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Product Qualification Test Report
AMPMODU* Mod IV Pin Contacts

AMP Product Specification 108-25019, Revision 0

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CORPORATE TEST LABORATORY

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Table of Contents

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CORPORATE TEST LABORATORY

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Product Qualification Test Report for
AMPMODU Mod IV Pin Contacts

1. Introduction

1.1 Purpose

The purpose of testing was to determine if AMPMODU Mod IV Pin Contacts conform to AMP Product Specification 108-25019, Revision 0.

1.2 Scope

This report covers electrical and mechanical performance of the subject product. The test samples were provided by the Circuit Components Division of the Interconnection and Component Products Group. Testing was performed between December 22, 1983 and March 27, 1984.

1.3 Conclusion

The AMPMODU Mod IV Pin Contacts conform to the performance requirements of the product specification.

1.4 Product Description

AMPMODU Mod IV Pin Contacts are crimped to round wire and inserted into a flame retardant housing. Each pin contact is designed to be mated with any of the AMPMODU systems which utilizes receptacle contacts that mate with a 0.025 inch square post. The pin contacts could be crimped to any round wire having a range of AWG 22 through AWG 26. The crimped contacts could be fitted into insulator housings having 0.100, 0.125, or 0.150 inch contact centers. The finished assemblies constitute a miniature system called AMPMODU Mod IV Male Interconnection System. This system could be mated with either AMPMODU Mod II, Mod IV, or mass terminated (MT) connector systems.

The pin contacts are made of phosphor bronze, and the mating surfaces are plated with either tin or gold. The pin contacts are rated for a maximum current of 3 amperes at an operating temperature of -65°C to +105°C.

1.5 Test Samples

Test Group[a]	Quantity	AMP Part Number	Product Name	Wire Size (AWG)
1	40	102095-2	Pin Contact	22
1	40	87666-5	Receptacle[b]	22
2	30	102095-2	Pin Contact	22
2	30	87666-5	Receptacle[b]	22
2	30	102095-2	Pin Contact	24
2	30	87666-5	Receptacle[b]	22
2	30	102095-2	Pin Contact	26
2	30	87666-5	Receptacle[b]	22
2	30	102095-4	Pin Contact	22
2	30	87666-3	Receptacle[c]	22
2	30	102095-4	Pin Contact	24
2	30	87666-3	Receptacle[c]	22
2	30	102095-4	Pin Contact	26
2	30	87666-3	Receptacle[c]	22

(a) When required, mated connector assemblies in Test Group 1 were inserted into a 40-position housing (AMP Part Number 3-87456-6).

(b) These Receptacles were used, when required, to mate with Pin Contact Part Number 102095-2 and were not tested for qualification.

(c) These Receptacles were used, when required, to mate with Pin Contact Part Number 102095-4, and were not tested for qualification.

1.6 Qualification Test Sequence

The test samples were divided into two groups. Each group was tested independently and in accordance with the following sequence:

Paragraph	Test or Examination	Test Group	
		1	2
		Test Sequence (a)	
2.1	Examination of Product	1	1
2.2	Dielectric Withstanding Voltage	3,6	
2.3	Insulation Resistance	2,5	
2.4	Crimp Resistance		2,4
2.5	Current Cycling		3
2.6	Contact Retention	7	
2.7	Crimp Tensile		5
2.8	Thermal Shock	4	

(a) Numbers indicate sequence in which tests were performed.

2. Summary of Testing

2.1 Examination of Product

All test samples were visually, dimensionally, and functionally examined per applicable inspection plan.

2.2 Dielectric Withstanding Voltage

The pin contacts were inserted into an appropriate housing and were unmated. Then, 10 randomly selected adjacent and opposite contact positions were subjected to the voltages and altitudes listed below:

Test Voltage (Volts rms)	Altitude (Ft.)
750	Sea Level
300	50,000
275	70,000

The rate of voltage rise was 500 volts rms per second at 60 Hz frequency and held at the specified voltage for one minute, then returned to zero.

2.3 Insulation Resistance

The pin contacts were inserted into an appropriate housing and were unmated. A dc potential of 500 volts was applied between 10 randomly selected adjacent and opposite contact positions. The insulation resistance between the adjacent contacts was measured and recorded.

2.4 Crimp Resistance

The pin contacts were mated and connected to a dc power supply, as shown in Figure 1. The crimp potential drop was measured between two points as follows: One point was taken on the contact just ahead of the wire barrel. The other point was taken on the conductor 0.38 inch behind the insulation support. The following test currents were used to measure the potential drop of the mated contacts:

Wire Size (AWG)	DC Test Current (Amperes)
26	2.0
24	3.0
22	3.0

After the temperature of wire had been stabilized, the crimp potential drop was measured. Subsequently, the crimp resistance for each pin contact was calculated.

2.5 Current Cycling

The pin contacts were mated and subjected to 50 cycles of current cycling tests. Each cycle consisted of applying a dc current of 3.75 amperes for 30 minutes and turning it off for 15 minutes. Upon completion of current cycling tests, the pin contacts were tested for crimp resistance in accordance with paragraph 2.4.

2.6 Contact Retention

The unmated contacts were inserted in a housing. The housing was secured in air jaws so as to insure axial alignment of the contacts with the gripping jaws. A five-pound load was applied to each wire for a minimum of five seconds. Following the test, the contacts were inspected to determine if they remained seated in the housing.

2.7 Crimp Tensile

The unmated crimped contacts were placed in the test fixture of a tensile testing machine. Each wire crimped to a contact was pulled at a rate of one inch per minute. The tensile testing machine was activated so that the force necessary to separate the wire from the contact could be recorded. The samples were then examined to see if any wire had been pulled out of the contact.

