# Interconnection System, AMPMODU* Mod IV Gold Plated Contacts in MT style Housings

## 1. SCOPE

### 1.1. Content

This specification covers performance, tests and quality requirements for AMPMODU* Mod IV gold plated contacts used in the AMPMODU* MT style housings. This system consists of standard pressure receptacle contacts crimped onto either solid or stranded wire and then inserted into a MT housing. This system is designed to mate with AMPMODU Mod II .025 inch square posts or headers.

### 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 has not been completed as of yet. The Qualification Test Report number will be issued at a later date, once paperwork is completed.

## 2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

### 2.1. TE Documents

- 114-32167: Application Specification
- 502-134206: Engineering Test Report

### 2.2. Industry Documents

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

### 2.3. Reference Document

- 109-197 Test Specification (TE Test Specification vs EIA and IEC Test Methods)
- 108-25015 Test Specification (AMPMODU Mass Terminated Interconnection System)
- 108-25020 Test Specification (AMPMODU Mod IV, Wire to board, Std. Press, Gold contact)

## 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. Materials

A. Contact – Phosphor Bronze

B. Housing – Flame-Retardant Thermoplastic, UL94V-0

3.3. Ratings

| Voltage | Current | Temperature |
|---|---|---|
| 250 VAC | 2 Amps Maximum (26AWG) | -65 to 105°C |

3.4. Test Requirements and Procedures Summary

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

| TEST DESCRIPTION | REQUIREMENT | PROCEDURE |
|---|---|---|
| Initial examination of product | Meets requirements of product drawing and TE Connectivity Spec 114- 32167, Rev. A. | Visual, dimensional and functional per applicable quality inspection plan and EIA-364-18. |
| **ELECTRICAL** | | |
| Termination Resistance, Rated Current | 12 milliohms maximum, for Phosphor Bronze | EIA-364-6.<br>Measure potential drop of Mated contacts assembled in housings. See Figure 3. |
| Termination Resistance, Dry Circuit (Low Level) | 20 milliohms maximum, for Phosphor Bronze | EIA-364-23.<br>Subject mated contacts assembled in housing to 20 mv maximum open circuit at 100 ma maximum. See Figure 3. |
| Insulation Resistance | 5000 megohm minimum initial.<br>1000 megohm minimum final. | EIA-364-21.<br>Test between adjacent contacts of mated samples. Final measurements after 7 days at ambient temperature and humidity |
| Dielectric Withstanding Voltage. | One minute hold with no breakdown or flashover.<br>750 VAC at sea level | EIA-364-20, Condition I. |

Figure 1 (cont)

| MECHANICAL | | |
|---|---|---|
| **TEST DESCRIPTION** | **REQUIREMENT** | **PROCEDURE** |
| Vibration, sinusoidal | No discontinuities of 1 microsecond or longer duration. See Note (a). | EIA-364-28, test condition III.<br>Subject mated samples to 15 G's between 10-2000-10 Hz traversed in 20 minutes. 4 hours in each of 3 mutually perpendicular planes.<br>See Figure 4. |
| Physical Shock | No discontinuities of 1 microsecond or longer duration<br>See Note (a). | EIA-364-27, test condition G.<br>Subject mated samples 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. See Figure 4. |
| Mating Force | 9 ounces maximum per contact. | EIA-364-13.<br>Measure force necessary to mate samples a distance of 0.070 inch from point of initial contact with housing face, incorporating a free floating fixture at maximum rate of 0.5 inch per minute. |
| Unmating Force | 1.5 ounces minimum per contact. | EIA-364-13.<br>With Latch disabled, measure force necessary to unmate connector assembly at a rate of 0.5 inch per minute, using a free floating fixture. |
| Contact Retention | Contacts shall not dislodge from<br>normal locking position when a 5 pound axial load is applied. | Test Specification 109-30 at a rate of 0.5 inch per minute. |
| Contact Engaging Force | 8 ounces maximum per contact. | Test Specification 109-35.<br>Measure force to engage using 4 sided gage pin (.026+0.0/-0.0001) a distance of 0.070" after third mating. |

