

**AMPMODU* Mod.II Interconnection System,
2.54 mm. [.100 in.] PITCH****1. SCOPE**

- 1.1 This specification covers performance and test requirements for the AMPMODU* Mod.II interconnection system, manufactured by AMP Italy.
- 1.2 When tests or inspections are performed on the subject product line, this document must always be used together with the applicable product drawings.

2. DESCRIPTION

This system provides wire-to-board and board-to-board termination at 2.54 mm. [.100 in.] pitch using the 0.64x0.64 mm. [.025 sq. in.] post technology.
It is composed of :

2.1 Crimped receptacle connector :

Single and double row, having standard and high pressure contacts for discrete wires covering a range of 22 to 30 AWG.

2.2 Board mounted receptacle connector assembly :

Single and double row, horizontal and vertical mount, having standard or high pressure receptacle contacts inserted into an insulated housing which is directly mounted on a printed circuit board.

2.3 Header assembly :

Single and double row, having straight or right angle post contacts inserted into an insulated header which is directly mounted on a printed circuit board.

3. APPLICABLE DOCUMENTS

Applicable portion of the following documents form a part of this specification, to the extent indicated herein.

In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence.

- IEC 512-2 : Electromechanical components for electronic equipment :
Basic testing procedures and measuring methods.
- IEC 130-1 : Connectors for frequencies below 3 MHz, general requirements and measuring methods.
- IEC 68-2 : Basic environmental testing procedures for electronic equipment and components.
- UNI 5085 : Corrosion test of protective metallic coatings (Kesternich Test)

Product Code: 5434

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DR. R. FABRIS	<i>R. Fabris</i>	31 AUG 99	DATE	APVD C. TARTARI	<i>C. Tartari</i> 31 AUG 99 DATE

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4. REQUIREMENTS

4.1 Design and construction :

All components of this product line shall be of the design, construction and physical dimensions specified in the applicable product drawings.

4.2 Materials :

- **Receptacle:** Copper alloy, pre-gold plated (0.38 or 0.76 μm thk.) over Nickel or pre-tin plated (0.76 μm thk.)
- **Post contact:** Copper alloy, gold plated (0.38 or 0.76 μm thk. Duplex plating) over Nickel or tin plated (2.0 μm thk. min.)
- **Receptacle housing:**
Polyphenylene Oxide (Noryl), flammability rating UL 94V-1
- **Board mounted housing:**
Glass-reinforced Polyester, flammability rating UL 94V-0
- **Header housing:**
Glass-reinforced Polyester, flammability rating UL 94V-0

4.3 Ratings :

- A . **Current** : 3.0 A max per contact
- B . **Operating temperature** : -40°C to +80°C
- C . **Climatic category (IEC)** : 40/80/21
- D . **Max operating voltage** : 40 Vac or 60 Vdc
For applications at higher voltage, please contact AMP.

5. PERFORMANCE AND TEST DESCRIPTION

This product line shall meet the electrical, mechanical and environmental performance requirements specified in following table.

TEST DESCRIPTION	TEST PROCEDURE	REQUIREMENTS
Examination of the product	Visual, dimensional and functional check.	Shall be in accordance with the relevant product drawings.
Total connection resistance, low Level (Dry Circuit)	According to IEC 512-2, test 2a. Subject mated contacts assembled in housing to 20 mV max (Open circuit) at 20 mA and measure as indicated in fig.1a and 1b. Calculate the termination resistance, subtracting the resistance of wire.	15 m Ω max

