



QUALIFICATION TEST REPORT

CONNECTOR, AMPLIMITE®
.050 SERIES, .025 INCH CENTERLINE

501-286

Rev. 0

Product Specification: 108-1359 Rev. 0
CTL No.: CTL1135-019-003
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Corporate Test Laboratory Harrisburg, Pennsylvania

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Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMP* .050 Series, .025" Centerline AMPLIMITE Connectors to determine their conformance to the requirements of AMP Product Specification 108-1359 Rev. O.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the .050 Series, .025" Centerline AMPLIMITE Connectors manufactured by the Interconnection Components & Assemblies Products Division of the Capital Goods Business Unit. The testing was performed between September 26, 1994 and December 21, 1994.

1.3 Conclusion

The .050 Series, .025" Centerline AMPLIMITE Connectors meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-1359 Rev. O.

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1.4 Product Description

The AMPLIMITE .050 series connector consists of panel mount connectors and unshielded connectors for termination to .025 inch centerline ribbon cable. The contacts are phosphor-bronze. The housing material is black LCP.

1.5 Test Samples

The test samples were randomly selected from normal current production lots, and the following part numbers were used for test:

<u>Test Group</u>	<u>Quantity</u>	<u>Part Nbr</u>	<u>Description</u>
1,2,3,4,5,6	5 ea	786090-7	68 Position Plastic Plug
1,2,3,4,5,6	5 ea	786103-7	68 Position Panel Mount Recept.

1.6 Qualification Test Sequence

Test or Examination	Test Groups					
	1	2	3	4	5	6
Examination of Product	1,9	1,5	1,6	1,5	1,8	1,3
Termination Resistance, Dry Circuit	3,7	2,4	2,5	2,4		
Dielectric Withstanding Voltage					3,7	
Insulation Resistance					2,6	
Capacitance						2
Vibration	5					
Physical Shock	6					
Mating Force	2					
Unmating Force	8					
Durability	4					
Thermal Shock			3		4	
Humidity-Temperature Cycling			4		5	
Mixed Flowing Gas				3		
Temperature Life		3				

The numbers indicate sequence in which tests were performed.

2. Summary of Testing

2.1 Examination of Product - All Groups

All samples submitted for testing were selected from normal current production lots. They were inspected and accepted by the Product Assurance Department of the Capital Goods Business Unit.

2.1 Termination Resistance, Dry Circuit - Groups 1,2,3,4

All termination resistance measurements, taken at 100 milliamperes DC and 50 millivolts open circuit voltage were less than 50 milliohms.

Test Group	Nbr of Data points	Condition	Min	Max	Mean
1	340	Initial	7.61	14.39	8.652
		After Mechanical	8.00	28.26	10.675
2	340	Initial	7.39	16.12	8.327
		After Temp Life	7.63	17.89	8.874
3	340	Initial	7.55	13.04	8.272
		After Humidity	7.77	41.53	9.622
4	340	Initial	7.31	12.20	8.132
		After Mixed Gas	7.50	11.02	9.752

All values in milliohms

2.3 Dielectric Withstanding Voltage - Group 5

No dielectric breakdown or flashover occurred when a test voltage was applied between adjacent contacts.

2.4 Insulation Resistance - Group 5

All insulation resistance measurements were greater than 1,000 megohms.

2.5 Capacitance - Group 6

All capacitance measurements were less than 3 picofarads.

2.6 Vibration - Group 1

No discontinuities of the contacts were detected during vibration. Following vibration, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.7 Physical Shock - Group 1

No discontinuities of the contacts were detected during physical shock. Following physical shock testing, no cracks, breaks, or loose parts on the connector assemblies were visible.

2.8 Mating Force - Group 1

All mating force measurements were less than 24 pounds for a 68 position connector assembly.

2.9 Unmating Force - Group 1

All unmating force measurements were greater than 5 pounds for a 68 position connector assembly.

2.10 Durability - Group 1

No physical damage occurred to the samples as a result of mating and unmating the connector 500 times.

2.11 Thermal Shock - Groups 3,5

No evidence of physical damage to either the contacts or the connector was visible as a result of thermal shock.

2.12 Humidity-Temperature Cycling - Groups 3,5

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to humidity-temperature cycling.

2.13 Mixed Flowing Gas - Group 4

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to the pollutants of mixed flowing gas.

2.14 Temperature Life - Group 2

No evidence of physical damage to either the contacts or the connector was visible as a result of exposure to an elevated temperature.

3. Test Methods

3.1 Examination of Product

Product drawings and inspection plans were used to examine the samples. They were examined visually and functionally.