Figure 1 (cont)

**MECHANICAL (CONT.)**

| TEST DESCRIPTION | REQUIREMENT | PROCEDURE |
|---|---|---|
| Contact Separating Force | 1 ounce minimum per contact. | Test Specification 109-35.<br>After sizing 3 times with a (.026+0.0/-0.0001) pin, Measure force to separate a 4 sided gage pin (.0240" +0.0001/-0) from a depth of 0.070". |
| Durability | See Note (a). | EIA-364-09.<br>Mate and unmate samples for 200 cycles for 30 µin gold plating and 100 cycles for 15 µin gold plating at a maximum rate of 500 cycles per hour. |

**ENVIRONMENTAL**

| TEST DESCRIPTION | REQUIREMENT | PROCEDURE |
|---|---|---|
| Thermal shock | See Note (a). | EIA-364-32, Test Condition 2.<br>Mated specimens were subjected to 5 cycles between -65 and 105°C with 30 minute dwells at temperature extremes and 1 minute transitions between temperatures. |
| Humidity-temperature cycling | See Note (a). | EIA-364-31 Method IV<br>Subject mated samples to 10 cycles (24 hrs each) between 25 and 65'C at 95% RH and cold shocks to -10°C. |
| Corrosion, Salt Spray | Termination resistance, dry circuit and rated current | EIA-364-26.<br>Subject mated connectors to a 5% salt concentration spray for 48 hours |

Figure 1 (cont)

| ENVIRONMENTAL | | |
|---|---|---|
| **TEST DESCRIPTION** | **REQUIREMENT** | **PROCEDURE** |
| Corrosion, Mixed Flowing gas | Termination resistance, dry circuit and rated current | EIA-364-65, class 3a<br>Subject mated samples with 15 µin gold plating to environmental class IIIa for 14 days. |
| | | EIA-364-65, class 3a<br>Subject mated samples with 30 µin gold plating to environmental class IIIa for 20 days. |

Figure 1 (cont)

***NOTE***

***(a)*** *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.*

3.5. Product Qualification and Requalification Test Sequence

| **Test or Examination** | **Test Sets 1, 5** | **Test Sets 2, 6** | **Test Set 3** | **Test Sets 4, 8** |
|---|---|---|---|---|
| | **Test Sequence (b)** | | | |
| Initial Examination of Product | 1 | 1 | 1 | 1 |
| Mating Force | 2 | | | |
| Termination Resistance, Dry Circuit | 3,8 | 2,5,8 | | |
| Termination Resistance, Rated Current | 4,9 | 3,6,9 | | |
| Durability | 5 | | | |
| Sinusoidal Vibration | 6 | | | |
| Physical Shock | 7 | | | |
| Unmating Force | 10 | | | |
| Corrosion, Industrial Gas (MFG) | | 4 | | |
| Corrosion, Salt Spray | | 7 | | |
| Insulation Resistance | | | 2,6 | |
| Withstanding Voltage | | | 3,7 | |
| Thermal Shock | | | 4 | |
| Humidity/temperature cycling | | | 5 | |
| Contact Engaging Force | | | | 2 |
| Contact Separating Force | | | | 3 |
| Contact Retention | | | | 4 |
| Final Examination of Product | 11 | 10 | 8 | 5 |

***NOTE***

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

Figure 2

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

A Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of minimum of 3 connectors. A minimum of 30 randomly selected contacts distributed between the 3 connectors shall be measured. Contacts shall be crimped in accordance with TE Connectivity Specification 114-25003. All test Groups were crimped to 26 AWG wire, supplied by the customer.

B. Test Sequence

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

### 4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification 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 of Figure 1. Failures 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 resubmittal.

