled its full distance, when applicable). The peak force shall be recorded.

4.3 Failures

Potential modes of failure resulting from this test are forces in excess of those specified for insertion or removal of contacts from the connector.

5 Details to be specified

The following details shall be specified in the referencing document:

5.1 Number of contacts to be tested, if other than specified herein; see clause 4

5.2 Preparation, mounting and wiring of specimen

5.3 Wire type, gage

5.4 Appropriate insertion and removal tools

5.5 Test condition, if other than standard ambient

5.6 Maximum insertion, release and removal forces

5.7 Any deviation from standard test condition.

6 Test documentation

Documentation shall contain the details specified in clause 5, with any exceptions, and the following:

6.1 Title of test

6.2 Specimen description and contact identification, including fixturing

6.3 Test equipment used, and date of last and next calibration

6.4 Test procedure

6.5 Values and observations

6.6 Name of operator and date of test


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