PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers the performance requirements for the AMP* SL 156 connector system. This system is used for wire to board interconnection and mates with .045 square or round posts.

1.2. Qualification

When tests are performed on the subject product line, the 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. 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 Specifications

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. 114-1021: Contact, SL 156, Application of

2.2. Commercial Standard

UL 498: Attachment Plugs and Receptacles

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

A. Contacts, low and high force: Brass, .012 inches thick, tin plated
B. Housings: Nylon, unreinforced, 94V-0

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C	Change per ECN	FK	7/26
	AG-473		84
B	Revised all Para	FK	3-2-81

DIST 49

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3.3. Ratings

A. Current/Voltage: 250 vac at 6.5 amperes maximum
B. Operating temperature: -55° to 105°C

3.4. Performance and Test Description

Connector assemblies shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and AMP Spec 114-1021	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination Resistance, Specified Current	Wire Size, AWG / Test Current, ampere / Resistance, milliohms max initial: 24 / 1.5 / 4.00; 22 / 3.0 / 3.75; 20 / 4.5 / 3.50; 18 / 6.0 / 3.00	Measure potential drop of connector assembly mated with .045 posts on printed circuit board, see Figure 4; AMP Spec 109-25, calculate resistance.
Termination Resistance, Dry Circuit	3.00 milliohms maximum initial.	Subject mated contacts assembled in housing to 50 mv open circuit at 100 ma maximum, see Figure 4; AMP Spec 109-6, cond A.
Dielectric Withstanding Voltage	2.0 kvac; 1 minute dielectric withstanding voltage.	Test between adjacent circuits of unmated connector assembly; AMP Spec 109-29-1.
Insulation Resistance	1000 megohms minimum initial, 100 megohms minimum final.	Test between adjacent circuits of unmated connector assembly; AMP Spec 109-28-4.
Temperature Rise vs Current (b)	Temperature rise, see Figure 3; termination resistance.	T-rise at rated current; AMP Spec 109-45.
MECHANICAL		

Figure 1 (cont)

Test Description	Requirement	Procedure
Mating Force	Force, pounds maximum Contact Type / .045 Sq / .045 Rd High Force: 4.2 / 1.75 Low Force: 1.5 / 1.25	Measure force necessary to mate connector assembly with .045 square and round posts mounted on printed circuit board; AMP Spec 109-42, calculate force per contact.
Unmating Force	Force, pounds minimum Contact Type / .045 Sq / .045 Rd High Force: 1.5 / 0.50 Low Force: 0.25 / 0.25	Measure force necessary to unmate connector assembly with .045 square and round posts mounted on printed circuit board; AMP Spec 109-42, calculate force per contact.
Contact Retention	10 pounds minimum.	Apply axial load to crimped contacts by gripping wire; AMP Spec 109-30.
Durability	Mating and unmating force; 3.50 milliohms maximum termination resistance, dry circuit.	Mate and unmate connector assemblies for 25 cycles with .045 post and printed circuit board on fixture and manually mate; AMP Spec 109-27.
Crimp Tensile	Wire Size AWG / Crimp Tensile, pounds minimum 24: 10 22: 15 20: 25 18: 35	Determine crimp tensile at a rate of 1 inch/minute; AMP Spec 109-16.
ENVIRONMENTAL		
Thermal Shock (a)	Dielectric withstanding voltage; 4.50 milliohms maximum termination resistance, dry circuit.	Subject mated connectors to 25 cycles between -55° and 85°C; AMP Spec 109-22.

(a) Connector assemblies shall remain mated and shall show no evidence of cracking or chipping.

(b) Maximum rated current that can be carried by this product is limited by maximum operating temperature of housings, which is 105°C, and temperature rise of contacts, which is 30°C. Variables which shall be considered for each application are: wire size, connector size, contact material, ambient temperature, and printed circuit board design.

Figure 1 (end)

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3.6. Connector Tests and Sequences

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Examination of Product	1					
Termination Resistance, Specified Current			1			
Termination Resistance, Dry Circuit		3,5		2,4		
Dielectric Withstanding Voltage		1,6				
Insulation Resistance		2,7				
Temperature Rise vs Current			2			
Mating Force				1		
Unmating Force				5		
Contact Retention						1
Durability				3		
Crimp Tensile					1	
Thermal Shock		4				

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test group 1 shall consist of 1 housing of each size, and 5 contacts all representative of the entire lot being tested. Test group 2 through 4 shall consist of 6 connector assemblies per group. The housings and wire sizes shall be chosen randomly to cover the range of the product line. Group 5 samples shall consist of 15 contacts per wire size. Group 6 samples shall consist of 15 contacts crimped on #18 AWG wire and tested with appropriate random housings. All contacts shall be crimped to appropriate PN 103501 and 103502 tin plated test conductors in accordance with AMP Specification 114-1021. For tests which require connector mating, .045 square or .045 round posts shall be used.

B. Test Sequence

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

C. Acceptance

(1) Requirements put on test samples, as indicated in the requirements portion of Figure 1, exist as either the upper or lower statistical tolerance limit (95% confidence, 99% reliability). All samples tested in accordance with this specification shall meet the stated tolerance limit.

(2) 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.

4.2. Quality Conformance Inspection

The applicable AMP 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.

4.3. Certification

This product has been Recognized under the Component Recognition Program of Underwriters Laboratories Inc., Electrical File Number E-28476 and certified by Canadian Standards Association File Number LR-16455.