### 4.4. Quality Conformance Inspection

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

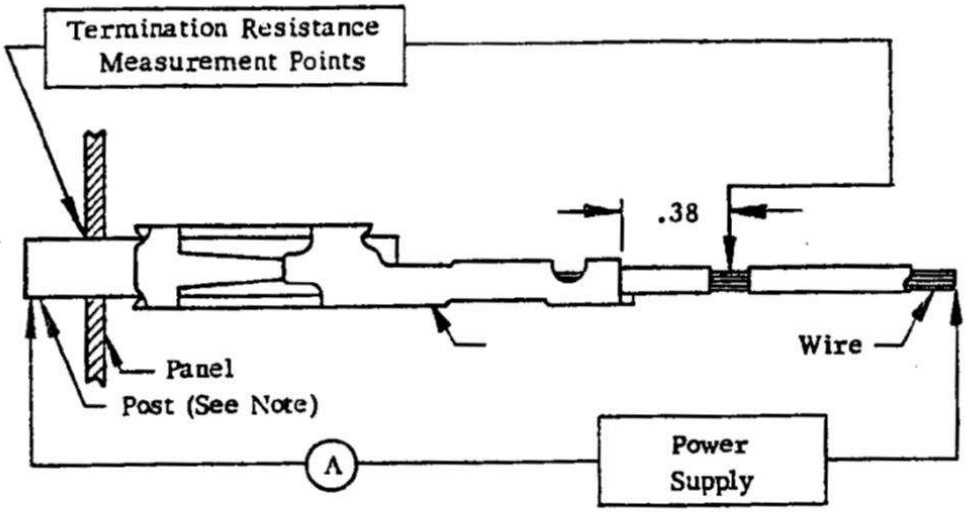


Figure 3
Termination Resistance Measurement Points

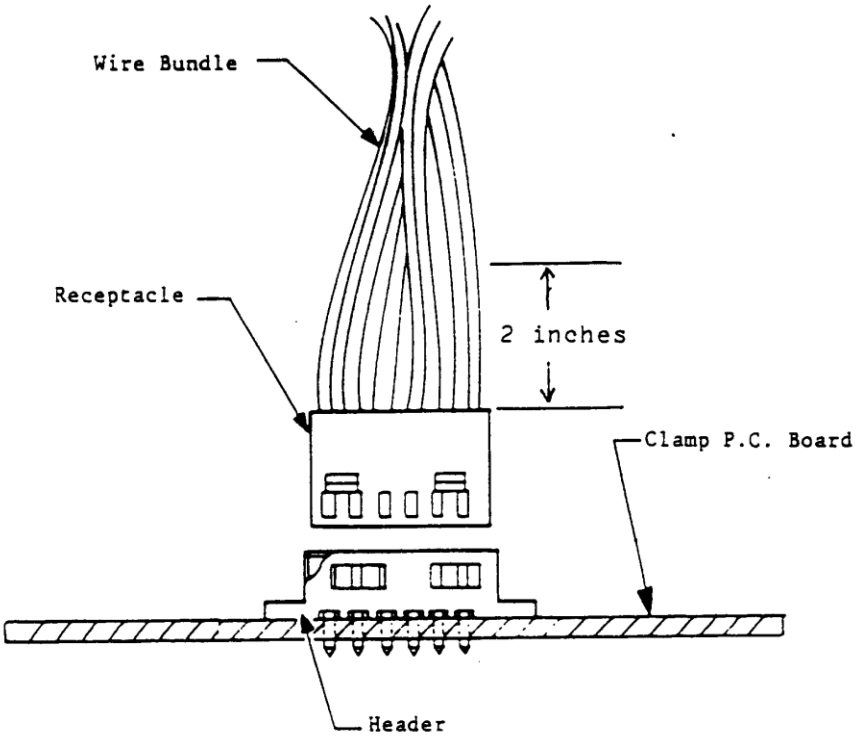


Figure 4
Vibration & Physical Shock Mounting Fixture