TEST DESCRIPTION	TEST PROCEDURE	REQUIREMENTS												
Crimp resistance, low level (Dry Circuit)	According to IEC 512-2, test 2a. Subject mated contacts to 20 mV max (Open circuit) at 20 mA and measure as indicated in fig.2. Calculate the crimp resistance, subtracting the resistance of wire.	7 mΩ max												
Insulation resistance	According to IEC 512-2, test 3a. Test between adjacent or opposite contacts of mated connectors by applying 500 V dc for 1 min.	Initial : 5000 mΩ min Final : 1000 mΩ min												
Dielectric withstanding voltage	According to IEC 512-2, test 4a. Test between adjacent or opposite contacts of mated connectors by applying 750 V rms for 1 min.	No breakdown or flashover												
Engaging force	According to IEC 512-7, test 13b. a) <u>With gage</u> : measure force to engage a steel gage size 1, as indicated in Fig.3 b) <u>With posts</u> : measure force necessary to mate male and female connector assemblies, with disconnected locking device, using a suitable machine. Calculate force per contact.	Std Pr. : 1.8 N max High Pr. : 5.0 N max Std Pr. : 2.0 N max High Pr. : 7.0 N max												
Separating force	According to IEC 512-7, test 13b. Measure force to separate using a steel gage size 2, as indicated in Fig.3.	Initial values : Std Pr. : 0.4 N min High Pr. : 0.6 N min After durability : Std Pr. : 0.35 N min High Pr. : 0.5 N min												
Durability	According to IEC 512-5, test 9a. Mate and unmate male and female connector assemblies using a suitable machine. Number of cycles : <table border="1" data-bbox="561 1606 1015 1734"> <thead> <tr> <th>Type</th> <th>Plating</th> <th>Cycles</th> </tr> </thead> <tbody> <tr> <td>Std. Pr.</td> <td>0.38μm gold</td> <td>100</td> </tr> <tr> <td>Std. Pr.</td> <td>0.76μm gold</td> <td>200</td> </tr> <tr> <td>High Pr.</td> <td>0.76μm tin</td> <td>25</td> </tr> </tbody> </table>	Type	Plating	Cycles	Std. Pr.	0.38μm gold	100	Std. Pr.	0.76μm gold	200	High Pr.	0.76μm tin	25	No physical damage. Shall meet the requirements of subsequent tests listed in para 6.
Type	Plating	Cycles												
Std. Pr.	0.38μm gold	100												
Std. Pr.	0.76μm gold	200												
High Pr.	0.76μm tin	25												
Crimp tensile	According to IEC 512-8A, test 16d. Determine crimp tensile, by applying an axial load to wire, at a rate of 25 mm/min.	75% min. of tensile strength of wire.												

TEST DESCRIPTION	TEST PROCEDURE	REQUIREMENTS
Contact retention	Crimp-on, snap-in contact only. According to IEC 512-8, test 15a. Apply an axial load to crimped contacts inserted in housing.	30 N min.
Locking device retention	To be performed on plastic housings without contacts applying an axial load to mated connector housings.	5 N min.
Corrosion, salt spray	According to IEC 512-6, test 11f. Subject mated connectors to 48 hrs of salt spray, with 5% of NaCl concentration.	Shall meet the requirements of subsequent tests listed in para 6.
Corrosion, Kesternich test	Subject mated and unmated connectors to the Kesternich test, acc. to UNI 5085. Duration of test : 8 h	Shall meet the requirements of subsequent tests listed in para 6.
Thermal shock	According to IEC 512-6, test 11d. Subject mated connectors to 5 cycles between -40°C and +80°C. Lasting time to each temperature : 30 min.	No physical damage. Shall meet the requirements of subsequent tests listed in para 6.
Damp heat, steady state	According to IEC 512-6, test 11c. Subject mated connectors to 21 days of damp heat, at a temperature of 40°C, and 96% of relative humidity.	No physical damage. Shall meet the requirements of subsequent tests listed in para 6.
Temperature/Humidity cycling	According to IEC 68-2-38, test Z/AD. Subject mated connectors to 10 temperature/humidity cycles. Duration of each cycle : 24 h	No physical damage. Shall meet the requirements of subsequent tests listed in para 6.
Solderability	Post contacts mated with relevant printed circuit board. According to IEC 68-2-20 test Ta, method 1 : solder bath at 235°C. Samples shall be previously aged at 155°C for 16 hours (Ageing 3).	At least 95% of soldering area of tested post contacts shall have a fresh, smooth and uniform coverage of solder.
Vibration	According to IEC 512-4, test 6d. Subject mated connectors to 10G, 10 to 500 Hz, with 100 mA current applied. Displacement: 1.5 mm. (max tot exc) Sweep time : 15 min. No. of cycles : 12 per axis.	No physical damage. No discontinuities greater than 1 microsecond.

