

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMPLIMITE* .050 series slimline connectors. Product consists of printed circuit board mounted shielded receptacles, vertical, right angle and stackable right angle and shield plug cable connector.

1.2. Qualification

When tests are performed on subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using 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, latest edition of the document applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification shall take precedence.

2.1. AMP Documents

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
- D. 114-40036: Application Specification
- E. 501-255: Test Report

3. REQUIREMENTS

3.1. Design and Construction

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

* Trademark

Product Code: 0996 through 1000

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<p>CONTROLLED DOCUMENT This specification is a controlled document per AMP Specification 102-21. It is subject to change and Corporate Standards should be contacted for latest revision.</p>				<p>DR <i>David M. Hutter</i> 25 July 94</p>		<p>AMP AMP Incorporated Harrisburg, PA 17105-3608</p>	
				<p>CHK <i>Lawrence J. Prokopy</i> 25 July 94</p>		<p>NO 108-1366</p>	
<p>0 EC 0020-0805-94 <i>BHB</i> 25 July 94</p>		<p>PAGE 1 OF 6</p>		<p>TITLE CONNECTOR, AMPLIMITE, .050 SERIES, SLIMLINE</p>			
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3.2. Materials

- A. Backshell (cable assembly): Copper-nickel alloy
- B. Bracket: Zinc die casting, bright tin-lead over copper plating
- C. Contacts:
 - (1) PCB connector: Phosphor bronze, gold in contact area, tin-lead on PC board legs, all over nickel plating
 - (2) Cable connector: Phosphor bronze, gold in contact area, tin-lead in IDC area, all over nickel plating
- D. Covers:
 - (1) Backshell: ABS, black and gray, UL94V-0
 - (2) Terminating: PBT, black, UL94V-0
- E. Housings:
 - (1) PCB connector: LCP, black, UL94V-0
 - (2) Cable connector: PBT, black, UL94V-0
- F. Jack screws: Steel, clear chromate over zinc plating
- G. Keys: Zinc die casting, bright tin over copper plating
- H. Shells:
 - (1) Plug: Steel, bright tin-lead over copper plating
 - (2) Receptacle: Steel, bright tin over copper plating

3.3. Ratings

- A. Voltage: 30 vac per UL and CSA
- B. Current: 1 ampere maximum, see Figure 2
- C. Temperature:
 - (1) -55 to 105°C
 - (2) -55 to 70°C for backshell cover

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient environmental conditions per AMP Specification 109-1 unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec 114-40036.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	25 milliohms maximum.	Subject mated contacts assembled in housing to 50 mv open circuit at 100 ma. See Figure 4. AMP Spec 109-6-1.

Figure 1 (cont)

Test Description	Requirement	Procedure
Dielectric withstanding voltage.	500 vac dielectric withstanding voltage. 1 minute hold. No breakdown or flashover. 1 milliampere maximum leakage current.	Test between adjacent contacts of mated connector assemblies. AMP Spec 109-29-1.
Insulation resistance.	1000 megohms minimum.	Test between adjacent contacts of mated connector assemblies. AMP Spec 109-28-4.
Capacitance.	3 picofarads maximum.	Test between adjacent contacts of mated connector assemblies. AMP Spec 109-47, Condition E.
MECHANICAL		
Vibration, random.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated connectors to 7.56 G's rms. See Figure 5. AMP Spec 109-21-5, Test level B, Duration 20 minutes.
Physical shock.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated connectors to 30 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 5. AMP Spec 109-26-1.
Mating force.	21 pounds maximum.	Measure force necessary to mate connector assemblies at rate of 1 inch per minute. AMP Spec 109-42, Condition A.
Unmating force.	1.5 pounds minimum.	Measure force necessary to unmate connector assemblies at rate of 1 inch per minute. AMP Spec 109-42, Condition A.

Figure 1 (cont)

