AMPMODU*, MOD II INTERCONNECTION SYSTEM, 2.54mm [.100 in.] PITCH PIN HEADERS

1. SCOPE

1.1. Content

This specification covers performance and test requirements for AMPMODU*, MOD II interconnection system, 2.54mm [.100 in.] pitch pin header.

This miniature system consists of AMPMODU II Pin header for application with MODU II board mounted rec. contacts, female connectors with MODU II Solder, MODU IV, IV 1/2, V or Tandem spring crimp respectively MT contacts.

1.2. Description of Connector Configuration (Housing and Contact Spacing)

The pin header consists of contact pins 0.63 square or 0.63 dia (.025) loaded to a pin housing of 2.54 (.100) center line.

1.3. Qualification

When tests are performed on the subject product line, procedures specified in Table 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

2.1. 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.

2.2. TE Documents

- 108-19056: Product Specification Connector System HV-100
- 108-19072: Product Specification Connector System HV-190
- 108-25020: Product Specification MOD IV, WtB, Std pressure gold contacts
- 108-25021: Product Specification MOD IV, WtB, Intermediate pressure contacts
- 108-25007: Product Specification MOD IV, WtB, High pressure contacts
- 114-25003: Application Specification AMPMODU MOD IV, IV1/2, and V Recp and Housings
- 114-25004: Application Specification AMPMODU Mod I and II Board Receptacle Contacts
- 114-25011: Application Specification (AMPMODU*, MODU II action pin posts)
- 502-153146: Qualification Test Report (AMPMODU II Solderability Test)
- 502-19955: Qualification Test Report (PdNi Plating Qualification)
- 502-19930: Qualification Test Report (AMPMODU II headers resistance to soldering heat)

2.3. Industry Documents

- IEC 60512: Connectors for Electronic Equipment tests and measurements.
- IEC 60068: Environmental Testing General Procedure
- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.

2.4. Reference Document

- 109-197 Test Specification (TE Test Specification vs EIA and IEC Test Methods)

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials, and physical dimensions specified on the applicable product drawing.

3.2. Ratings

A. Current:

Ambient temp. max. 70% — 5 amperes maximum per contact pin;
For mated contacts see specification of
Female part but 5 amperes maximum.

B. Temperature Range: -65° to 105° C for mated pair
-65° to 125° C for unmated contact pin

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

Table 1

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Examination of product	Meets requirements of drawing.	Dimensional and visual;
Insulation Resistance	5000 megohms minimum initial; 1000 megohms minimum after moisture	According to IEC 60512-3-1 (test 3a). Test between adjacent or opposite contact of mated connectors by applying 500V dc for 1 min.
Dielectric Withstanding Voltage	Test Voltage (rms) — Altitude 2,54 CL (.100) — feet unmated pin header 1000 sea level mated pair 750 sea level mated pair 300 50,000 mated pair 275 70,000 No breakdown or flashover	According to IEC 60512-4-1 (test 4a). Test between adjacent or opposite contact of mated connectors by applying 500Vrms for 1 min.
Thermal Shock	Termination resistance, dry circuit (low level); no physical damage	According to IEC 60512-11-4 (test 11d). Subject wired and mated connector to 5 cycles, -65° to 105° C.
Durability	Termination resistance, dry circuit (low level); individual contact separation force. no mechanical damage	According to IEC 60512-9-1 (test 9a). Mate and un-mate at a rate of 150 cycles per hour for the number of cycles specified. Cycles see on the specification of the used female contact.