6. CONNECTOR TESTS AND SEQUENCES

TEST DESCRIPTION	TEST GROUP AND SEQUENCE (**)				
	1	2	3	4	5
Examination of the product	1,10	1,10	1,7	1,3	1,7
Termination resistance	2,9	4,9			
Crimp resistance (a)					
Insulation resistance		2,6	2,5		2,5
Dielectric withstanding voltage		3,7	3,6		3,6
Engaging force	3,6				
Separating force	4,7				
Durability	5				
Crimp tensile (a)					
Contact retention (a)					
Locking device retention (a)					
Corrosion, salt spray (b)	8				
Corrosion, Kesternich test (b)	8				
Thermal shock		5			
Damp heat, steady state					4
Temperature/humidity cycling			4		
Solderability				2	
Vibration		8			

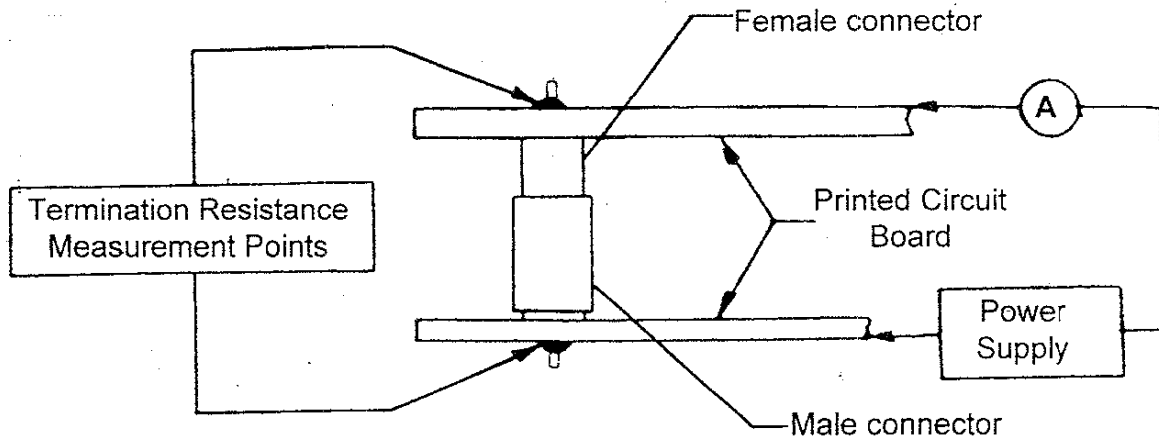
(**) Numbers indicated the sequence in which tests are performed
 (a) Tests to be performed on separate samples (not in sequence)
 (b) Alternative test methods

7. QUALIFICATION TEST

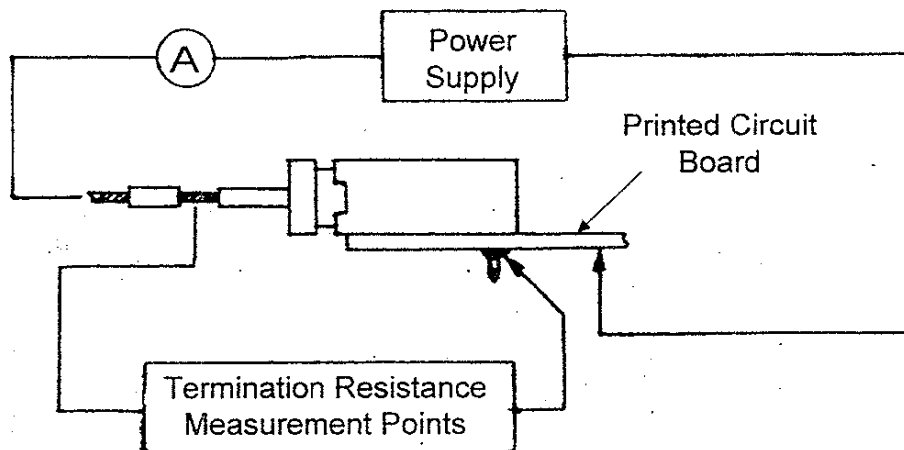
Qualification test shall be performed according to the test methods and requirements specified in para 5 and test sequence specified in para 6.

