
**AMP 2.5mm Pitch EMIX
Economic Metric Interconnect Series
Wire-To-Board System**

1. SCOPE**1.1. CONTENTS**

This specification covers the requirements for product performance, test methods and quality assurance provisions of AMP Economic Metric Interconnect Series, 2.5mm Pitch, Crimp Type.

The applicable product descriptions and part number are as shown below, Table 1 :

Product Part No.	Descriptions
X- 1470222 -X	Receptacle CRIMP Housing, 2-18 Circuit Position
X- 1470223 -X	Receptacle CRIMP Contact, Applicable wire: AWG#22-28
X- 1470224 -X	Post Header Vertical Type, 2-18 Circuit Position
X- 1470225 -X	Post Header Right-angle Type, 2-18 Circuit Position

OBSOLETE

*Table 1***1.2 QUALIFICATION**

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS AND SPECIFICATIONS

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.

- A. 109-1: General Requirements for Test Specifications
- B. 109 series: Test Specification as indicated in figure 2 (Comply with MIL-STD-202)
- C. Corporate Bulletin 401-76: Cross-reference between AMP test Specifications and Military or Commercial Documents.
- D. 114-57012 : Application Specification
- E. 501-57195 : 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. Housing

Receptacle CRIMP Housing : Thermoplastic (UL94V-2).

Post Header Housing : Thermoplastic (UL94V-2).

B. Contact

CRIMP Receptacle Contact : Copper Alloy, Pre-Tin Plated

Post Headers Contact : Copper Alloy, Tin plated over Copper Plate

3.3. RATING

A. Voltage : 250 VAC / DC

B. Operating Temperature : -40 to +105°C

C. Curren : AWG #22 — 3.0A

AWG #24 — 2.5A

AWG #26 — 2.0A

AWG #28 — 1.5A

3.3.1 Applicable wires

A. Wire Size : AWG #28 -- #22 (0.08mm² - 0.32mm²)

B. Insulation Diameter : Ø1.2mm - Ø1.7mm

Note: The compatibility of wires for termination must be evaluated accordingly; by the category from each manufacturer, brand, tradenames and product catalog numbers

3.3.2 Applicable Printed Circuit Board

A. Board Thickness : 1.0mm - 1.6mm

B. Hole Diameter : 0.9mm – 1.0mm

3.4. PERFORMANCE AND TEST DESCRIPTION

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Table 2. All tests are performed at ambient environmental conditions per AMP Specification 109-1 unless otherwise specified.

3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY

Table 2

TEST ITEMS	REQUIREMENTS			PROCEDURES
Conformity of Product physical requirements	Product shall conform to the requirements of applicable Product Drawing and Application Specification			Visually, inspected per applicable quality inspection plan.
ELECTRICAL PERFORMANCE REQUIREMENTS				
Contact Resistance	Initial	10m ohms max.		Subject mated contacts assembled in housing to closed circuit current of 10mA max at open circuit voltage of 10mV/DC max.
	Final	40m ohms max.		
Insulation Resistance	1000M ohms min. (Initial) 100M ohms min (Final)			Measure by applying test potential between adjacent contacts, and between the contacts and ground in the mated connector assembly.
Dielectric Strength	Connector must withstand test potential of 1000 VAC for 1 min. Current leakage limit to 5.0mA max.			Measure by applying test potential between adjacent contacts, and between the contacts and ground in the mated connector assembly. MIL-STD-202, Method 301.
MECHANICAL PERFORMANCE REQUIREMENTS				
Connector Mating/Unmating Force	Circuit Pos.	Mating (kgf max)	Unmating (kgf min)	Subject terminated connector and header to mate and unmate to measure the force required to engage and disengage by operating at a rate of 25mm a minute.
	2	3.6	0.55	
	3	4.4	0.60	
	4	5.2	0.65	
	5	6.0	0.70	
	6	6.6	0.80	
	7	7.2	0.90	
	8	7.8	1.00	
	9	8.4	1.10	
	10	9.0	1.20	
	11	9.6	1.30	
	12	10.2	1.40	
	13	10.8	1.50	
	14	11.4	1.60	
	15	12.0	1.70	
	16	12.6	1.80	
	17	13.2	1.90	
18	13.8	2.00		

