

**Connector, Right Angle 12 Row Z-PACK\* HM****DESIGN OBJECTIVES**

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore AMP\* Incorporated makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, AMP Incorporated may change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the right angle 12 row Z-PACK\* HM connector. This design consists of columns of contacts which are overmolded and pressed into the front housing with a single beam contact in the right angle receptacle mating with a pin pressed into the vertical plug housing. Modules are available in 144 and 288 positions. End modules with 72 positions and a hermaphroditic key and guide pin are available in left and right hand versions. Side wall guidance has  $\pm 2$ mm of misalignment gathering and are polarized.

## 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 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. AMP Documents

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Government or Commercial Documents
- D. 114- : Application Specification
- E. 501- : Qualification Test Report

**3. REQUIREMENTS**

## 3.1. Design and Construction

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

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3.2. Materials

- A. Guide pin: Passivated stainless steel
- B. Key: Thermoplastic, 30% glass filled
- C. Lead frame: Beryllium copper, gold plating on the contact area and tin-lead plating on the ACTION PIN\* interface
- D. Male contact: Phosphor bronze, gold plating on the contact area and tin-lead plating on the ACTION PIN\* interface
- E. Overmold: Thermoplastic, 30% glass filled
- F. Plug housing: Thermoplastic, 30% glass filled
- G. Receptacle housing: Thermoplastic, 40% glass filled

3.3. Ratings

- A. Voltage: \_\_\_\_\_ vac
- B. Current: Signal application only
- C. Temperature: -55 to 125°C
- D. Characteristic Impedance: 50 ohms

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 AMP Specification 109-1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec 114-____.	Visual, dimensional and functional per applicable quality inspection plan.
<b>ELECTRICAL</b>		
Termination resistance.	20 milliohms maximum.	AMP Spec 109-6-1. Subject mated contacts assembled in housing to 50 mv maximum open circuit at 100 ma maximum. See Figure 3.
Insulation resistance.	10000 megohms minimum.	AMP Spec 109-28-4. Test between adjacent contacts of mated samples.
Dielectric withstanding voltage.	750 vac at sea level. 1 minute hold with no breakdown or flashover.	AMP Spec 109-29-1. Test between adjacent contacts of mated samples.
<b>MECHANICAL</b>		
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-7. Subject mated samples to 3.14 G's rms between 5-500 Hz. 15 minutes in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (cont)

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Test Description	Requirement	Procedure
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-26-1, except 30 G's. Subject mated samples 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 4.
Durability.	See Note.	AMP Spec 109-27. Mate and unmate samples for 250 cycles at a maximum rate of 600 cycles per hour.
Mating force.	.75 N per pin maximum.	AMP Spec 109-42, Condition A. Measure force necessary to mate samples at a maximum rate of .5 inch per minute.
Unmating force.	.15 N per pin minimum.	AMP Spec 109-42, Condition A. Measure force necessary to unmate samples at a maximum rate of .5 inch per minute.
<b>ENVIRONMENTAL</b>		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated samples to 5 cycles between -55 and 125°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 125°C for 500 hours.
Mixed flowing gas.	See Note.	AMP Spec 109-85-2. Subject mated samples to environmental class II for 14 days.

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**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)			
Examination of product	1,9	1,5	1,5	1,8
Termination resistance	3,7	2,4	2,4	
Insulation resistance				2,6
Dielectric withstanding voltage				3,7
Vibration	5			
Mechanical shock	6			
Durability	4			
Mating force	2			
Unmating force	8			
Thermal shock				4
Humidity-temperature cycling				5
Temperature life		3(c)		
Mixed flowing gas			3(c)	

- NOTE**
- (a) See Para 4.1.A.
  - (b) Numbers indicate sequence in which tests are performed.
  - (c) 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. All test groups shall each consist of a minimum of 5 samples.

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.

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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 AMP 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.

