
Connector, .125 Inch AMPLIVAR* Blade & Receptacle

1. SCOPE**1.1. Content**

This specification covers performance, tests and quality requirements for the .125 inch AMPLIVAR* blade and receptacle connector. The AMPLIVAR blade contacts are designed for use on unstripped magnet wire while the receptacles are designed for use on stripped stranded, fused stranded, or solid wire.

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.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 24Oct97. The test file number for this testing is CTL 1192-000-002. This documentation is on file at and available from the Americas Regional Test Laboratory.

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. 114-2145: Application Specification
- E. 501-401: 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.

3.2. Materials

- A. Contact: Brass, tin plated
- B. Housing: 6/66 nylon, UL94V-0

3.3. Ratings

- A. Voltage: 300 vac
- B. Current: See Figure 4 for applicable current carrying capability
- C. Temperature: -40 to 105°C

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 114-2145.	Visual, dimensional and functional per applicable quality inspection plan.	
ELECTRICAL			
Termination resistance.	ΔR 5 milliohms maximum increase final.	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.	1000 megohms minimum.	AMP Spec 109-28-4. Test between adjacent contacts of mated samples.	
Dielectric withstanding voltage.	2200 vac at sea level. 1 minute hold with no breakdown or flashover.	AMP Spec 109-29-1. Test between adjacent contacts of mated samples.	
Temperature rise vs current.	30°C maximum temperature rise at specified current.	AMP Spec 109-45-1. Measure temperature rise vs current. See Figure 4.	
Current cycling.	See Note.	AMP Spec 109-51. Subject mated contacts to 500 cycles at 200% rated current for 45 minutes ON and 15 minutes OFF.	
MECHANICAL			
Crimp tensile.	Magnet Wire Size	Pounds [N] Minimum	
	(copper) AWG		
	14		50
	19		15
	22		8
	25	4	
	28	2	
		AMP Spec 109-16. Determine crimp tensile at a maximum rate of 1 inch per minute.	

Figure 1 (cont)

Test Description	Requirement	Procedure
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-21-1. Subject mated samples to 10-55-10 Hz traversed in 1 minute with .06 inch maximum excursion. 2 hours in each of 2 mutually perpendicular planes.
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	AMP Spec 109-26-7. Subject mated samples to 50 G's sawtooth shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	AMP Spec 109-27. Mate and unmate samples for 5 cycles at a maximum rate of 300 cycles per hour.
Contact retention.	10 pounds [44.5 N] minimum. Contacts shall not dislodge.	AMP Spec 109-30. Apply axial load to contacts by pulling on wire.
Contact insertion force.	2 pounds [8.9 N] maximum per contact.	AMP Spec 109-41. Measure force necessary to insert contact into housing.
Mating force.	28 pounds [124.5 N] maximum.	AMP Spec 109-42, Condition A. Measure force necessary to mate fully loaded samples at a maximum rate of .5 inch per minute.
Unmating force.	3 pounds [13.3 N] minimum.	AMP Spec 109-42, Condition A. Measure force necessary to unmate fully loaded samples at a maximum rate of .5 inch per minute.
Housing lock strength.	25 pounds [111.2 N] minimum.	AMP Spec 109-50. Determine housing lock strength at a maximum rate of 1 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	AMP Spec 109-22. Subject mated samples to 25 cycles between -40 and 105°C.

Figure 1 (cont)

Test Description	Requirement	Procedure
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 105°C for 580 hours.

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(b)	4	5	6	7
	Test Sequence (c)						
Examination of product	1,9	1,10	1,8	1,3	1,4	1,5	1,3
Termination resistance	3,7	2,8				2,4	
Insulation resistance			2,6				
Dielectric withstanding voltage			3,7				
Temperature rise vs current		3,9					
Current cycling						3	
Crimp tensile							2
Vibration	5	7(d)					
Mechanical shock	6						
Durability	4						
Contact retention					3		
Contact insertion force.					2		
Mating force	2						
Unmating force	8						
Housing lock strength				2			
Thermal shock		4(e)	4				
Humidity-temperature cycling		6	5				
Temperature life		5					

NOTE

- (a) See Para 4.1.A.
- (b) Test group 3 applies only to product with an insulating system.
- (c) Numbers indicate sequence in which tests are performed.
- (d) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per AMP Specification 109-151.
- (e) Precondition samples with 3 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. Test group 1 shall consist of 7 pairs of housings fully loaded with receptacles crimped on 18 AWG stranded wire and blades crimped on the minimum size magnet wire for each size terminal. Test group 2 shall consist of 8 pairs of housings fully loaded with receptacles crimped on 18 AWG stranded wire and blades crimped on the maximum and minimum size magnet wire for each size terminal. Test groups 3 and 5 shall each consist of 7 pairs of housings fully loaded with receptacles crimped on 18 AWG stranded wire and blades crimped on the maximum size magnet wire on the maximum size terminal. Test group 4 shall consist of 10 pairs of housings without contacts. Test group 6 shall consist of 7 pairs of housings fully loaded with receptacles crimped on 18 AWG stranded wire and blades crimped on the maximum size magnet wire for each size terminal. Test group 7 shall consist of 30 blade terminals crimped on each of the maximum and minimum size magnet wire for each size terminal.