TEST ITEMS	REQUIREMENTS		PROCEDURES
Individual Pin Insertion/ Extraction Force	Insertion Force	Extraction Force	Subject terminated contact and pin to mate and unmate to measure the force required to insert and extract by operating at a rate of 25±3mm a minute.
	0.5 kgf max	0.08 kgf min	
Tensile Strength of Wire Termination	AWG #22—3.5kgf min. AWG #24—3.0kgf min. AWG #26—2.5kgf min. AWG #28—2.0kgf min.		Apply an axial pull-off load to terminated wire of contact. At a rate of 25±3mm a minute. The load is applied in the axial and lateral directions
Contact Retention Force	1.5 kgf min. per contact		Apply axial load to terminated contact at a rate of 25±3mm a minute.
Pin Retention Force	1.0kgf min. per contact		Apply axial pull-off load to post contact mounted on housing and measure the force required to dislodge post from housing.
ENVIRONMENTAL PERFORMANCE REQUIREMENTS			
Temperature Life (Heat Aging)	Termination resistance (low level) shall be met.		Subject mated connector assemblies to temperature life at 85°C±2°C for 240 hours.
Humidity, Steady State	Insulation Resistance (Final) 500 Mohms min. Termination resistance (low level) shall be met.		Subject mated connectors to steady state humidity at 40°C and 90-95% R.H for 240hrs MIL-STD-202, Method 103, Condition B.
Salt Spray	Termination resistance (low level) shall be met. Must meet visual & electrical requirements.		Subject mated/ unmated connectors to 5% salt concentration for 48 hours. MIL-STD-202, Method 101, Condition B
Solderability	The contact solder tails should be covered by a continuous new solder coating for 95% Minimum of affected area.		Subject contacts to solderability testing, as specified and solder transfer at 245±5°C for 3sec MIL-STD-202, Method 208
Resistance to Soldering Heat	No physical damage shall occur.		Subject product mounted on printed circuit board to solder bath at 245±5°C for 5 ± 0.5 seconds MIL-STD-202, Method 210 except as indicated above when testing by manual soldering iron, apply it as 350±5°C for 3±1 seconds without forcing pressure to affect the tine of contact.

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Table 3

Test of Examination	1	2	3	4
Examination of Product	1	1,8	1,7	1,4
Contact Resistance	4	4	2,4,6	
Insulation Resistance		2,6		
Dielectric Withstanding Voltage		3,7		
Mating Force	5			
Unmating Force	6			
Individual Insert-Extraction Force	3			
Tensile Strength of Wire Termination	2			
Contact Retention Force	7			
Post Retention Force	8			
Temperature Life			3	
Humidity, Steady State		5		
Salt Spray			5	
Solderability				2
Resistance to Soldering Heat				3

- (a) See paragraph 4.2.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Discontinuities shall not be measured

4. QUALITY ASSURANCE PROVISIONS

4.1 QUALIFICATION TESTING

A. TEST SPECIMENS

The test specimens to be used for the performance evaluation testing, shall be prepared in accordance with AMP Application Specification 114-57012, Termination AMP 2.5mm EMIX CRIMP Connector, by using samples selected from the current production at random, and conforming to the requirements of the applicable product drawings.

B. TEST CONDITION

Unless otherwise specified, all tests shall be performed under any combination of the following test conditions:

Temperature : 15 – 30° C

Relative Humidity : 45 – 75%

Atmospheric Pressure : 650 – 800 mm Hg.

4.2 RE-QUALIFICATION TESTING

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

4.3 ACCEPTANCE

Acceptance is based on verification that product meets requirements Spelled in Table 2. Data attributed to equipment; test setup or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmit.

4.4 QUALITY CONFORMANCE INSPECTION

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimension and functional requirements shall be in accordance with applicable product drawing and this specification.