Interconnection System, AMPMODU* Mod II Receptacle Assemblies

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the AMPMODU* Mod II interconnection system incorporating standard or high pressure receptacles in either standard or short point of contact styles. The receptacles are housed in board mounted flame retardant housings. The mating male header assemblies utilize .025 inch square or .025 inch diameter posts in flame retardant insulating headers. The header assemblies may be shrouded or unshrouded. The receptacles and posts mate on .100 or .150 inch centerlines and mount to solderable printed circuit boards. Connectors are available in both vertical or horizontal configurations.

1.2. Qualification

When tests are performed on the subject product line, the 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 in Aug00. Additional testing
| was completed in Oct 2009. The Qualification Test Report number for this testing is 501-492. 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. Tyco Electronics Documents

| - 114-25018: Application Specification (AMPMODU* Mod II and Mod IV Printed Circuit Board Connectors)
| - 501-492: Qualification Test Report (Interconnection System, AMPMODU* Mod II Receptacle Assemblies)

2.2. Commercial Standard

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
IEC 60068 - Environmental testing of electromechanical products

2.3. Reference Document

| 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)

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

- Current:
  - 3 amperes maximum for single contact
  - 2 amperes maximum per contact for fully energized connector
- Operating Temperature: -55 to 125°C

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.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing and Application Specification 114-25018.	EIA-364. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364. Visual inspection.
ELECTRICAL		
Dry circuit resistance.	12 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 3.
Insulation resistance.	5000 megohms minimum initial. 1000 megohms minimum final.	EIA-364-21. Test between adjacent contacts of mated specimens.
Dielectric withstanding voltage.	Test Voltage (rms) .100¢ .150¢ / Altitude (feet) 750 1000 Sea level 300 400 50000 275 275 70000 One minute hold with no breakdown or flashover.	EIA-364-20, Conditions I, III and IV. Test between adjacent contacts of mated specimens.

Figure 1 (continued)

Test Description	Requirement	Procedure
Temperature rise vs current.	30°C maximum temperature rise at specified current.	EIA-364-70, Method I. Measure temperature rise at 3 contacts from 1 row (end, middle and contact midway between), with the connector suspended in free air, solder tines oriented down with a single contact energized at rated current. See Figure 4.
MECHANICAL		
Solderability.	Solderable area shall have a minimum of 95% solder coverage.	EIA-364-52. Subject contacts to solderability.
Vibration, sinusoidal.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Condition IV. Subject mated specimen to 10-2000 Hz sinusoidal , 0.06 inch peak-to-peak or 20 g peak. 12 cycles (4 hours) on each axis.
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method G. Subject mated specimens to 100 G's sawtooth shock pulses of 6 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	225 cycles for 30 µin gold plating standard contact style and standard pressure specimens. 200 cycles for 30 µin gold plating short point contact style and standard pressure specimens. 100 cycles for 15 µin gold plating standard contact style and standard pressure specimens. 75 cycles for 15 µin gold plating short point contact style and standard pressure specimens. 75 cycles for 100 µin tin plating short point contact style and standard pressure specimens. 50 cycles for 30 µin gold plating short point contact style and high pressure specimens. 25 cycles for 10 µin gold plating short point contact style. See Note.	EIA-364-9. Mate and unmate specimens for the specified cycles at a maximum rate of 600 cycles per hour.

Figure 1 (continued)

Test Description	Requirement	Procedure
Mating force.	6 ounces maximum average for standard pressure contacts. 20 ounces maximum average for high pressure contacts.	EIA-364-13. Measure force necessary to mate specimens after 1 unmonitored cycle at a maximum rate of .5 inch per minute.
Unmating force.	.75 ounce minimum per contact.	EIA-364-13. Measure force necessary to unmate specimens during 3rd unmonitored cycle at a maximum rate of .5 inch per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject specimens to 5 cycles between -55 and 125°C.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method IV. Subject specimens to 10, 24 hour cycles between 25 and 65°C at 80 to 100% RH with -10°C cold shock.
Temperature life.	See Note.	EIA-364-17, Condition 5, Time Condition C. Subject mated specimens to 125°C for 500 hours.
Mixed flowing gas.	See Note.	Subject mated samples to environment class III for 21 days. IEC 60068-2-60 (method 4).

