# Nickel Plated DIAMOND GRIP* Heat Resistant STRATO-THERM* terminals and butt splices

## 1. SCOPE

### 1.1. Content

This specification defines the performance, tests, and quality requirements for the TE Connectivity (TE) Nickel Plated DIAMOND GRIP* Heat Resistant STRATO-THERM* terminals and butt splices. Terminals and splices covered by this specification are intended for termination to stranded, nickel plated, high temperature wire conforming to SAE AS22759 Class 1 wire.

### 1.2. Qualification

When tests are performed on the subject product line, procedures specified in Table 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

## 2. APPLICABLE DOCUMENTS AND FORMS

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

- 109-1: General Requirements for Testing
- 109 Series: Test Specifications as indicated in Table 1
- 114-2162: Application Specification
- 501-134081: Qualification Test Report

### 2.2. Industry Documents

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC-60512: Electronic Equipment - Tests and Measurements
- SAE AS7928: Terminals, Lug, Splices, Conductor: Crimp Style, Copper, General Specification for

### 2.3. Reference Document

- 109-197 Test Specification (TE Test Specification vs EIA and IEC Test Methods)


| Indicates Change

## 3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

3.2. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

**Table 1**

| Test Description | Requirement | Procedure |
|---|---|---|
| Initial examination of product. | Meets requirements of product drawing. | EIA-364-18.<br>Visual examination and dimensional (C of C) inspection per product drawing. |
| Final examination of product. | Meets visual requirements. | EIA-364-18.<br>Visual examination. |
| **ELECTRICAL** | | |
| Voltage drop | SAE AS7928, paragraph 3.5.1<br>See Table 3. | SAE AS7928, paragraph 4.7.2 |
| Current cycling | SAE AS7928, paragraph 3.5.2<br>See Table 3. | SAE AS7928, paragraph 4.7.3 |
| **MECHANICAL** | | |
| Vibration. | SAE AS7928, paragraph 3.5.6<br>See Note. | SAE AS7928, paragraph 4.7.7 |
| Termination tensile strength | SAE AS7928, paragraph 3.5.7<br>See Table 3. | SAE AS7928, paragraph 4.7.8 |
| Axial Load | The metal sleeve on uncrimped lug terminals shall withstand a minimum axial force of 4 pounds and shall not move more than 1/32 inch on the barrel of the lug terminal. The metal sleeve on a crimped lug terminal shall withstand a minimum axial force of 8 pounds. | SAE AS7928, paragraphs 4.7.6.1 & 4.7.6.2 |
| **ENVIRONMENTAL** | | |
| Salt spray | SAE AS7928, paragraph 3.5.4<br>See Note. | SAE AS7928, paragraph 4.7.5 |
| Temperature cycling | See Note. | IEC 60512-11-4<br>Subject samples to 50 cycles of:<br>30 minutes at -55°C<br>30 minutes at room temperature<br>30 minutes at 343°C<br>30 minutes at room temperature<br>(+/- 5 minutes & +/- 5° C) |

***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 Table 2.*

3.3. Product Qualification and Requalification Test Sequence.

**Table 2**

| Test or Examination | Test Group (a) | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| | Test Sequence (b) | | | | |
| Initial examination of product | 1 | 1 | 1 | 1 | 1 |
| Voltage drop | 2,4 | 2,4 | 2,4 | 2,4 | |
| Current cycling | 3 | | | | |
| Vibration | | 3 | | | |
| Termination tensile strength | | 6 | 6 | | |
| Axial Load | | | | | 2 |
| Salt spray | | | 3 | | |
| Temperature cycling | | | | 3 | |
| Final examination of product | 5 | 5 | 5 | 5 | 3 |

***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 10 terminals of each wire size.

B. Test Sequence

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

**Table 3**

| Wire Size (AWG) | Test Current (amperes) | Maximum Voltage Drop (mV) – Millivolt Drop of Equivalent Length of Wire Plus Appropriate Value Below | | Tensile Strength (pounds minimum) |
|---|---|---|---|---|
| | | Initial | After test | |
| 26 | 3 | 5 | 8 | 5 |
| 24 | 4.5 | 5 | 8 | 7 |
| 22 | 9 | 5 | 8 | 11 |
| 20 | 11 | 5 | 8 | 13 |
| 18 | 16 | 5 | 8 | 27 |
| 16 | 22 | 5 | 8 | 35 |
| 14 | 32 | 5 | 8 | 49 |
| 12 | 41 | 5 | 8 | 77 |
| 10 | 55 | 5 | 8 | 105 |

Millivolt Drop and Tensile Strength Requirements