Samples shall be selected at random from current production.

Each test group shall consist of 4 connectors.



a) Board to board version



b) Wire to board version

FIGURE 1 - Termination resistance measurement set-up

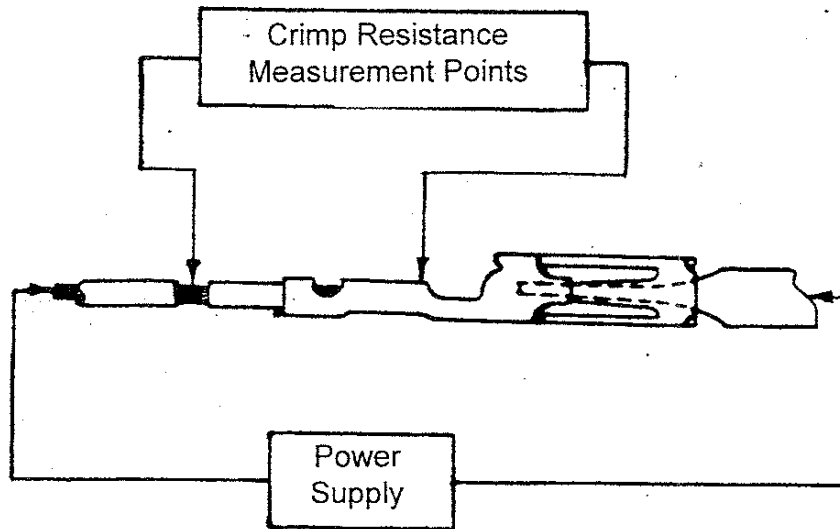
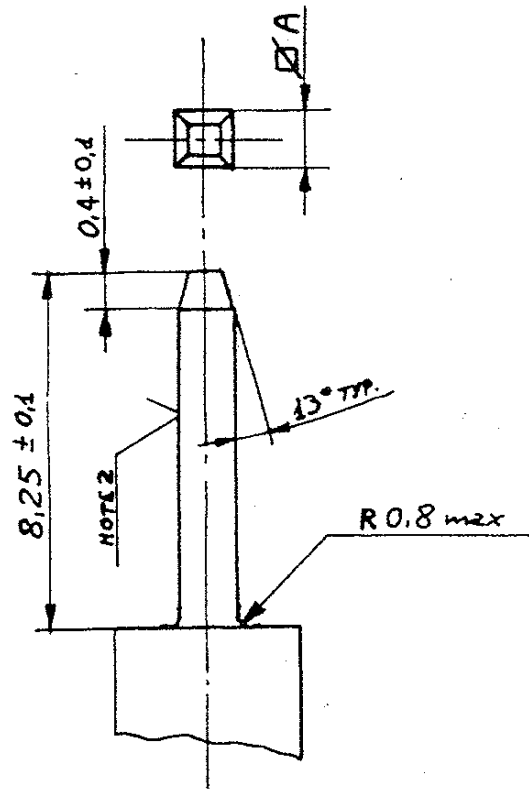


FIGURE 2 - Crimp resistance measurement set-up



NOTES :

1. *Material :* Stainless steel, heat treated ; Hardness : 60÷62 HRC
2. *Surface roughness :* 0.1 µm Ra on all sides

GAGE	A (mm)	A (inches)
1	0.6604 ^{+0.0000} _{-0.0025}	.0260 ^{+0.0000} _{-.0001}
2	0.6096 ^{+0.0025} _{-0.0000}	.0240 ^{+0.0001} _{-.0000}

FIG. 3 - Engaging / Separating force gages