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**Pivot II Connector, Two Pair**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics Two Pair Pivot II Connector. This connector accepts two wires for each wire stuffer (pair) for power drop in a telecommunications circuit and is mounted on a customer provided .062 inch thick printed circuit board. Power from the printed circuit board is transferred to the connector module by means of solder posts which also serve as the mounting device for the module. Each wire stuffer module will accept solid copper wire 22 through 26 AWG with a maximum insulation diameter of .060 inch. Other wire sizes and types may be accommodated, but are subject to Tyco Electronics Engineering approval. Wire termination is accomplished simultaneously for each pair, no stripping of wire is required.

## 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 in May03. The Qualification Test Report number for this testing is 501-373-2. 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: AMP Test Specifications vs EIA and IEC Test Methods
- 501-373-2: Qualification Test Report

## 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: 250 volts AC
- Current: See Figure 4 for applicable current carrying capability
- Temperature: -40 to 80°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.
<b>ELECTRICAL</b>		
Low level contact resistance.	$\Delta R$ 5 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Insulation resistance.	500 megohms minimum.	EIA-364-21. Test between adjacent contacts of mated specimens.
Withstanding voltage.	1 minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1000 volts AC at sea level. Test between adjacent contacts of mated specimens.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	EIA-364-70, Method 1. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C. Specimens shall be fully loaded and 100% energized. See Figure 4.
<b>MECHANICAL</b>		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28. Subject mated specimens to 4.44 G's rms between 10-500 Hz. 1 hour in each of 3 mutually perpendicular planes.

Figure 1 (cont)

Test Description	Requirement	Procedure
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for 50 cycles at a maximum rate of 600 cycles per hour.
Mating force.	111.21 N [25 lbf] maximum.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Unmating force.	2.22 N [.5 lbf] minimum.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
<b>ENVIRONMENTAL</b>		
Thermal shock.	See Note.	EIA-364-32. Subject mated specimens to 5 cycles between -40 and 80°C.
Humidity-temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated 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 Time Condition C. Subject mated specimens to 80°C for 500 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
	Test Sequence (b)		
Initial examination of product	1	1	1
Low level contact resistance	3,5,8	2,4,7,9	
Insulation resistance			2,6
Withstanding voltage			3,7
Temperature rise vs current		3,10	
Vibration, random	6	8	
Mechanical shock	7		
Durability	4		
Mating force	2		
Unmating force	9		
Thermal shock			4
Humidity-temperature cycling		5(c)	5
Temperature life		6	
Final examination of product	10	11	8

**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. Test group 1 shall consist of 4 fully populated specimens for each material pairing using 22 AWG solid copper wire. Test group 2 shall consist of 4 fully populated specimens for each material pairing using 26 AWG solid copper wire. Test group 3 shall consist of 6 fully populated specimens for each material pairing using both 22 and 26 AWG solid copper wire.

B. Test Sequence

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

4.2. Requalification Testing

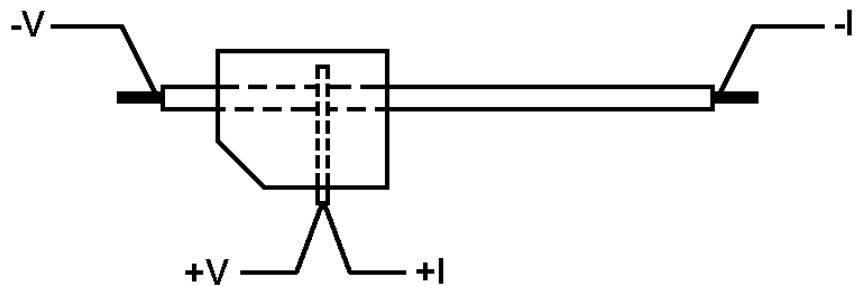
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

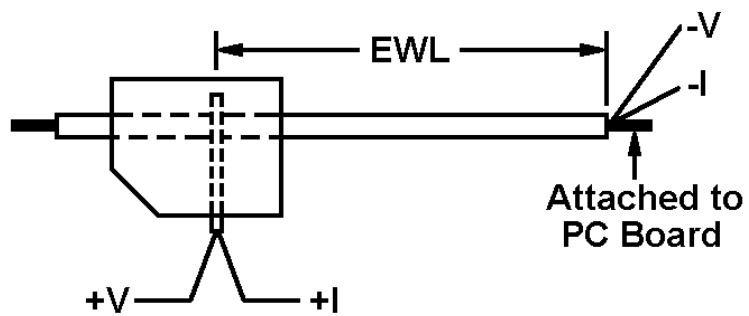
Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing 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.



Test Group 1



Test Group 2

Figure 3  
Low Level Contact Resistance Measurement Points

Material Type	Temperature (°C)	Current (amperes)
Initial Readings		
Group A	23.34	4.5
Group B	21.84	
Group C	20.21	
Final Readings		
Group A	25.01	4.5
Group B	25.61	
Group C	21.07	

**NOTE** Group A material is Stanyl TE250F3 base and stuffer, Group B material is Valox 420 SEO base and stuffer, Group C material is Valox 420 SEO base and Makrolon 6455 clear stuffer.

Figure 4A  
Current Capability

Percent Connector Loading	Wire Size AWG		
	26	24	22
Single Contact	0.85	0.92	1
50	0.69	0.76	0.83
100	0.52	0.57	0.62

**NOTE** To determine the acceptable current carrying capacity for percentage connector loading and wire gage indicated, use the Multiplication Factor (F) from the above chart and multiply it times the Base rated Current for a single circuit at the maximum ambient operating temperature shown in Figure 4A.

Figure 4B  
Current Rating