Vibration	No interruption of continuity greater than 1 microsecond. no physical damage	According to IEC 60512-6-4 (test 6d) or EIA 364-28D (test cond. 3). Subject wired and mated connector to 15G's, 10-2000HZ, with 100mA current applied, 10 cycle on each axis.
Physical Shock	No interruption of continuity greater than 1 microsecond. no physical damage	According to IEC 60512-6-3 (test 6c). Subject rigid mount wired and mated connectors to 100G's, 6 millisecond, sawtooth waveform, with 100mA current applied. 3 shocks*3axis*2direction=18 shocks
Moisture Resistance	Termination resistance, dry circuit (low level). insulation resistance. dielectric withstanding voltage. no physical damage	According to IEC 60512-11-12 (test 11m) or EIA 364-31B Method IV. Subject mated connectors to 10 days temperature humidity cycle, 25 to 65°C, 80 to 100% RH, 5 cold shocks at -10C.
Corrosion, Salt Spray	Termination resistance, dry circuit and rated current. (low level)	According to IEC 60512-11-6 (test 11f). Subject mated connectors to 48 hours of salt spray, with 5% of NaCl concentration.
Mixed Flowing Gas	Termination resistance, dry circuit and rated current (low level)	According to EIA 364-65A (class III A). 70% RH, 30°C, 20 ppb Cl_2, 200 ppb NO_2, 100 ppb H_2s, 200 ppb SO_2, for 20 days unless otherwise specified.
Contact Retention	Contact shall not dislodge from its normal locking position	According to IEC 60512-15-1 (test 15a). Apply min 10N min axial to contact at a rate of 25mm per minute Not for Low profile pin header.
Solderability	Contact tails shall have a solder coverage of 95% minimum Aging (Damp heat)- 85°C / 85% RH, 4 days , unmated (Simulates 2 years of Solderability)	According to IEC 60068-2-20 (test Ta) method 1. Solder bath at 235°C.
Resistance to Wave Soldering Heat	No physical damage shall occur.	TEC 109-202, Condition B Peak temp 260±5°C, hold time 10 +2/-0 sec.
Resistance to Reflow Soldering Heat	No physical damage shall occur. 3 cycles of 260°C peak reflow soldering simulation curve.	TEC 109-201, Condition B (reflow curve 3.3, test method B) Peak temperature: 260 +0/-5°C Time within 5°C of peak: 20 to 40 seconds

3.4. Product Qualification and Requalification Test Sequence

Table 2

Test of Examination	Test Spec	Test Group (a)	
		1	2 (*Evaluation*)
		Test Sequence (b)	
Examination of Product		1	1
Insulation Resistance	IEC 60512-3-1 (test 3a)	3; 10	
Dielectric Withstanding Voltage	IEC 60512-4-1 (test 4a)	4; 11	
Thermal Shock	IEC 60512-11-4 (test 11d)	5	
Durability	IEC 60512-9-1 (test 9a)	6	
Vibration	IEC 60512-6-4 (test 6d) or EIA 364-28D (test cond. 3)	7	
Physical Shock	IEC 60512-6-3 (test 6c)	8	
Moisture Resistance	IEC 60512-11-12 (test 11m) or EIA 364-31B Method IV	9	
Corrosion, Salt Spray (c)	IEC 60512-11-6 (test 11f)	12	
Mixed Flowing Gas (c)	EIA 364-65A (class III A)	13	
Contact Retention	IEC 60512-15-1 (test 15a)	14	
Solderability	IEC 60068-2-20 (test Ta) method 1	2	2

NOTE

(a) Test Group 1 and 2 shall consist of a minimum of 6 connector assemblies of each type plating indicated in product drawing with a minimum of 36 receptacles.

Test Group 2 shall consist of 30 pin headers of each type plating indicated in product drawing. All test measurements shall consist of a minimum of 30 random readings for each group.

(b) Numbers indicate sequence in which tests are performed.

(c) This test not applicable to tin plated parts.

4. QUALITY ASSURANCE PROVISIONS

4.1. General Requirements

Connectors presented under this specification shall be a product which has passed qualification tests per Para 4.2, and which meet the quality conformance of Para 4.3.

4.2. Qualification Requirements

Qualification requirements shall be in accordance with the test sequence of Para 3.4 of this specification.

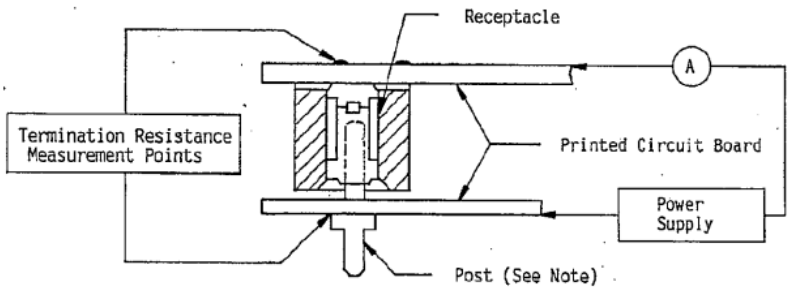

Figure 1

Termination resistance measurement points for Printed Circuit Board. Mounted Receptacles,

Note:
Post plating shall be identical to receptacle plating when conducting tests, see plating details on the product drawing.

4.3. Quality conformance Requirements

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