

Connector Block, 110, PCB

1. SCOPE**1.1. Content**

This specification covers performance, tests and quality requirements for AMP* 110 style printed circuit board connecting blocks. These connecting blocks are pressed into a printed circuit board and wave soldered. 22, 24 or 26 AWG solid or stranded wire is inserted into the top of the connecting block using an AT&T or Krone style punch down tool. The IDC terminal displaces the insulation and holds the wire in place with a gas-tight connection.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in AMP 109 series specifications 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. 114-6059: Application Specification
- E. 114-6065: Application Specification
- F. 501-367: Qualification Test Report
- G. 502-1061: Engineering Report
- H. 502-1075: Engineering Report

2.2. Commercial Specification

ANSI/TIA/EIA-568-A Oct 1995, Annex A and B

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

- A. Housing: Polycarbonate, UL94V-0
- B. Terminal: Phosphor bronze, bright tin-lead over nickel plating

EC 0502-0294-97, BAB

3.3. Ratings

- A. Voltage: 150 vac
- B. Current: Signal application only
- C. Temperature: -40 to 70°C

3.4. Performance and Test Description

Product is designed to meet 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 114-6059.	Visual, dimensional and functional per applicable quality inspection plan.										
ELECTRICAL												
Termination resistance.	1 milliohm maximum initial per interface. ΔR 5 milliohms maximum per interface.	AMP 109-6-6. Subject terminated samples to 20 mv maximum open circuit at 100 ma maximum. See Figure 4.										
Insulation resistance.	100 megohms minimum.	AMP Spec 109-28-3. Test between adjacent contacts of terminated samples.										
Dielectric withstanding voltage.	1500 vac at sea level.	AMP Spec 109-29-1. Test between adjacent contacts of terminated samples.										
Near end crosstalk.	See Figure 5.	TIA/EIA 568-A 1995, Annex B, Para 10.4.4. Test 10 adjacent pairs.										
Attenuation.	See Figure 5.	TIA/EIA 568-A 1995, Annex B, Para 10.4.4. Test 10 adjacent pairs.										
Return loss.	See Figure 5.	TIA/EIA 568-A 1995, Annex B, Para 10.4.4. Test 10 adjacent pairs.										
MECHANICAL												
Termination tensile strength, horizontal.	<table><tr><td>Wire Size</td><td>Slot Tensile</td></tr><tr><td>AWG</td><td>Pounds Minimum</td></tr><tr><td>22</td><td>8</td></tr><tr><td>24</td><td>8</td></tr><tr><td>26</td><td>4</td></tr></table>	Wire Size	Slot Tensile	AWG	Pounds Minimum	22	8	24	8	26	4	AMP Spec 109-16. Determine slot tensile at a maximum rate of 1 inch per minute. Pull parallel to terminated wire. See Figure 6.
Wire Size	Slot Tensile											
AWG	Pounds Minimum											
22	8											
24	8											
26	4											

Figure 1 (cont)

Test Description	Requirement		Procedure
Termination tensile strength, vertical.	Wire Size AWG	Slot Tensile Pounds Minimum	AMP Spec 109-16. Determine slot tensile at a maximum rate of 1 inch per minute. Pull perpendicular to terminated wire. See Figure 6.
	22	1.5	
	24	1.5	
	26	1.5	
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.		AMP Spec 109-21-1. Subject terminated samples to 10-55-10 Hz traversed in 1 minute. 2 hours in each of 3 mutually perpendicular planes. See Figure 7.
Durability.	See Note.		AMP Spec 109-27. Terminate and reterminate contact for 200 cycles with 24 AWG solid conductor wire using tool PN 558418-1 set on low impact setting and blade PN 558419-1.
ENVIRONMENTAL			
Thermal shock.	See Note.		AMP Spec 109-22. Subject terminated samples to 100 cycles between -40 and 70°C with 30 minutes at each extreme.
Humidity-temperature cycling.	See Note.		AMP Spec 109-23-4, Condition C. Subject terminated samples to 21 cycles between 25 and 65°C at minimum of 90% RH with -10°C cold shock.
Temperature life.	See Note.		AMP Spec 109-43. Subject terminated samples to temperature life at 70°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	4	5	6
	Test Sequence (b)					
Examination of product	1,8	1,7	1,5	1,5	1,4	1,6
Termination resistance		2,6	2,4	2,4		5
Insulation resistance	2,6					
Dielectric withstanding voltage	3,7					
Near end crosstalk						4
Attenuation						2
Return loss						3
Termination tensile strength, horizontal & vertical					3	
Vibration				3		
Durability		3(c)				
Thermal shock	4	4			2	
Humidity-temperature cycling	5	5				
Temperature life			3			

