



The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, TE Connectivity (TE) makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, TE may change these requirements based on the results of additional testing and evaluation. Contact TE Engineering for further details.

MT-2/JPT SLD Connector

1. SCOPE

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of MT-2/JPT SLD Connector.

1.2. Qualification

When tests are performed on the subject product line, procedures specified 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 has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

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

- 1743059: Customer Drawing (MT-II/JPT SLD 36P PLUG ASSY)
- 1743350: Customer Drawing (MT-II/JPT SLD 16P PLUG ASSY)
- 1897009: Customer Drawing (MT-II/JPT SLD 26P PLUG ASSY)
- 2188667: Customer Drawing (MT-II/JPT SLD 20P PLUG ASSY)

3. REQUIREMENTS

3.1. Design and Construction

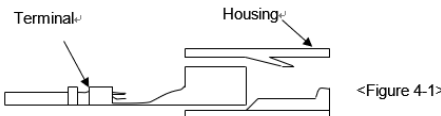
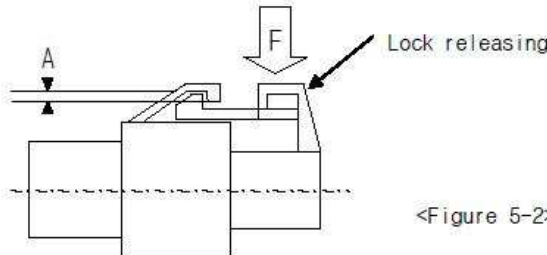
Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

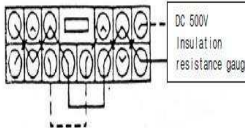
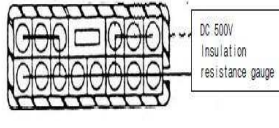
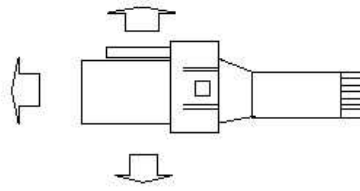
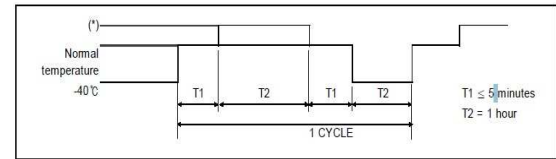
3.2. Ratings

| Voltage | Temperature | Humidity |
|---------|-------------|----------|
| 12V DC | 25±5°C | 60±20% |

3.3. Test Requirements and Procedures Summary

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

| TEST DESCRIPTION | REQUIREMENT | PROCEDURE |
|--|--|---|
| Appearance | No crack, damage, distortion are permitted | Using sense of sight and touch. |
| CONN engage and disengage force | Max 10 kgf and less | Measure force by inserting and disengaging the connector with terminal assembled at constant 50 mm/min speed. However, remove lock part when measuring disengage force. |
| Reverse insertion between housings | It shall not be incorrectly inserted by applying force of 20kgf. | Insert the housing with terminal by pushing it in reverse direction with applying 20kgf. |
| Reverse insertion between terminal and housing | 5kgf or more | Crimp cable of maximum size on terminal and then, insert it into housing by the end of insulation. |
| Engage force between terminal and housing | 1.5kgf or less | As shown in the following figure 4-1, measure the weight while inserting terminal into fixed housing at 50mm/min speed.  <Figure 4-1> |
| Strength of HSG lock | Min 10kgf or less | Combine housing only, fix the one side of housing in completely locked condition, and extend the other side in axial direction and 30 angle direction at a constant speed of 50mm/min. Then measure weight when lock structure is disengaged or destroyed. |
| HSG lock releasing force | Max 6kgf | Apply force (F) to lock releasing part, and measure weight on the point of A=0. However, cut connector and then perform test at the section in order to secure visibility.  <Figure 5-2> |
| Terminal retention force | 060(MT-2) Min 5kgf 110(JPT) Min 6kgf | Fix the housing after inserting crimped terminals. Extend one line of cable in axial direction at a speed of 50mm/min at a position 50~100mm away from crimped part, and measure weight when terminal is disengaged from the housing. |
| Voltage Drop | 060(MT-2) Max 3mV/A 110(JPT) Max 5mV/A | Measure the circuit voltage drop (V) by sending voltage and current described in the table 5-1 with terminal combined on the connector. Then calculate a voltage drop (VD) in terminal by subtracting cable resistance (L) from the circuit voltage drop (V). |