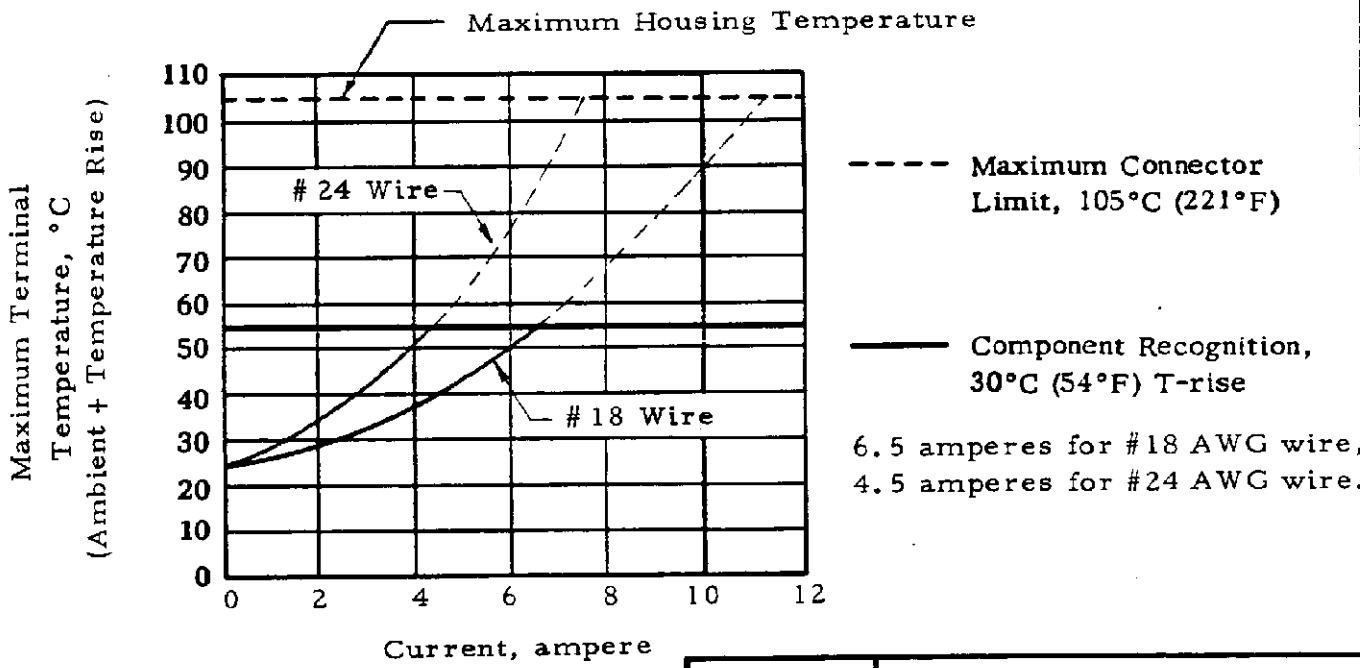

Figure 3

Terminal Temperature vs Current/Circuit, 5 Position Housing

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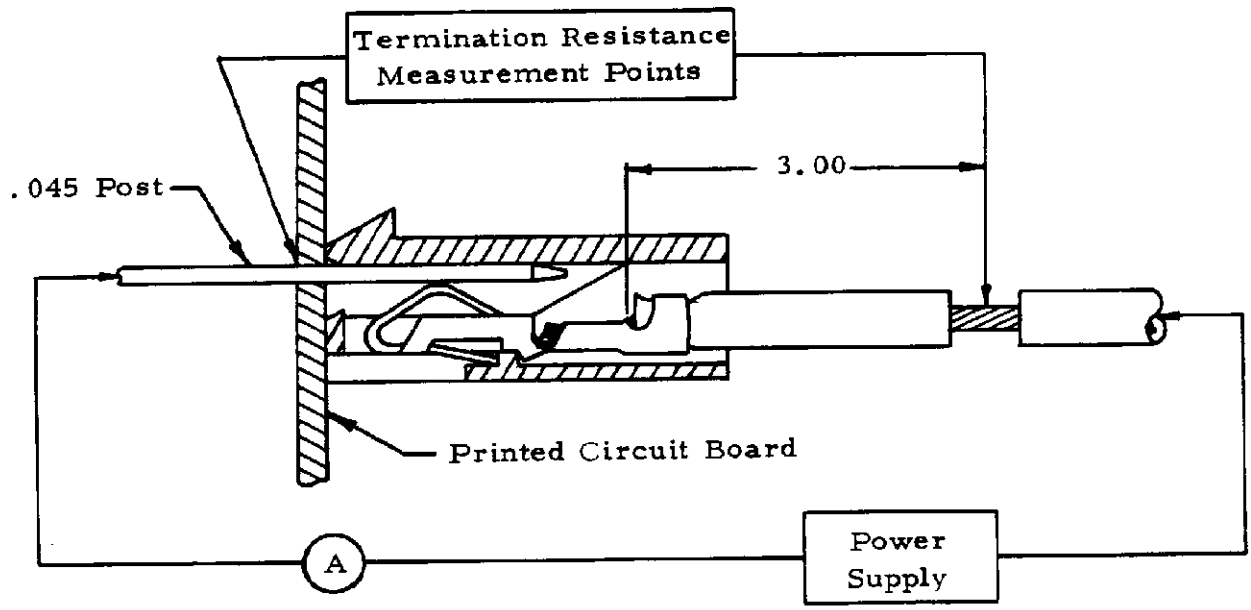

Notes:
1. A 1 ft min length of continuous lead for heat dissipation.
2. Termination resistance equals millivolts divided by test current less resistance of 3 inches of wire.
3. Printed circuit board test board is tin plated 1 ounce copper.

Figure 4

Termination Resistance Measurement Points

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