
Commercial High Current, High Voltage, LGH* Connector

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the LGH* high voltage, high current commercial connector. This connector is designed for flash tube connections in copy machine application where size, safety, reliability and unusual power handling capabilities are critical.

1.2. Qualification

When tests are performed on the subject product line, the procedures specified in 109-Series Test 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. TE Connectivity (TE) Documents

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1.
- C. 114-1004: Application Specification
- D. 501-114: Test Report

2.2. Commercial Standard

UL 94V-0: Flammability of Plastic Materials, Test for

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. Material

- A. High voltage contact: Phosphor bronze, tin-plated
- B. Contact: Brass, tin plated, type III+
- C. Housing and strain relief: Nylon 6/6, UL94V-0

3.3. Ratings

- A. Voltage: 2500 vac rms or 3500 vdc maximum
- B. Current
 - 1. Main, 1600 amperes peak for 300 microseconds at 120 pulses per minute maximum
 - 2. Drain, 10 amperes maximum.
- C. Operating Temperature: -15° to 105°C
- D. Operating altitude: 0 - 10,000 feet
- E. Operating humidity: 10 - 85% (with no condensation)

3.4. Performance and Test Description

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient temperature unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure																		
Examination of Product	Meets requirements of product drawing and Application Specification 114-1004.	Visual, dimensional and functional per applicable quality inspection plan.																		
ELECTRICAL																				
Termination Resistance, Specified Current	<table border="1"> <thead> <tr> <th>Wire Size AWG</th> <th>Test Current Ampere</th> <th>Resistance Maximum Milliohms</th> </tr> </thead> <tbody> <tr> <td>Main</td> <td></td> <td></td> </tr> <tr> <td>10</td> <td>20</td> <td>2.0</td> </tr> <tr> <td>16</td> <td>8</td> <td>2.0</td> </tr> <tr> <td>Drain</td> <td></td> <td></td> </tr> <tr> <td>22</td> <td>5</td> <td>10.0</td> </tr> </tbody> </table>	Wire Size AWG	Test Current Ampere	Resistance Maximum Milliohms	Main			10	20	2.0	16	8	2.0	Drain			22	5	10.0	Measure potential drop of mated contacts assembled in housing, see Figure 4; Test Specification 109-25, calculate resistance.
Wire Size AWG	Test Current Ampere	Resistance Maximum Milliohms																		
Main																				
10	20	2.0																		
16	8	2.0																		
Drain																				
22	5	10.0																		
Dielectric Withstanding Voltage	8 kvdc dielectric withstanding voltage, one minute hold. 12 micro-amperes maximum leakage current, 0-10,000 feet.	Test between adjacent main contacts of mated connector assemblies; Test Specification 109-29-1.																		
Insulation Resistance	5000 megohms minimum initial. 1000 megohms minimum after test.	Test between adjacent contacts of mated connector assembly; Test Specification 109-28-4, cond D.																		
High Voltage Soak	Termination resistance, specified current; insulation resistance; dielectric withstanding voltage.	Continuously operate, 1 main line at 2500 vac (rms) 60 Hz with the other main and drain line grounded, for 250 hours.																		
MECHANICAL																				
Vibration (a)	No discontinuities greater than 10 microseconds.	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at .06 inch total excursion; 2 hours in each of 3 mutually perpendicular planes; Test Specification 109-21-1.																		
Physical Shock (a)	No discontinuities greater than 10 microseconds.	Subject mated connector to 50 G's sawtooth in 11 milliseconds; 3 shocks in each direction applied along the 3 mutually perpendicular planes total 18 shocks; Test Specification 109-26-7.																		
Mating Force	31 pounds maximum Initial force per contact.	Measure force necessary initial force per contact. to mate connector assembly with locking latches removed, incorporating free floating fixtures at a rate of .5 inch/minute; Test Specification 109-42, cond A.																		