2.8 Thermal Shock

The pin contacts were mated and subjected to five cycles of thermal shock. Each cycle consisted of exposing the connectors to -65°C temperature for 30 minutes followed by +105°C temperature for another 30 minutes. The transition time between the two temperature extremes was less than 15 seconds.

Upon completion of the test, the samples were tested for insulation resistance per paragraph 2.3. The samples were then checked for dielectric withstanding voltage per paragraph 2.2.

3. Test Results

3.1 Examination of Product-Both Groups

All of the samples from both groups conformed to the requirements of the product drawing.

3.2 Dielectric Withstanding Voltage-Group 1 Only

All samples completed a one-minute exposure to the specified voltages and altitudes, without any flashover or breakdown.

3.3 Insulation Resistance-Group 1 Only

The minimum insulation resistance of the pin contacts following each specified environment is as follows:

Minimum Insulation Resistance in Megohms

Environment	Measured	Specified
Initial	$2.5X10^8$	$5.0X10^3$
Thermal Shock	$1.0X10^7$	$5.0X10^3$

3.4 Crimp Resistance-Group 2 Only

The maximum crimp resistance of the pin contacts were as follows:

Maximum Crimp Resistance in Milliohms
AMP Part Number 102095-2

Wire Size	Test Current	Initial		Final	
(AWG)	(Amperes)	Measured	Specified	Measured	Specified
26	2.0	3.60	4.50	3.47	6.50
24	3.0	2.37	4.00	2.52	6.00
22	3.0	1.44	3.00	1.60	5.00

Maximum Crimp Resistance in Milliohms
AMP Part Number 102095-4

Wire Size (AWG)	Test Current (Amperes)	Initial		Final	
		Measured	Specified	Measured	Specified
26	2.0	2.92	4.50	5.14	6.50
24	3.0	2.53	4.00	3.33	6.00
22	3.0	1.45	3.00	1.55	5.00

3.5 Current Cycling-Group 2 Only

The pin contacts conformed to the maximum specified crimp resistance following their exposure to 50 cycles of current cycling test. The maximum crimp resistance of the pin contacts are shown in paragraph 3.4.

3.6 Contact Retention-Group 1 Only

All pin contacts remained seated in their housing after each pin contact was loaded with five pounds of weight for five seconds.

3.7 Crimp Tensile-Group 2 Only

The minimum crimp tensile of the pin contacts were as follows:

Minimum Crimp Tensile in Pounds

Wire Size (AWG)	AMP Part Number 102095-2		AMP Part Number 102095-4	
	Measured	Specified	Measured	Specified
26	8.8	4.0	9.0	4.0
24	12.3	7.0	14.0	7.0
22	17.3	11.0	15.5	11.0

3.8 Thermal Shock-Group 1 Only

The pin contacts conformed to the minimum insulation resistance after they were subjected to five cycles of thermal shock (see paragraph 3.3).

All samples completed a one-minute exposure to the specified voltages and altitudes without any flashover or breakdown.

4. Figures

4.1

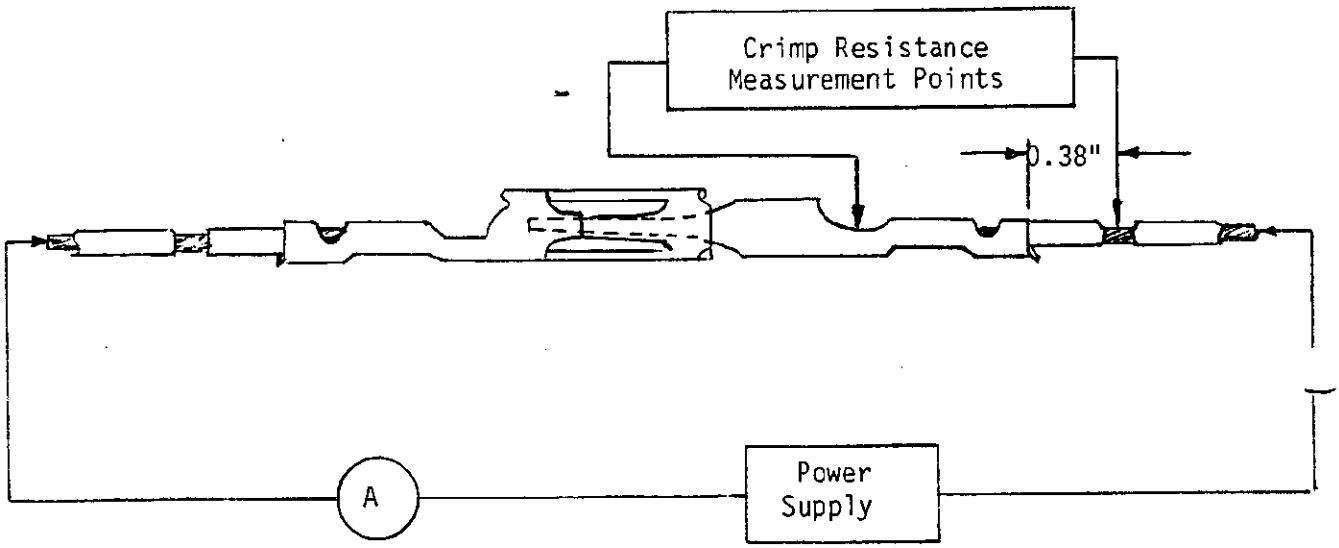

Figure 1

Crimp Resistance Measurement Points

5. Validation

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