NOTE

- (a) See Para 4.1.A.
 (b) Numbers indicate sequence in which tests are performed.
 (c) Perform 100 cycles before thermal shock, 33 cycles after 50 cycles of thermal shock, 33 cycles after 7 days of humidity-temperature cycling, and 34 cycles after 21 days of humidity-temperature cycling.

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 5 connecting blocks for each wire size specified in Figure 3.

NOTE

When testing 26 AWG wire, use stuffer cap PN 569332-1.

Test Group	Wire Size (AWG)	Board Mounted
1	24 solid 24 stranded	No
2	24 solid	Yes
3	24 solid	Yes
4	24 solid	Yes
5	26, 24, and 22 solid	No
6	24 solid	No

Figure 3
Sample Preparation

B. Test Sequence

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

4.2. Requalification Testing

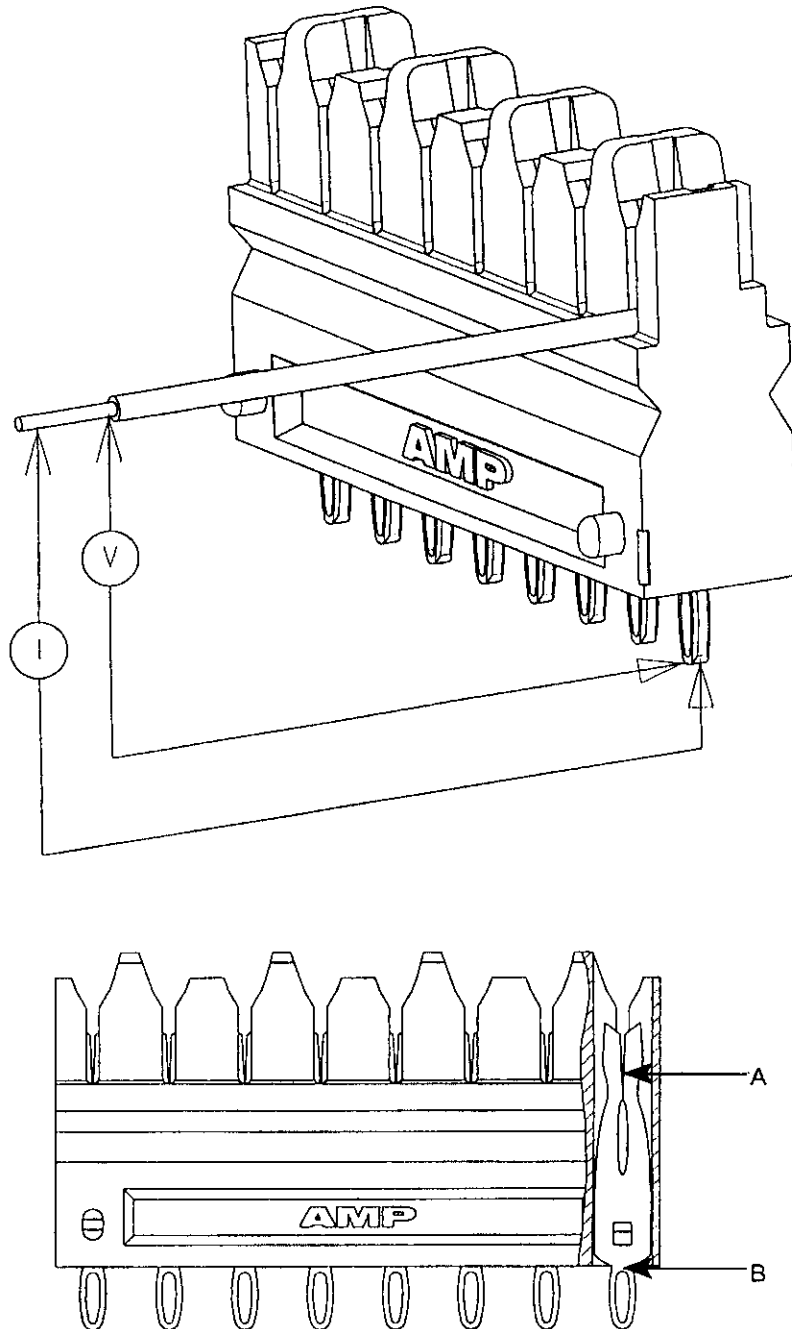
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