Figure 1 (continued)

Test Description	Requirement	Procedure
Unmating Force	5 pounds minimum Final force per contact	Measure force necessary to unmate connector assembly with locking latches removed, at a rate of .5 inch/minute; Test Specification 109-42, cond A
Contact Retention	Contact shall not dislodge from the housing.	Apply axial load of 40 pounds to the main and 10 pounds to drain contacts; Test Specification 109-30 except grip wire.
Durability	Mating-unmating forces; final termination resistance, specified current.	Mate and unmate connector assemblies for 50 cycles; Test Specification 109-27.
Housing Panel Retention	40 pounds minimum	Measure panel retention force using nominal panel cutout dimensions as specified in the AMP Customer drawing; Test Specification 109-49.
Housing Lock Strength	17 pounds minimum	Determine strength of housing locking mechanism; Test Specification 109-50.
ENVIRONMENTAL		
Thermal Shock (a)	Dielectric Withstanding voltage; final termination resistance, specified current.	Subject mated connectors to 25 cycles between -55 and 85°C; Test Specification 109-22.
Humidity-Temperature Cycling	Final termination resistance, specified current, dielectric withstanding voltage	Subject mated connectors to 10 humidity-temperature cycles between 25 and 65°C at 95% RH; Test Specification 109-23, method III, cond B, with low frequency vibration and cold shock at -10°C.

NOTE

Shall remain mated and show no evidence of damage, cracking or chipping.

Figure 1 (end)

3.6. Connector Test and Sequence

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Examination of Product	1, 10	1, 10	1	1, 5
Termination Resistance, Specified Current	3, 7	2, 9	2, 6	
Dielectric Withstanding Voltage	9	4, 8	3, 7	
Insulation Resistance		3, 7	4, 8	
High Voltage Soak			5	
Vibration	5			
Physical Shock	6			
Mating Force	2			
Unmating Force	8			
Contact Retention				3
Durability	4			
Housing Panel Retention				2
Housing Lock Strength				4
Thermal Shock		5		
Humidity-Temperature Cycling		6		

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

Figure 2

3.7. Retention of Qualification

Test Examination	Test Group (a)	
	1	2
	Test Sequence (b)	
Examination of Product	1, 8	1, 7
Termination Resistance, Specified Current		3, 6
Dielectric Withstanding Voltage	3, 7	
Insulation Resistance	2, 6	
Mating Force		2
Unmating Force		4
Thermal Shock	4	
Humidity-Temperature Cycling	5	5 (c)

NOTE (a) See Para 4.1.A
 (b) Numbers indicate sequence in which tests are performed
 (c) Precondition with 10 cycles durability

Figure 3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connector housing and contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test groups 1 thru 4 shall consist of 5 mated connectors in each group with the 10 contacts crimped to # 10 AWG wire and 10 contacts crimped to # 16 AWG wire. The 20 drain wire shall be crimped to # 20 AWG wire. All contacts shall be crimped to appropriate test conductors in accordance with Application Specification 114-1004.

B. Test Sequence

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

4.2. Retention of Qualification

If, in a five-year period, no changes to the product or process occur, the product shall be subjected to the two groups of the testing described in the test sequence, see Figure 3. Justification for exceeding this time limit must be documented and approved by the division manager.

4.3. Requalification Testing

If changes significantly affecting form, fit, or function are made to the product or to the 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.

4.4. 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.

4.5. Quality Conformance Inspection

The applicable quality 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.

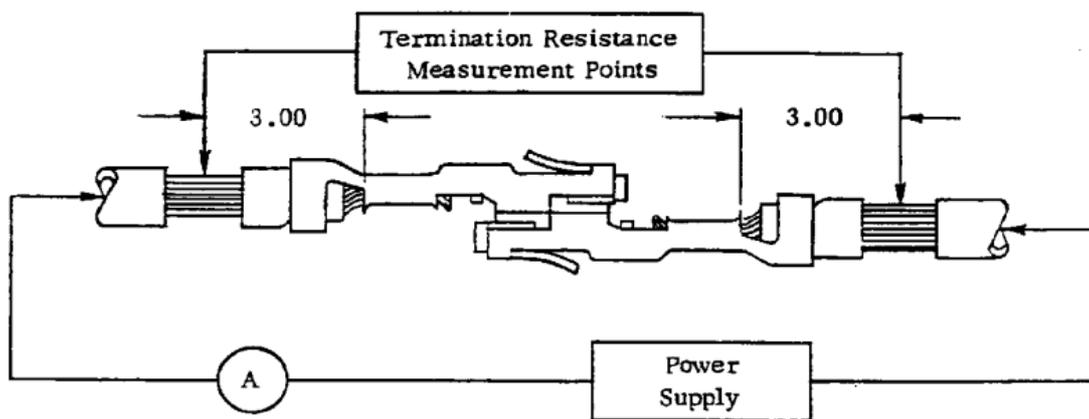


Figure 4
Resistance and Temperature Measurement Points