
Single, Two and Four Pair Pivot Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics single, 2, and 4 pair pivot connector. This connector module accepts 4 twisted pair wires (4 pairs) for the power drop to subscribers in an HFC architecture 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 module will accept 4 pairs of solid copper 22 or 24 AWG wires 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.

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 requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. Tyco Electronics Documents

- 109-1: Test Specification (General Requirements for Test Specifications)
- 109 Series: Test Specifications as indicated in Figure 1
- 114-6062: Application Specification (Pivot Connectors)
- 501-373: Qualification Test Report (Single, Two and Four Pair Pivot Connector)

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: Signal application only, 5 amperes maximum
- 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 Test Specification 109-1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and Application Specification 114-6062.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance.	2 milliohms maximum.	AMP Spec 109-6-6. Subject mated contacts assembled in housing to 20 mv maximum open circuit at 100 ma maximum. See Figure 3.
Insulation resistance.	500 megohms minimum.	AMP Spec 109-28-4. Test between adjacent contacts of mated samples.
Dielectric withstanding voltage.	1000 vac at sea level. 1 minute hold with no breakdown or flashover.	AMP Spec 109-29-1. Test between adjacent contacts of mated samples.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	AMP Spec 109-45-1. Measure temperature rise vs current. See Figure 4.
MECHANICAL		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-7. Subject mated samples to 4.44 G's rms. 1 hour in each of 3 mutually perpendicular planes.
Physical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-26-1. Subject mated samples 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.	AMP Spec 109-27. Manually mate and unmate samples for 50 cycles at a maximum rate of 600 cycles per hour.
Mating force.	25 pounds maximum.	AMP Spec 109-42, Condition A. Measure force necessary to mate samples at a maximum rate of .5 inch per minute.

Figure 1 (continued)

Test Description	Requirement	Procedure
Unmating force.	0.5 pound minimum.	AMP Spec 109-42, Condition A. Measure force necessary to unmate samples at a maximum rate of .5 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated samples to 5 cycles between -40 and 80°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated samples to 10 cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated samples to temperature life at 80°C for 500 hours.

NOTE

Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence 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)		
Examination of product	1,9	1,9	1,8
Termination resistance	3,7	2,7	
Insulation resistance			2,6
Dielectric withstanding voltage			3,7
Temperature rise vs current		3,8	
Solderability			
Vibration	5	6(c)	
Physical shock	6		
Durability	4		
Mating force	2		
Unmating force	8		
Thermal shock			4
Humidity-temperature cycling		4(d)	5
Temperature life		5	

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per AMP Specification 109-151.
- (d) Precondition samples with 10 cycles durability.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Samples 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 samples for both 22 and 24 AWG solid copper wire. Test groups 2 and 3 shall each consist of 8 fully populated samples wired with 22 AWG solid copper wire.

B. Test Sequence

Qualification inspection shall be verified by testing samples 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. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan will 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.

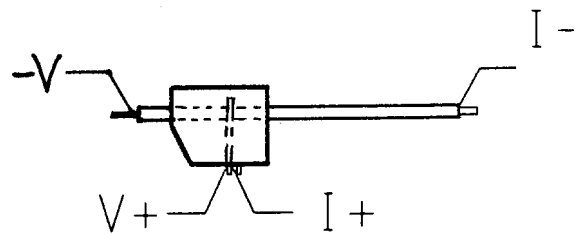


Figure 3
Termination Resistance Measurement Points

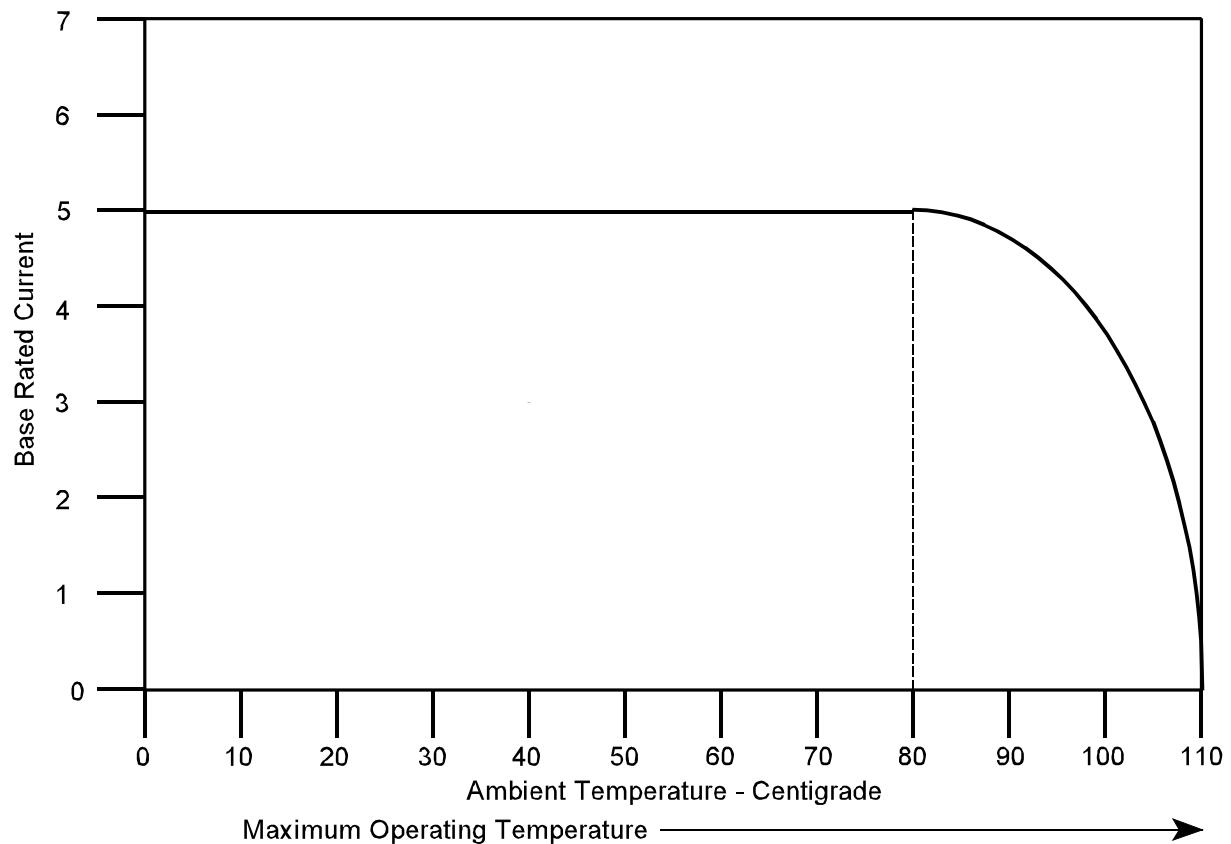


Figure 4A
Current Carrying Capability

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

NOTE

To determine 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 maximum ambient operating temperature as shown in Figure 4A.

Figure 4B
Current Rating