SL 156 Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) SL 156 connector system. This system is used for wire-to-board interconnection and mates with .045 inch square or round posts.

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. TE Documents

- 109-1: Test Specification (General Requirements for Test Specifications)
- 109 Series: Test Specifications as indicated in Figure 1
- 114-1021: Application Specification (SL 156 Contacts and Housings)

2.2. Reference Documents

- UL 498: Attachment Plugs and Receptacles
- 502-1305: Engineering Report (Contact Retention Testing of SL 156 Connectors Part Numbers 2132189-2 and 1-2132189-2)

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: 6.5 amperes maximum

NOTE
The maximum rated current that can be carried by this product is limited by the maximum operating temperature of the housings (105°C) and the temperature rise of the contacts (30°C). Variables which shall be considered for each application are: wire size; contact material; ambient temperature; and PCB design.

- Temperature: -55 to 105°C

3.4. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and Application Specification 114-1021.	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination resistance, specified current.	Wire Size (AWG) / Test Current (amperes) / Resistance (milliohms max initial) 24 / 1.5 / 4.00 22 / 3.0 / 3.75 20 / 4.5 / 3.50 18 / 6.0 / 3.00	TE Spec 109-25. Measure potential drop of specimen mated with .045 inch posts on PCB. Calculate resistance. See Figure 3.
Termination resistance, dry circuit.	3 milliohms maximum initial. 10 milliohms maximum final.	TE Spec 109-6, Condition A. Subject specimens to 50 millivolts open circuit voltage at 100 milliamperes maximum. See Figure 3.
Insulation resistance.	1000 megohms minimum initial. 100 megohms minimum final.	TE Spec 109-28-4. Test between adjacent circuits of unmated specimens.
Dielectric withstanding voltage.	One minute hold with no breakdown or flashover.	TE Spec 109-29-1. 2000 volts AC at sea level. Test between adjacent circuits of unmated specimens.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	TE Spec 109-45. Measure temperature rise at rated current. See Figure 4.
MECHANICAL		
Durability.	See Note.	TE Spec 109-27. Manually mate and unmate specimens with .045 inch square and round posts mounted on PCBs for 25 cycles.
Mating force.	Contact Type / Force (lbs max) .045 Sq / .045 Rd High Force / 4.2 / 1.75 Low Force / 1.5 / 1.25	TE Spec 109-42. Measure force necessary to mate specimens with .045 inch square and round posts mounted on PCBs. Calculate force per contact.
Unmating force.	Contact Type / Force (lbs min) .045 Sq / .045 Rd High Force / 0.77 / 0.50 Low Force / 0.25 / 0.25	TE Spec 109-42. Measure force necessary to unmate specimens with .045 inch square and round posts mounted on PCBs. Calculate force per contact.
Contact retention.	10 pounds minimum.	TE Spec 109-30. Apply axial load to the crimped contacts by gripping the wire.

Figure 1 cont.

Crimp tensile.	Wire Size (AWG) / Crimp Tensile (lbs min) 24 / 10 22 / 15 20 / 25 18 / 35 16 / 40	TE Spec 109-16. Determine crimp tensile at a maximum rate of 1 inch per minute.
Contact insertion force	4.05 lbf [18N] maximum per contact	EIA-364-5 Measure force necessary to insert a contact into the housing.
ENVIRONMENTAL		
Thermal shock.	See Note.	TE Spec 109-22. Subject mated specimens to 25 cycles between -55 and 85°C.

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)