B. Test Sequence

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

4.2. Requalification Testing

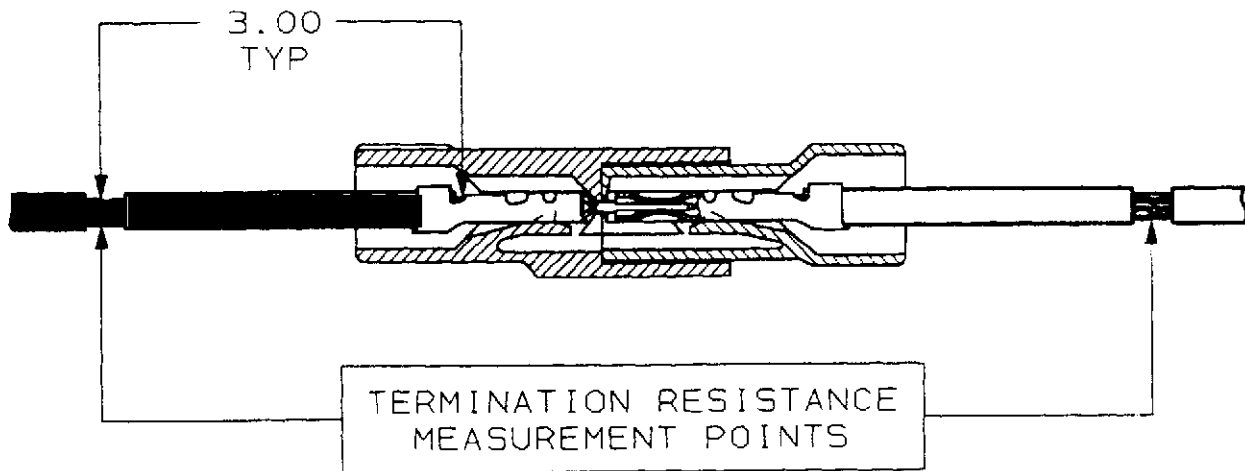
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

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.



NOTE

Termination resistance equals total resistance less resistance in 3 inches of magnet wire and 3 inches of stranded lead wire.

Figure 3
Termination Resistance Measurement Points

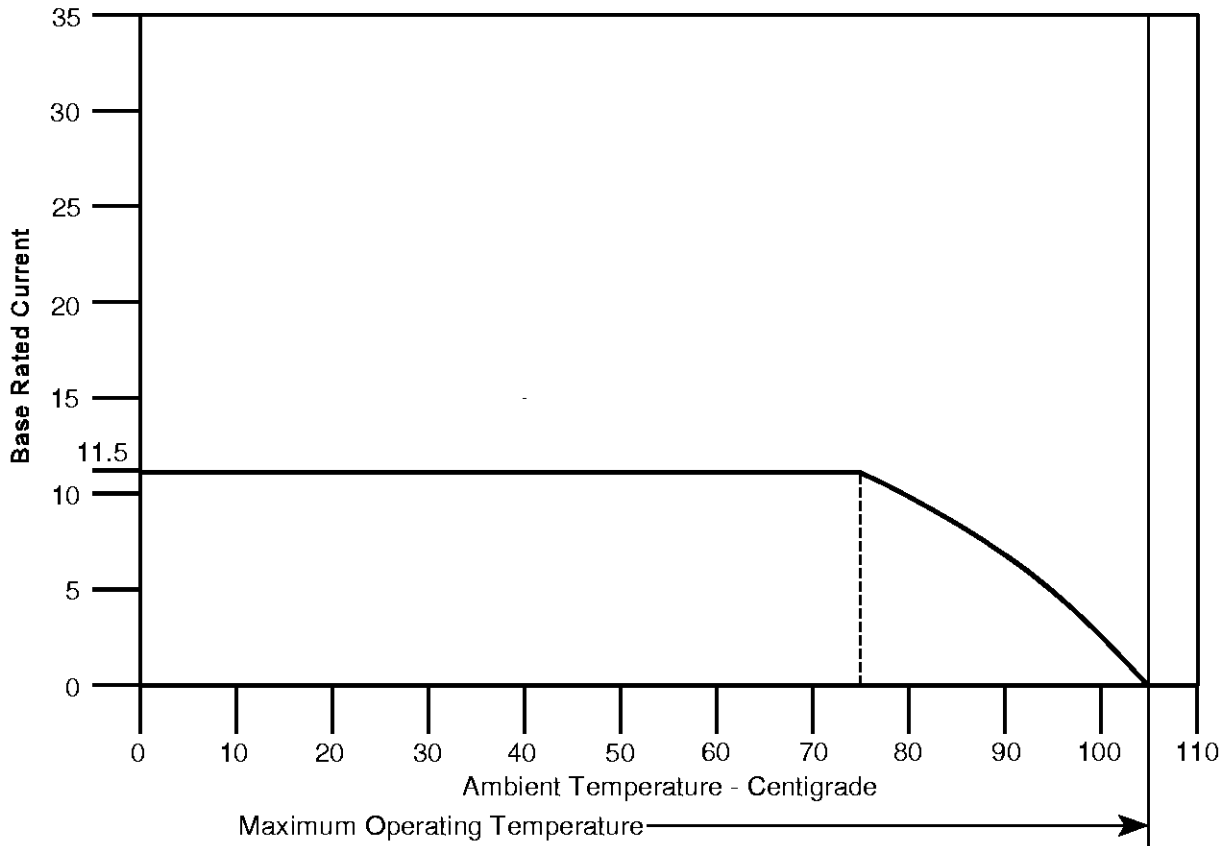


Figure 4A
Current Carrying Capability

Percent Connector Loading	Wire Size AWG				
	28	25	22	19	14
Single Contact	.41	.52	.62	.75	1
50	.39	.50	.60	.72	.96
100	.33	.41	.49	.61	.79

NOTE

To determine acceptable current carrying capacity for percentage connector loading and wire gage indicated, use the Multiplication Factor (F) from the above chart and multiply it times the Base rated Current for a single circuit at the maximum ambient operating temperature shown in Figure 4A.

Figure 4B
Current Rating