
AMPMODU* Micro Interconnect Plug and Receptacle Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the AMPMODU* Micro Interconnect cable mounted plug and printed circuit board mounted receptacle connectors available in 4 to 40 positions.

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 06Aug02. The Qualification Test Report number for this testing is 501-541. This documentation is on file at and available from Engineering Practices and Standards (EPS).

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. TE Connectivity (TE) Documents

- 109-197: TE Test Specifications vs EIA and IEC Test Methods
- 114-13051: Application Specification
- 501-541: Qualification Test Report

2.2. Commercial Standard

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

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

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- Voltage: 30 volts AC
- Current: Signal application only, 1 ampere per contact terminated with 28 AWG wire, .75 ampere per contact terminated with 30 AWG wire
- Temperature: -55 to 85°C unless limited by the temperature rating of the wire being used

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 EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low level contact resistance.	25 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Insulation resistance.	500 megohms minimum.	EIA-364-21. Test between adjacent contacts of mated specimens.
Withstanding voltage.	1 minute hold with no breakdown or flashover.	EIA-364-20. 250 volts AC at sea level. Test between adjacent contacts of mated specimens.
MECHANICAL		
Solderability.	Solderable area shall have a minimum of 95% solder coverage.	EIA-364-52, Category 3. Subject contacts to solderability.
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Condition VII, Level D. Subject mated specimens to 3.10 G's rms between 20-500 Hz. 15 minutes in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (continued)

Test Description	Requirement	Procedure
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.
Durability.	See Note.	EIA-364-9. Manually mate and unmate specimens for 25 cycles at a maximum rate of 500 cycles per hour.
Mating force.	24.9 N [5.6 lbf] maximum for 4 position specimens. 101.4 N [22.8 lbf] maximum for 40 position specimens. See Figure 5.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Unmating force.	1.3 N [.3 lbf] minimum for 4 position specimens. 13.3 N [3 lbf] minimum for 40 position specimens. See Figure 5.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Plug contact retention.	Contacts shall not dislodge.	Apply an axial load of 9.3 N [2.1 lbf] at a rate of 12.7 mm [.5 in] per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject mated specimens to 5 cycles between -55 and 85°C.
Humidity-temperature cycling.	See Note.	EIA-364-31. Subject mated specimens to 10, 24 hour cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	EIA-364-17. Subject mated specimens to 85°C for 500 hours.
Mixed flowing gas.	See Note.	EIA-364-65. Subject mated specimens to environmental Class IIA for 14 days.

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	4	5	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
Low level contact resistance	3,7	2,4	2,4			
Insulation resistance				2,6		
Withstanding voltage				3,7		
Solderability						2
Vibration	5					
Mechanical shock	6					
Durability	4					
Mating force	2					
Unmating force	8					
Plug contact retention					2	
Thermal shock				4		
Humidity-temperature cycling				5		
Temperature life		3(c)				
Mixed flowing gas			3(c)			
Final examination of product	9	5	5	8	3	3

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

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of 5 specimens.

B. Test Sequence

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

4.2. Requalification Testing

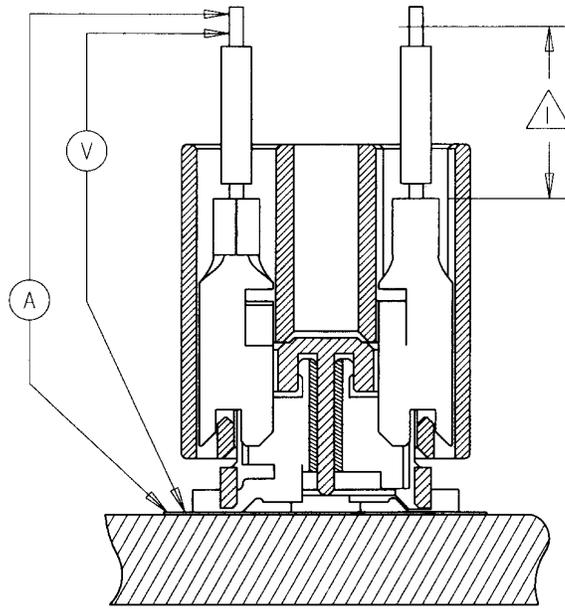
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

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. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable 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.