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
Dry circuit resistance	3,7	2,4	2,4			
Insulation resistance				2,6		
Dielectric withstanding voltage				3,7		
Temperature rise vs current						2
Solderability					2	
Vibration	5					
Mechanical shock	6					
Durability	4					
Mating force	2					
Unmating force	8					
Thermal shock				4		
Humidity/temperature cycling			3(c)(e)	5		
Temperature life		3(e)				
Mixed flowing gas			3(d)(e)			
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) Tin plated specimens.
(d) Gold plated specimens.
(e) 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. All test groups shall each consist of a minimum of 30 contacts.

B. Test Sequence

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

4.2. Requalification Testing

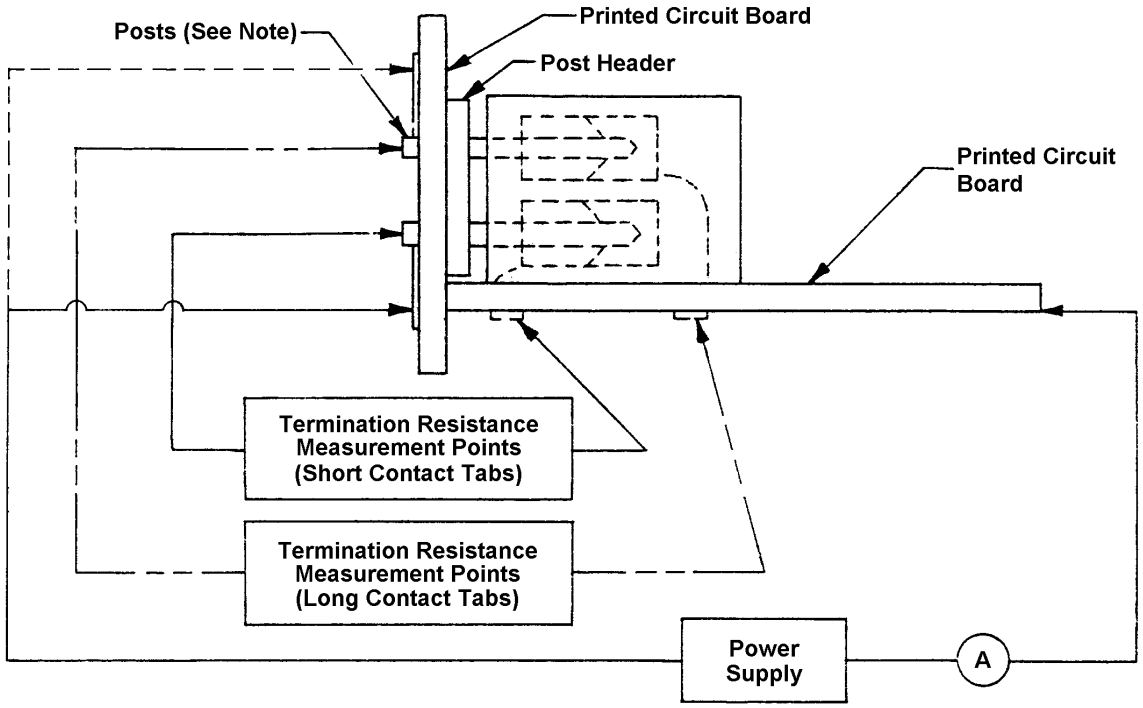
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

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.

