NOTE
The product described in this document has been fully tested to ensure conformance to the requirements outlined below. Contact TE Engineering for further details

POWER TAP ASSEMBLY, POWER DISTRIBUTION

1. SCOPE

1.1. Content

This specification covers performance, tests, and quality requirements for TE Connectivity (TE) POWER TAP SCREW TERMINAL Connector PN 2446198-3. This terminal is designed to fasten Spade Tongue crimped terminals of stud Size M5.

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 has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

1.4. Revision Summary

Revisions to this specification include:

- Initial release of specification.

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 Connectivity Specifications

114-160725	Application Specification
501-161291	Qualification Test Report

2.2. Commercial Standards and Specifications

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

2.3. Reference Documents

109-1	General Requirements for Testing
102-950	Qualification of Separable Interface Connectors

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials, and physical dimensions specified on the applicable product drawing (PN 2446198).

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable TE drawing.

A. Contacts: Brass, Tin Plating over Nickel.

B. Screw: steel, Zinc Plating

3.3. Ratings

A. Current Rating: 40 A max

B. Temperature Rating: –40°C to +110°C

3.4. Performance Requirements and Test Description

3.5. The product should meet the electrical, mechanical, and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions otherwise specified.

3.6. Test Requirements and Procedure Summary

Test Description	Requirement	Procedure
Initial Examination of Product	Meets the requirements of product drawing; no defective abnormalities such as cracks, breakage, damages, loose of parts, rust and fusion that are detrimental to connector functions, shall be present.	EIA-364-18 Visually and tactually inspect parts for appearance in accordance with applicable Q.I.P (Quality Inspection Procedure) and product drawing for presence of stated defects. Please record date of manufacture of product.
Final Examination of Product	After testing, no physical damage such as cracks, breakage, damages, loose of parts, rust, and fusion that are detrimental to connector functions, shall be present.	EIA-364-18 Visually and tactually inspect parts for appearance in accordance with applicable Q.I.P (Quality Inspection Procedure) and product drawing for presence of stated defects.
Electrical		
Low Level Contact Resistance	Initial & Final requirement [1 milliohm] (maximum)	EIA-364-23 Subject contacts to 100mA MAX at 20mV MAX open circuit potential.
Temperature rise vs current. Current Temperature Derating Curve as per IEC spec. See Note (c)	Initial 25°C maximum temperature rise 25A Initial 30°C maximum temperature rise 30A Initial 60°C maximum temperature rise 40A Final less than 6° average ΔT Rise from initial readings. Serrated screw with 1.5 Nm torque.	EIA 364-70, Method 2 Stabilize at a single current level until 3 readings at 5-minute intervals are within 1°C. See Figure
Current Cycling	Shall remain intact and show no evidence of damage, cracking, or chipping. Serrated screw with 1.5 Nm torque.	EIA 364-55, Condition B, Method 4 Subject terminals to 500 cycles. T1 shall be measured after the 24th cycle and T2 shall be measured after the 500th cycle. Terminals terminated overload test current to be 50 Amp of the nominal test current. One cycle includes 45 minutes on and 15 minutes off.
Mechanical		
Random vibration	No discontinuities greater than 10 microseconds. See Note. Serrated screw with 1.5 Nm torque.	EIA 364-28D Test Condition V, Subject mated connectors to 16.91 G's rms for 20 minutes.
Torque test	Shall remain intact and show no evidence of damage, cracking, or chipping.	Apply 3Nm to tap screw terminal, hold 5 seconds and release. 5 cycles on same sample, measuring LLCR after 1st and after 5th cycle.

		connecting Spade Tongue terminals using serrated screw on top terminal studs using calibrated torque wrench).
Screw Torque Disassembly	Shall remain intact and show no evidence of damage, cracking, or chipping, Screw should not be disassembled totally from terminal	Apply max 1 Nm to tap screw terminal, the threads peened on the bottom to prevent the total disassembly of the screw from the terminal. (using calibrated torque wrench).
Environmental		
Humidity-Temperature Cycling	Shall remain intact and show no evidence of damage, cracking, or chipping.	EIA 364-31, Method IV, Test Duration B Subject specimens to 10 cycles (10 days) between 25 to 65°C at 80 to 100% Relative Humidity
Temperature Life	Shall remain intact and show no evidence of damage, cracking, or chipping.	EIA 364-17, Method A, Test Condition 4 250-hour duration @ 110°C±5°C
Salt Spray Test	Shall remain intact and show no evidence of damage, cracking, or chipping.	EIA-364-26, Condition B. Subject specimens tested for 24 hours, with 5% solution salt spray 35±2°C.

Figure 1 (end)

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.

3.7. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP					
	1	2	3	4	5	6
	TEST SEQUENCE					
Initial Examination of product	1	1	1	1	1	1
Final Examination of product	5		9	5	3	5
Termination resistance	2,4	2,4	2,5,7	2,4		2,4
Current cycling		3				
Temperature rise vs current			3,8			
Vibration	3					
Torque				3		
Screw Torque Disassembly					2	
Humidity-temperature cycling			4			
Salt Spray Test						3
Temperature life			6			

Figure 2

NOTE

(a) See paragraph 4.2.

(b) Allowable connection temperature is the ambient temperature plus temperature rise of the terminal at normal operating conditions.

(c) Numbers indicate sequence in which tests are performed.

(d) The maximum rated current that can be carried by this product is limited by NOTE maximum operating temperature of the terminal, which is 110 °C and temperature rise of contacts. Variables which shall be considered for each application are: wire size, connector size, contact material, ambient temperature, and printed circuit board design.

4. QUALITY ASSURANCE PROVISIONS

4.1. Test Conditions

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions shown in Figure 3.

Temperature	15°C – 35°C
Relative Humidity	45% – 75%
Atmospheric Pressure	86.6 – 106.6 kPa

Figure 3

4.2. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure **2**.

4.3. 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.

4.4. Acceptance

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

4.5. 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. Termination Resistance Probe Location

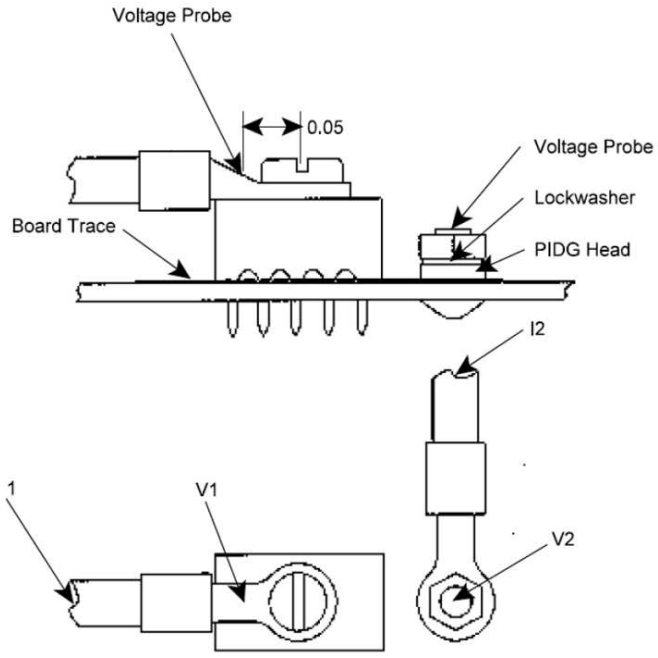

Figure. Thermocouple Mounting