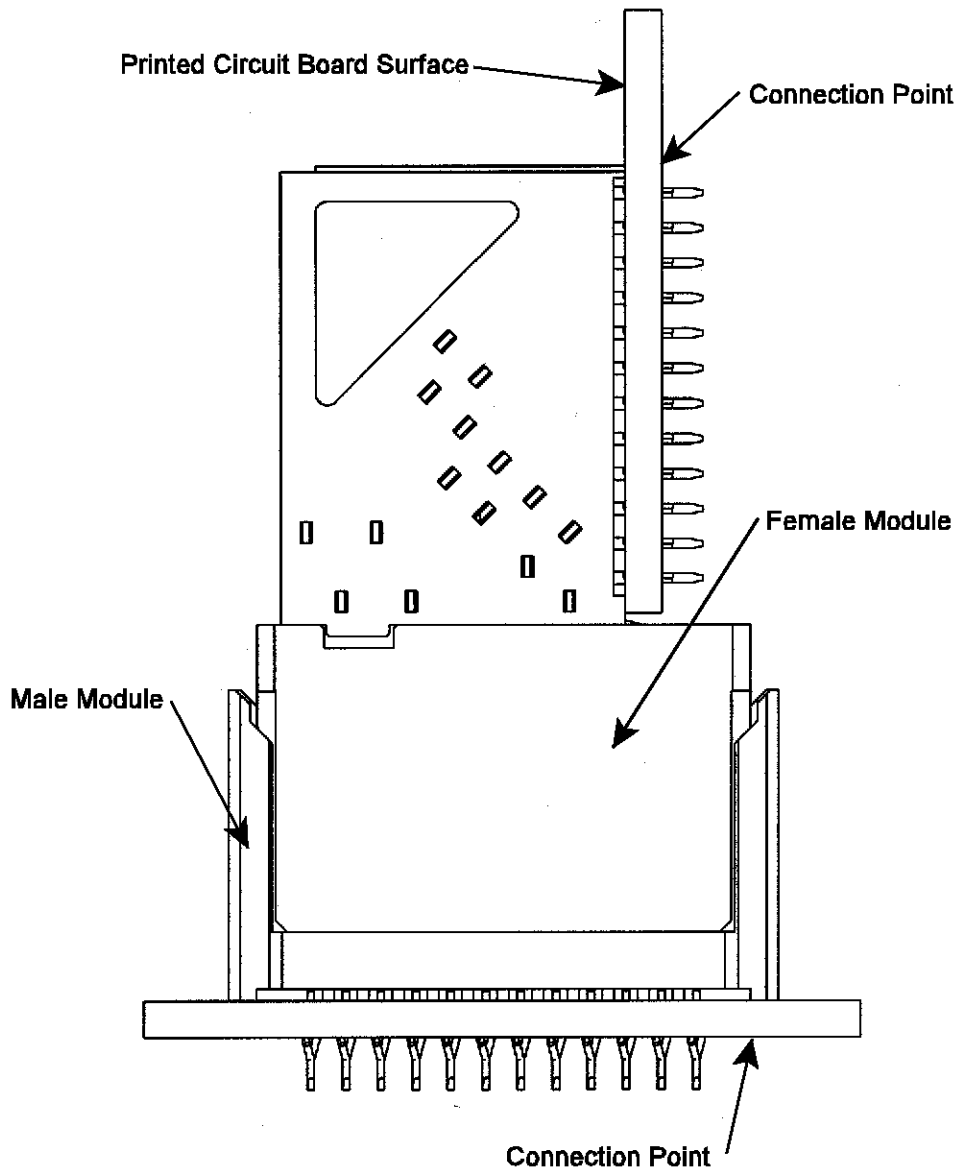


Figure 3  
Termination Resistance Measurement Points

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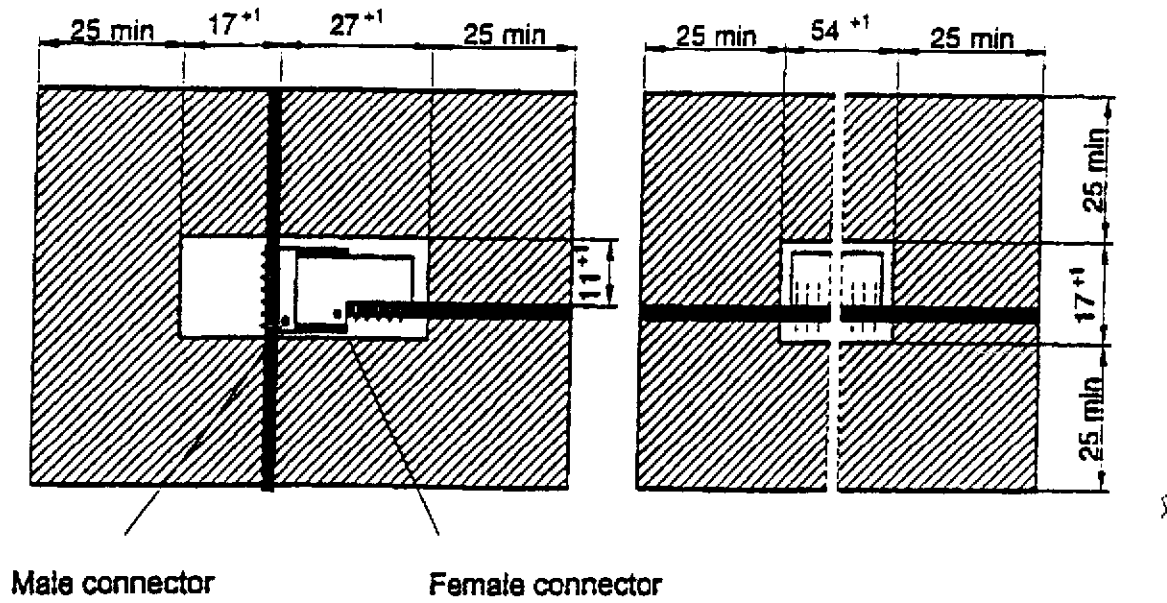


Figure 4  
Vibration & Physical Shock Mounting Fixture

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