| | | <p>1) HARNESS versus UNIT: $VD = V(L3+L4)$</p> <table border="1"> <thead> <tr> <th>Application</th> <th>Open voltage</th> <th>Short circuit current</th> <th>Division</th> </tr> </thead> <tbody> <tr> <td>Signal circuit</td> <td>20 ± 5 mV</td> <td>10 mA</td> <td>ECU, Sensor</td> </tr> <tr> <td>Power circuit</td> <td>13 V</td> <td>1 A</td> <td>Other than the above</td> </tr> </tbody> </table> <p style="text-align: right;"><Table5-1></p> | | Application | Open voltage | Short circuit current | Division | Signal circuit | 20 ± 5 mV | 10 mA | ECU, Sensor | Power circuit | 13 V | 1 A | Other than the above |
|--|---------------------------------|---|---|----------------------|-------------------|-----------------------|-----------------|----------------|---------------|-------|-------------|---------------|------|-----|----------------------|
| Application | Open voltage | Short circuit current | Division | | | | | | | | | | | | |
| Signal circuit | 20 ± 5 mV | 10 mA | ECU, Sensor | | | | | | | | | | | | |
| Power circuit | 13 V | 1 A | Other than the above | | | | | | | | | | | | |
| Insulation resistance | Min 250 M Ω | <p>Measure resistance between neighbor terminals (figure 5-6), and between terminal and housing surface (figure 5-7) with DC 500V insulation resistance gauge with connector combined.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"><Figure 5-6: Between neighboring terminals> <Figure 5-7: Between neighboring terminal and housing surface></p> | | | | | | | | | | | | | |
| High voltage test | No allowed insulation breakdown | <p>Measured by applying test potential of 1000 V AC between the adjacent contact between the contact and housing.</p> | | | | | | | | | | | | | |
| Twisting Test - Connector Engage and Disengage Endurance Test | Appearance | No crack, damage, distortion are permitted | <p>Apply 8kgf force on the end part of combined connector 10 times each in the (front, rear, left, right) directions perpendicular to axial direction.</p> <p>Make combine connectors engage and disengage at 100mm/min. Perform it 50 times. (Do not use locking device)</p> | | | | | | | | | | | | |
| | Max 10mV/A | | | | | | | | | | | | | | |
| Cold temperature test | Appearance | No crack, damage, distortion are permitted | <p>Engage and disengage connector with terminal assembled 10 times with hands, and leave it in temperature chamber of -40°C for 120 hours. Make connector engaged and disengaged 5 times immediately, and drop it onto the concrete surface from 1m height 3 times in the direction of figure 6-1. (Voltage drop & Temperature rise test perform at normal temperature) :</p> <div style="text-align: center;">  <p><Figure 6-1></p> </div> | | | | | | | | | | | | |
| | Insulation Resistance | <table border="1"> <tr> <td>Non-Sealed CONN' R :</td> <td>Between terminals</td> </tr> <tr> <td>Min 100 MΩ</td> <td>housing surface</td> </tr> </table> | | Non-Sealed CONN' R : | Between terminals | Min 100 M Ω | housing surface | | | | | | | | |
| | Non-Sealed CONN' R : | Between terminals | | | | | | | | | | | | | |
| Min 100 M Ω | housing surface | | | | | | | | | | | | | | |
| Current Leakage | Max 100 μ A | | | | | | | | | | | | | | |
| Cold and hot temperature shock test | Appearance | No crack, damage, distortion are permitted | <p>Engage and disengage Connector with terminal assembled 10 times with hands, this repeats 200 CYCLE by below test condition. (Sealed : 120°C, Non-Sealed : 80°C)</p> <div style="text-align: center;">  </div> | | | | | | | | | | | | |
| | Voltage Drop | Max 10mV/A | | | | | | | | | | | | | |
| | Appearance | No crack, damage, distortion are permitted | <p>Engage and disengage connector with terminal assembled 10 times with hands, and leave it in combined state at the</p> | | | | | | | | | | | | |