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PAGE NO
3

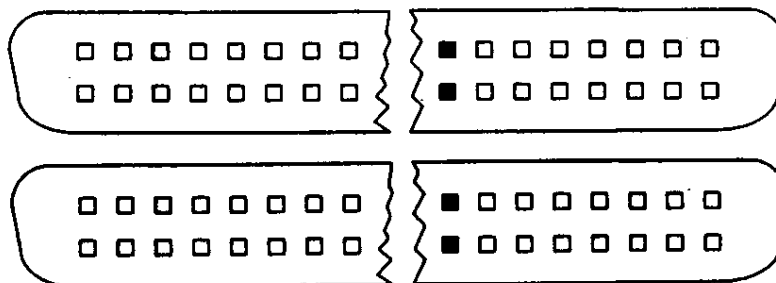
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Test Description	Requirement	Procedure
Durability.	See Note (a).	Mate and unmate connector assemblies for 500 cycles at maximum rate of 800 cycles per hour. AMP Spec 109-27.
Solderability.	Solderable area shall have minimum of 95% solder coverage.	Subject contacts to solderability. AMP Spec 109-11-1.
ENVIRONMENTAL		
Thermal shock.	See Note (a).	Subject mated connectors to 25 cycles between -55 and 105°C. AMP Spec 109-22.
Humidity-temperature cycling.	See Note (a).	Subject mated connectors to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. AMP Spec 109-23-4, Condition B.
Mixed flowing gas.	See Note (a).	Subject mated connectors to environmental class III for 20 days. AMP Spec 109-85-3.
Temperature life.	See Note (a).	Subject mated connectors to temperature life at 70°C for 500 hours. AMP Spec 109-43.

(a) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 3.

Figure 1 (end)



Stacked Receptacle

Denotes energized circuit, 1 ampere per contact

Figure 2
Current Energizing Circuit

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PAGE NO
4

108-1366

REV LOC
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3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5(c)
	Test Sequence (b)				
Examination of product	1,9	1,6	1,5	1,9	1,3
Termination resistance, dry circuit	3,7	2,5	2,4		
Dielectric withstanding voltage				4,8	
Insulation resistance				3,7	
Capacitance				2	
Vibration	5				
Physical shock	6				
Mating force	2				
Unmating force	8				
Durability	4	3			
Solderability					2
Thermal shock				5	
Humidity-temperature cycling				6	
Mixed flowing gas			3(d)		
Temperature life		4			

- (a) See Para 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) No wires used with this test group.
- (d) Precondition samples with 10 cycles durability.

Figure 3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall consist of 5 board mounted connectors and mating cable plugs except for test group 5 which does not require mating cable plugs. Cable shall be 28 AWG (7/32) tin plated copper wire in accordance with AMP Specification 114-40036. 30 random contacts shall be selected and identified with contact selection including ends of the connector. Unless otherwise specified, these contacts shall be used for all measurements.

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 3.

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PAGE NO
5

108-1366

REV LOC
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4.2. Requalification Testing

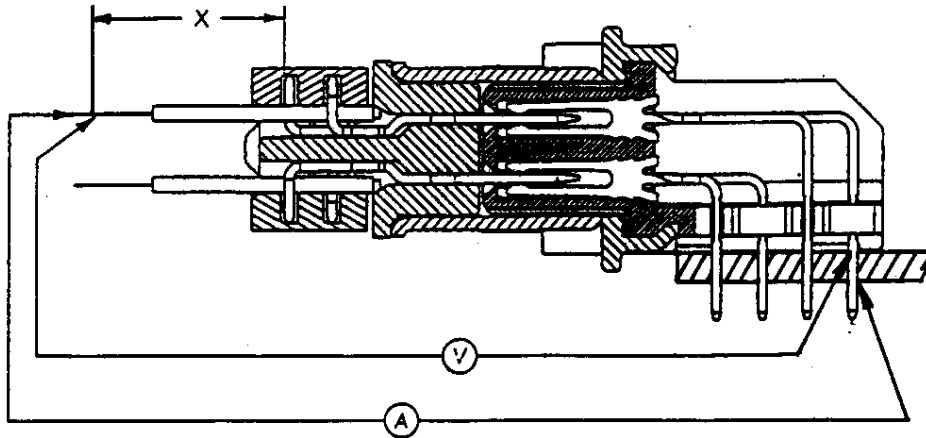
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify 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

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.



- Note: (1) Resistance due to X length of wire shall be removed from all readings.
(2) Backshells not illustrated.

Figure 4
Termination Resistance Measurement Points

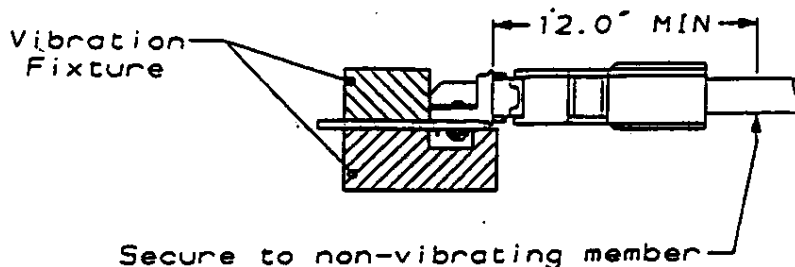


Figure 5
Vibration & Physical Shock Mounting Fixture

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PAGE NO
6

108-1366

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