3.2 Termination Resistance, Low Level

Termination resistance measurements at low level current were made using a four terminal measuring technique (Figure 1). The test current was maintained at 100 milliamperes DC with an open circuit voltage of 50 millivolts DC.

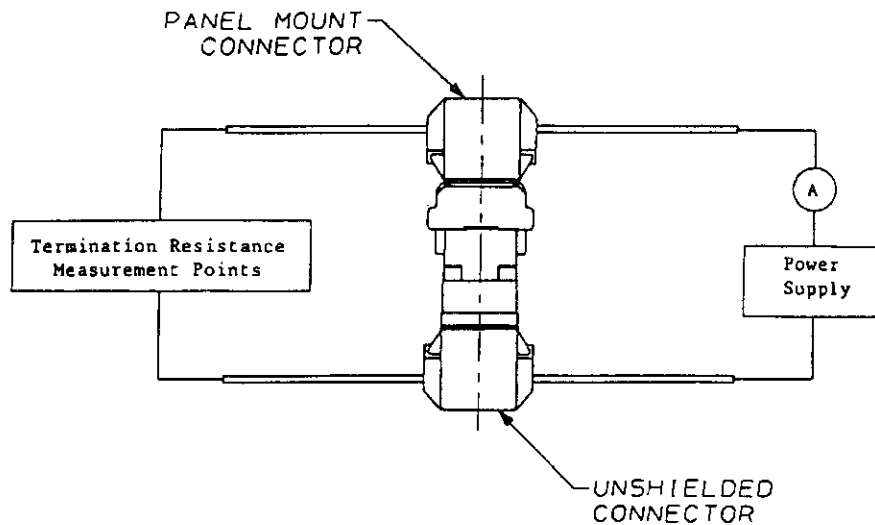


Figure 1
Typical Termination Resistance Measurement Points

3.3 Dielectric Withstanding Voltage

A test potential of 250 vac was applied between the adjacent contacts. This potential was applied for one minute and then returned to zero.

3.4 Insulation Resistance

Insulation resistance was measured between adjacent contacts, using a test voltage of 100 volts DC. This voltage was applied for two minutes before the resistance was measured.

3.5 Capacitance

Capacitance was measured between the adjacent contacts of mated connectors, using a test frequency of 1.0 MHz.

3.6 Vibration, Random

Mated connectors were subjected to a random vibration test, specified by a random vibration spectrum, with excitation frequency bounds of 50 and 2000 hertz. The power spectral density at 50 hz is $0.005 \text{ G}^2/\text{Hz}$. The spectrum slopes up at 6 dB per octave to a PSD of $0.02 \text{ G}^2/\text{Hz}$ at 100 Hz. The spectrum is flat at $0.02 \text{ G}^2/\text{Hz}$ from 100 to 1000 Hz. The spectrum slopes down at 6 dB per octave to the upper bound frequency of 2000 Hz, at which the PSD is $0.005 \text{ G}^2/\text{Hz}$. The root-mean square amplitude of the excitation was 5.35 GRMS. Connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.7 Physical Shock

Mated connectors were subjected to a physical shock test, having a half-sine waveform of 50 gravity units (g peak) and a duration of 11 milliseconds. Three shocks in each direction were applied along the three mutually perpendicular planes, for a total of 18 shocks. The connectors were monitored for discontinuities greater than one microsecond, using a current of 100 milliamperes in the monitoring circuit.

3.8 Mating Force

The force required to mate individual connectors was measured, using a free floating fixture with the rate of travel at 1.0 inch/minute.

3.9 Unmating Force

The force required to unmate individual connectors was measured using a free floating fixture with the rate of travel at 1.0 inch/minute.

3.10 Durability

Connectors were mated and unmated 500 times at a rate not exceeding 800 per hour.

3.11 Thermal Shock

Mated connectors were subjected to 25 cycles of temperature extremes with each cycle consisting of 30 minutes at each temperature. The temperature extremes were -55°C and 105°C. The transition between temperatures was less than one minute.

3.11 Humidity-Temperature Cycling

Unmated connectors were exposed to 10 cycles of humidity-temperature cycling. Each cycle lasted 24 hours and consisted of cycling the temperature between 25°C and 65°C twice while the relative humidity was held at 95%.

3.12 Mixed Flowing Gas, Class III

Mated connectors were exposed for 20 days to a mixed flowing gas Class III exposure. Class III exposure is defined as a temperature of 30°C and a relative humidity of 75% with the pollutants of C₁ at 20 ppb, NO₂ at 200 ppb, and H₂S at 100 ppb. Samples were preconditioned with 10 cycles of durability.

3.13 Temperature Life

Mated connectors were exposed to a temperature of 105°C for 500 hours. Samples were preconditioned with 10 cycles of durability.

4. Validation

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 12/21/94


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