| | | | | |
|---------------------------|-----------------------|--|-----------------|--|
| High temperature test | Voltage Drop | Max 10mV/A | | temperature chamber with 120°C for 300 hours. Then pick it out and leave it until it returns to normal temperature. |
| Temperature Humidity Test | Appearance | No crack, damage, distortion are permitted | | Engage and disengage connector with terminal assembled 10 times with hands, and leave it at 25°C ambient temperature and 65% relative humidity for 25 hours. And perform 5 cycles of the method specified in figure 6-3 <p style="text-align: center;">< Figure 6-3 : Test pattern ></p> |
| | Voltage Drop | Max 10mV/A | | |
| | Insulation Resistance | Min 100 MΩ | housing surface | |
| | Current Leakage | Max 100 μA | | |
| Dust Test | Voltage Drop | Max 10mV/A | | Engage and disengage connector with terminal assembled 10 times with hands, and diffuse 1.5kg Portland cement(JIS R5210) with fan (or others) for 10 seconds per 15 minutes while maintaining 150mm distance from wall in the closed container of 900~1200mm length, width and height, with connector combined. After 1 hour, measure it. |
| Waterproof Test | Appearance | No crack, damage, distortion are permitted | | Make combined connectors engaged and disengaged 10 times by hands, and leave it in combined state at 120 °C ambient temperature 40 minutes and then spray water of normal temperature for 20 minut according to S2 of JIS D0203. Repeat 48 cycles of this. * JIS D0203 S2 condition: attach specimen at 400mm distance from waterproof pipe with water spray hole or water discharge hole, and rotate waterproof pipe 23 times per minute around the axis. |
| | Insulation Resistance | Min 100 MΩ | housing surface | |
| | Current Leakage | Max 100 μA | | |
| Oil and liquid test | Appearance | No crack, damage, distortion are permitted | | Engage and disengage connector with terminal assembled 10 times with hands, and perform test each sample with connector combined. A. Immerse connector in combined state for 2 hours in mixed oil of 50± 2°C ENG oil (SAE10W) or equivalent oil and B. Immerse connector in combined state for1 hour in car gasoline (JIS K2202) at normal temperature, and then pick it out. C. Immerse connector in combined state for 1 hour in brake liquid (pure product) at normal temperature, and then pick it out. D. Immerse connector in combined state for 1 hour in 100% washer liquid (pure product) at normal temperature, and then pick it out. E. Immerse connector in combined state for 1 hour in 50% LLC (Long life coolant) at normal temperature, and then pick it out. |
| | Voltage Drop | Max 10mV/A | | |
| Ozone Test | Appearance | No crack, damage, distortion are permitted | | Engage and disengage Connector with terminal assembled 10 times with hands, and samples keep at 40°C and 50±5pphm |

| | | | | | |
|------------------------------------|------------------------|--|-------------------|---|--|
| | Voltage Drop | Max 10mV/A | | Ozone for 100hour. Then pick connector out of chamber and dry it for 2hours or more. | |
| Salt water test | Appearance | No crack, damage, distortion are permitted | | Engage and disengage connector with terminal assembled 10 times with hands, and put it in 35°C temperature regulation chamber, spray 5% salty water for 24 hours according to JIS Z2371, and, maintain room temperature without spray for 1 hour, Then repeat this four times. Then pick connector out of chamber and dry it at room temperature for 2 hours or more. | |
| | Voltage Drop | Max 10mV/A | | | |
| | Insulation Resistance | Min 100 MