
Vertical Screwless Wire Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics Vertical Screwless Wire Connector designed to terminate 16 and 18 AWG solid wire, and 18 AWG bonded wire per ASTM B470 Type I.

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 28Mar02. Additional testing was completed on 17Feb11. The Qualification Test Report number for this testing is 501-523. 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 Document

501-523: Qualification Test Report

2.2. Commercial Standards

- ASTM B470: Standard Specification for Bonded Copper Conductors for Use in Hookup Wires for Electronic Equipment
- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Document

109-197: AMP Test Specifications vs EIA and IEC Test Methods

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: 600 volts
- Current: 2 amperes maximum
- Temperature: -30 to 105°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.

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 (LLCR).	15 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Withstanding voltage.	One minute hold with no breakdown or flashover. 0.5 milliampere maximum leakage.	EIA-364-20, Condition I. 2200 volts AC at sea level. Test between adjacent contacts of unmated specimens.
MECHANICAL		
Random vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition VII, Condition D. Subject mated specimens to 3.10 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes. See Figure 4.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.
Durability.	See Note.	EIA-364-9. Insert and release wire 5 times using tool. Tool cross section shall be 0.46 X 2.03 mm.

Figure 1 (continued)

Test Description	Requirement	Procedure
Wire insertion force.	5 N maximum.	EIA-364-13. Measure force necessary to push wire into connector at a maximum rate of 12.7 mm per minute.
Wire retention force.	22.25 N minimum.	EIA-364-13. Apply axial force to wire at a maximum rate of 12.7 mm per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject specimens to 5 cycles between -30 and 85°C.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject specimens to 10 cycles (10 days) between 25 and 85°C at 80 to 100% RH.
Temperature life.	See Note.	EIA-364-17, Method A, Test Condition 4. Subject mated specimens to 105°C for 648 hours.

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
Test Sequence (b)				
Initial examination of product	1	1	1	1
LLCR	3,7	2,5	2,5	
Withstanding voltage				4
Random vibration	5			
Mechanical shock	6			
Durability	4	3	3	
Wire insertion force	2			
Wire retention force	8			
Thermal shock				2
Humidity/temperature cycling			4	3
Temperature life		4		
Final examination of product	9	6	6	5

NOTE

- (a) See paragraph 4.1.A.
 (b) Numbers indicate sequence in which tests are performed.

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. All test groups shall each consist of 15 specimens crimped to 16 AWG solid copper, 18 AWG solid copper, or 18 AWG bonded wire as required. Test groups 1, 2 and 3 shall be mounted to printed circuit boards.

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.

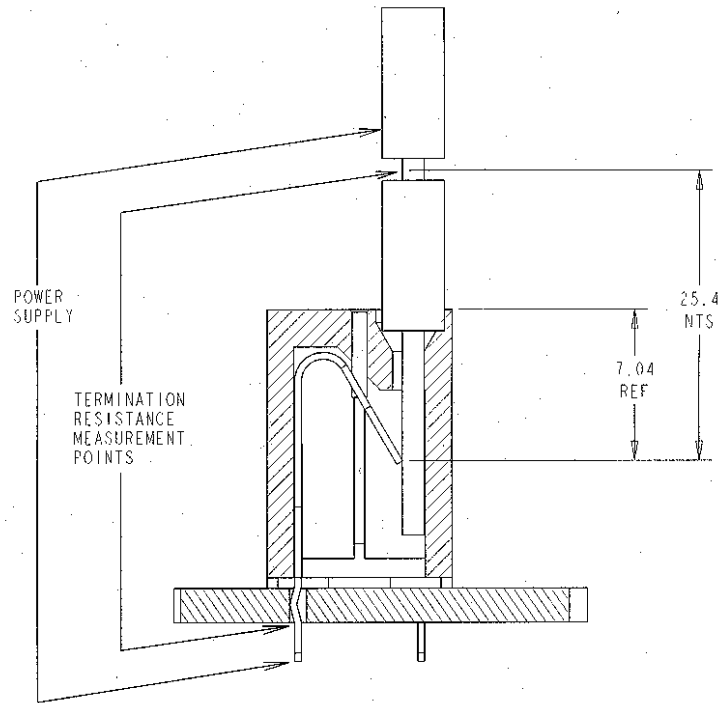


Figure 3
Low Level Contact Resistance Measurement Points

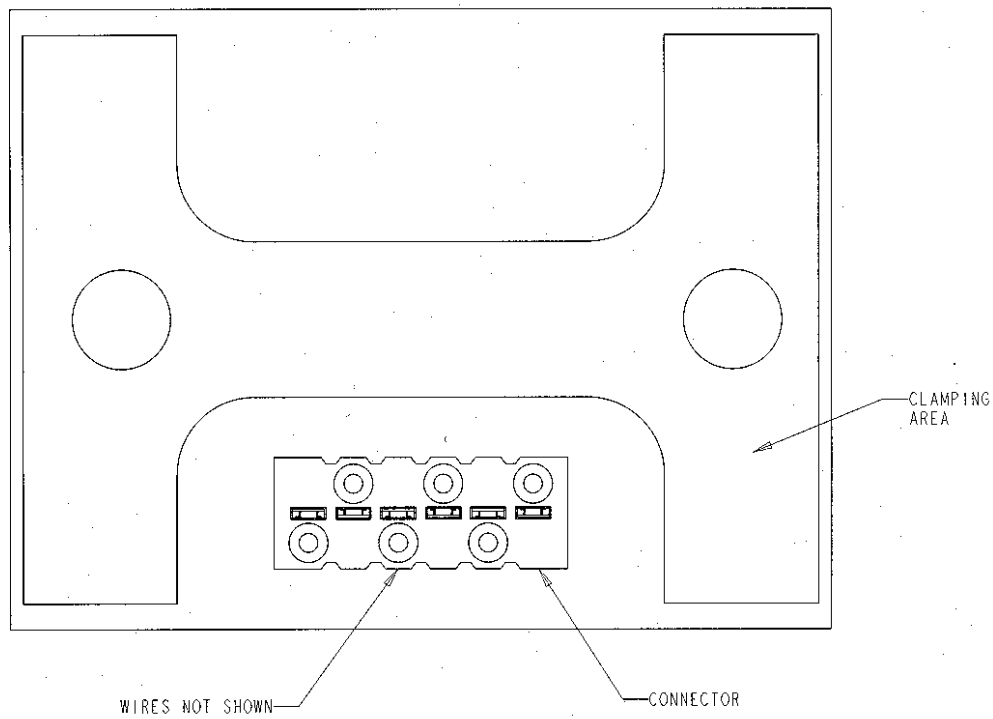


Figure 4
Vibration & Mechanical Shock Mounting Fixture