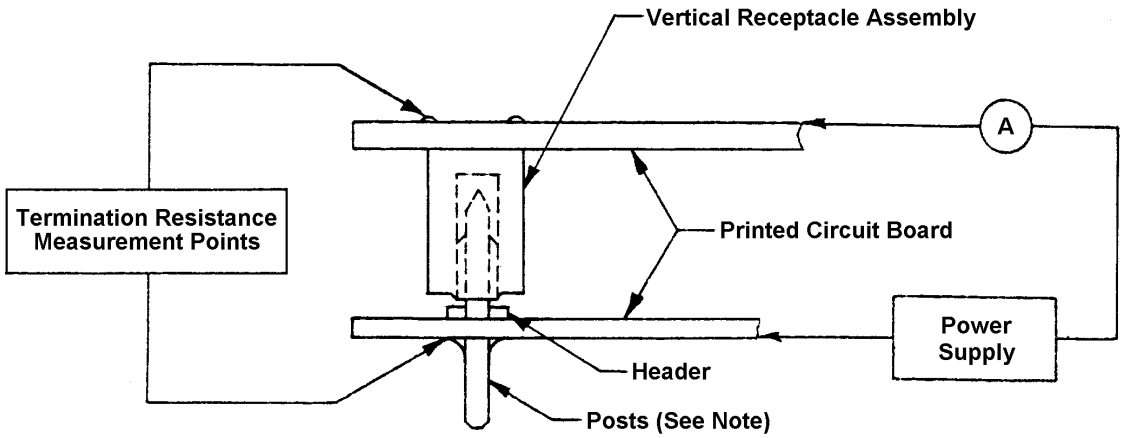
4.4. Quality Conformance Inspection

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.



NOTE *Post and receptacle plating shall be identical when conducting tests.*

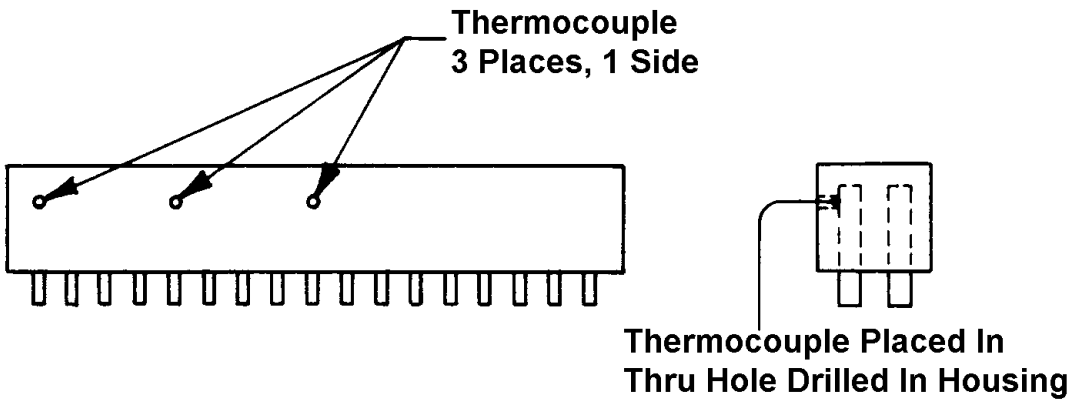
Post Header Assembly & Horizontal Receptacle Assembly



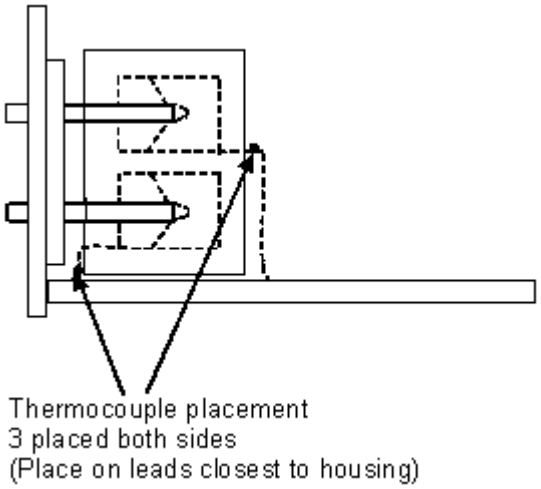
NOTE *Post and receptacle plating shall be identical when conducting tests.*

Post Header Assembly & Vertical Receptacle Assembly

Figure 3
Dry Circuit Resistance Measurement Points



Thermocouple Placement for Vertical Connectors



Thermocouple Placement for Horizontal Connectors

Figure 4
Thermocouple Placement