3.5. Product Qualification and Requalification Test Sequence

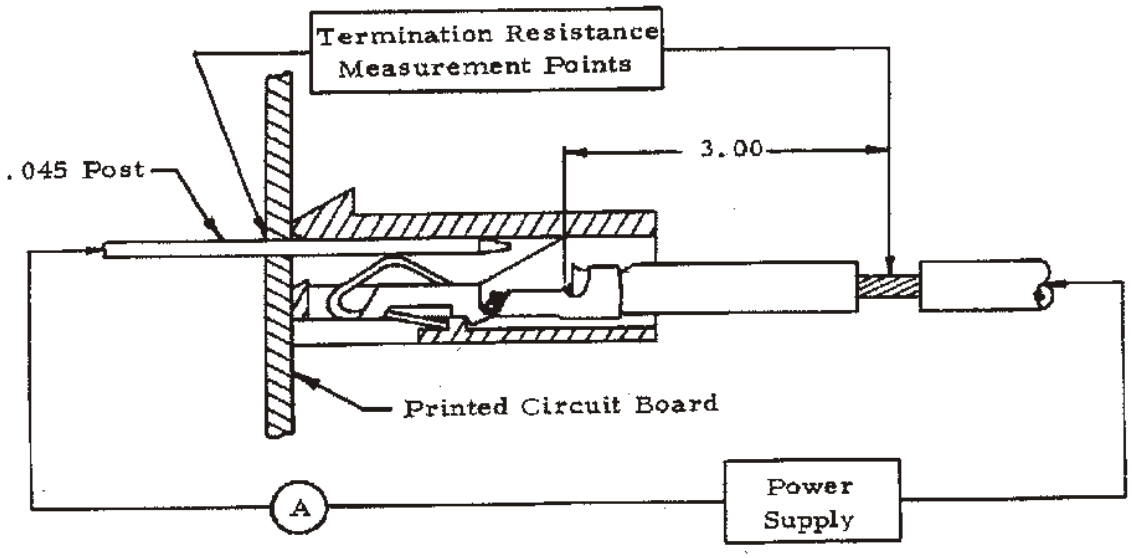
Test or Examination	Test Group (a)						
	1	2	3	4	5	6	7
	Test Sequence (b)						
Examination of product	1						1
Termination resistance,			1				
Termination resistance, dry		3,5		2,4			
Insulation resistance		2,7					
Dielectric withstanding voltage		1,6					
Temperature rise vs current			2				
Durability				3			
Mating force				1			
Unmating force				5			
Contact retention						1	
Crimp tensile					1		
Thermal shock		4					
Contact insertion force							2

NOTE

a. Specimens shall be prepared in accordance with applicable Instruction Sheets and 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 groups 2, 3 and 4 shall consist of 6 connector assemblies per group. Housing and wire sizes shall be chosen randomly to cover the range of the product line. Test group 5 shall consist of 15 contacts per wire size. Test group 6 shall consist of 15 contacts crimped on 18 AWG wire and tested with appropriate random housings. All contacts shall be crimped to appropriate part number 103501 and 103502 tin plated test conductors in accordance with Application Specification 114-1021. For tests which require connector mating, .045 inch square or round posts shall be used.

b. Numbers indicate sequence in which tests are performed.

Figure 2



NOTE

1. *A 1 foot minimum length of continuous lead for heat dissipation.*
2. *Termination resistance equals millivolts divided by test current less resistance of 3 inches of wire.*
3. *Test PCB is tin plated 1 ounce copper.*

Figure 3
Termination Resistance Measurement Points

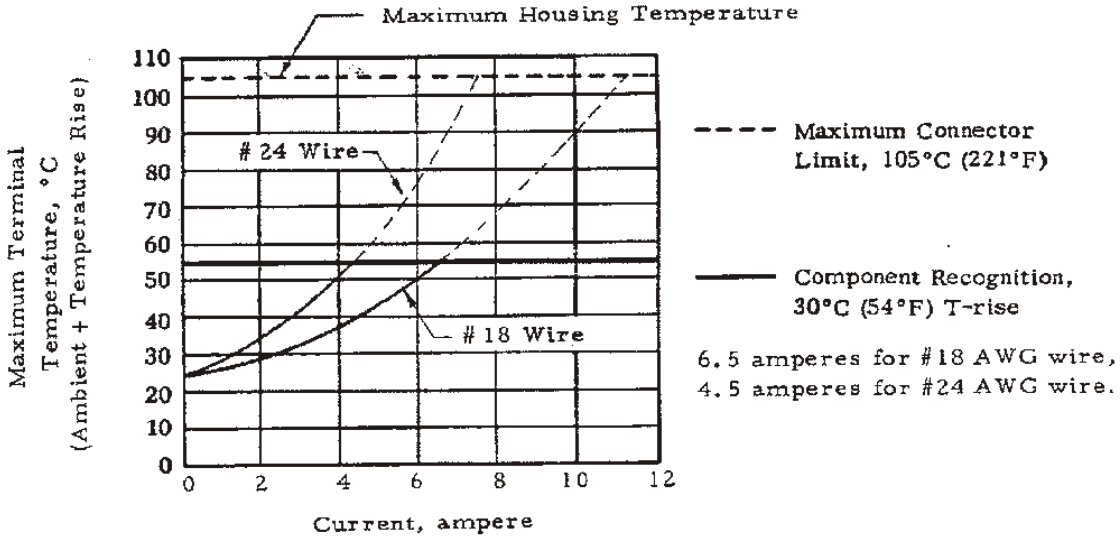


Figure 4
Terminal Temperature vs Current/Circuit, 5 Position Housing