⚠ RESISTANCE DUE TO WIRE IS TO BE REMOVED FROM ALL READINGS.

Figure 3
Dry Circuit Resistance Measurement Points

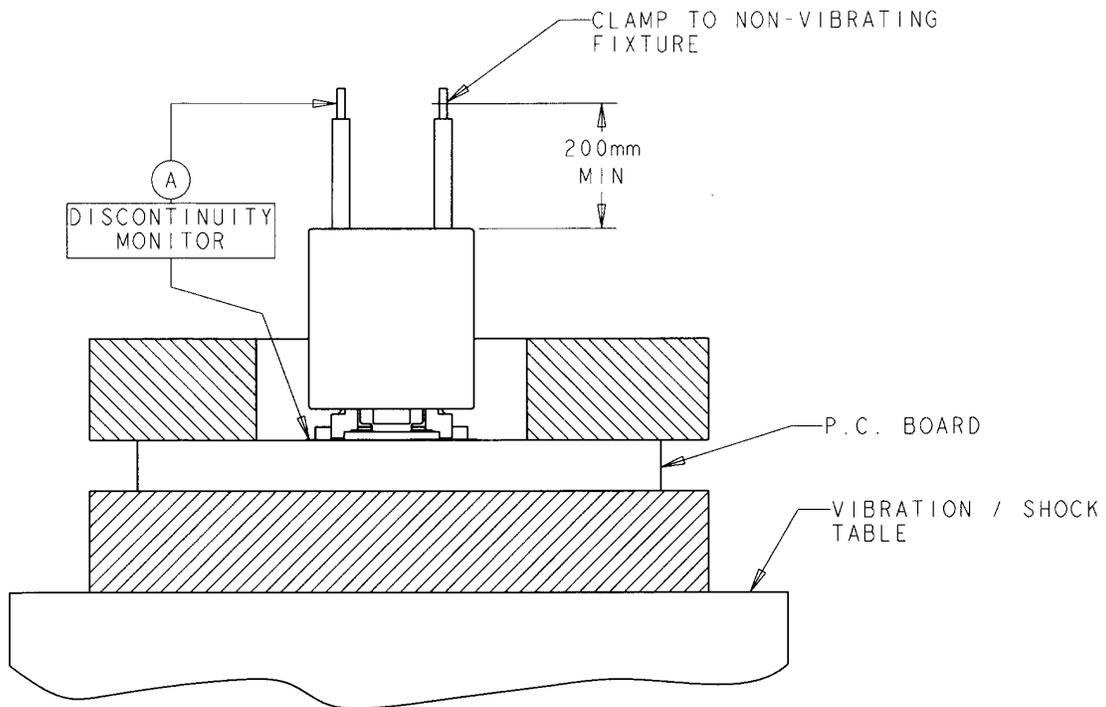


Figure 4
Vibration & Mechanical Shock Mounting Fixture

Connector Size	Mating Force N [lbf] maximum	Unmating Force N [lbf] minimum	Connector Size	Mating Force N [lbf] maximum	Unmating Force N [lbf] minimum
4	24.9 [5.6]	1.3 [0.3]	24	60.9 [13.7]	8.0 [1.8]
6	15.1 [3.4]	2.2 [0.5]	26	65.8 [14.8]	8.9 [2.0]
8	20.5 [4.6]	2.7 [0.6]	28	71.2 [16.0]	9.3 [2.1]
10	25.4 [5.7]	3.6 [0.8]	30	76.1 [17.1]	10.2 [2.3]
12	30.3 [6.8]	4.0 [0.9]	32	81.0 [18.2]	10.7 [2.4]
14	35.6 [8.0]	4.9 [1.1]	34	86.3 [19.4]	11.6 [2.6]
16	40.5 [9.1]	5.3 [1.2]	36	91.2 [20.5]	12.0 [2.7]
18	45.8 [10.3]	6.2 [1.4]	38	96.5 [21.7]	12.9 [2.9]
20	50.7 [11.4]	6.7 [1.5]	40	101.4 [22.8]	13.3 [3.0]
22	55.6 [12.5]	7.6 [1.7]			

Figure 5
Mating/Unmating Forces