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**

Interface resistance is calculated by subtracting the bulk resistance of the terminal (A - >B) from the termination resistance measurement, which includes the interface at A and may include wire, which would also be subtracted out.

Figure 4
Termination Resistance Measurement Points

Frequency (MHz)	NEXT Loss (dB)	Attenuation (dB)	Return Loss (dB)
1.0	65	0.1	≥ 23
4.0	65	0.1	≥ 23
8.0	62	0.1	≥ 23
10.0	60	0.1	≥ 23
16.0	56	0.2	≥ 23
20.0	54	0.2	≥ 23
25.0	52	0.2	≥ 14
31.25	50	0.2	≥ 14
62.5	44	0.3	≥ 14
100.0	40	0.4	≥ 14

Figure 5
Category 5, 100 Ohm Twisted Pair Performance Requirements
(Per TIA/EIA-568-A, 1995)

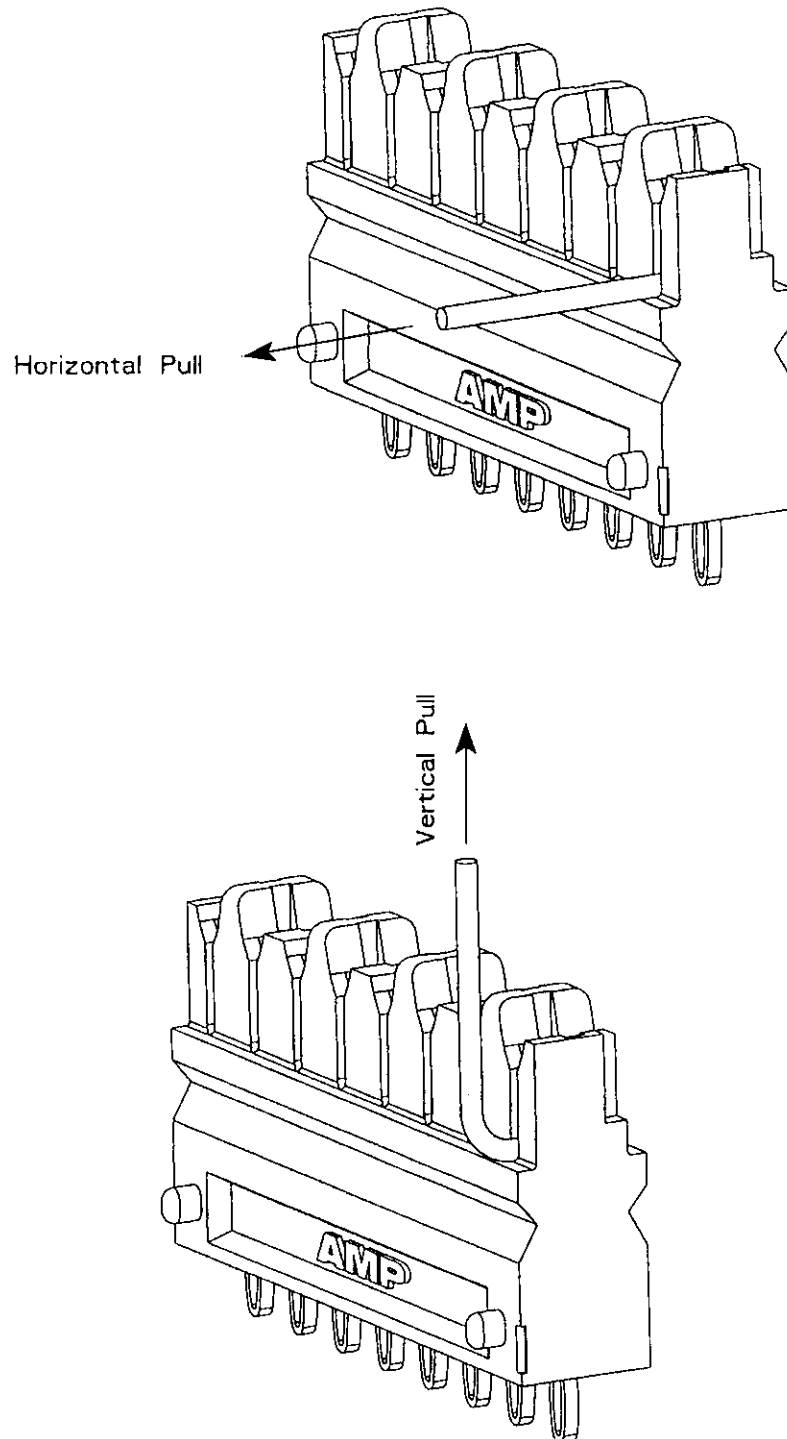


Figure 6
Termination Tensile Strength

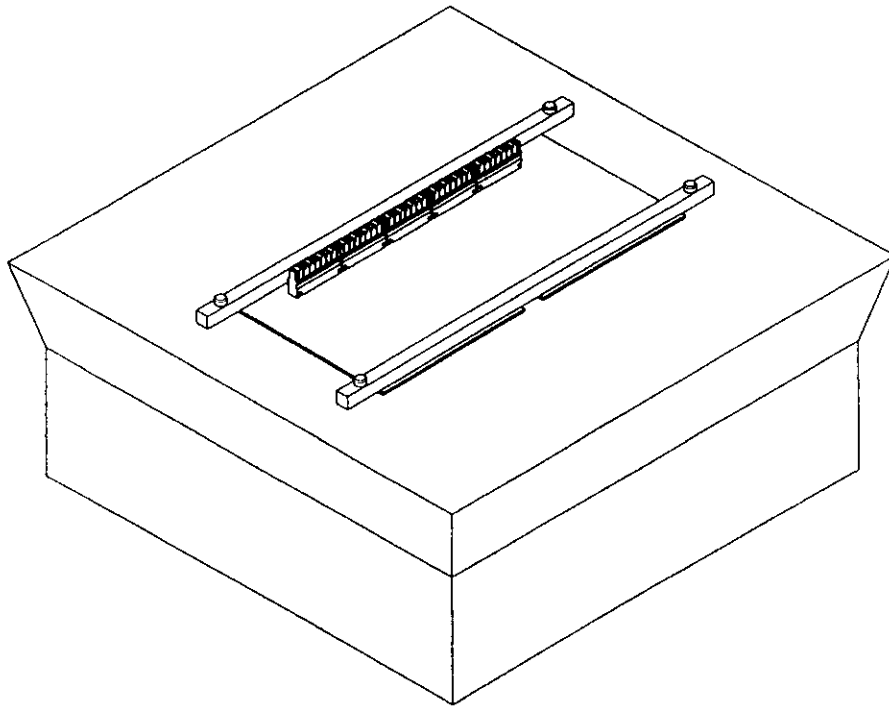


Figure 7
Vibration & Physical Shock Mounting Fixture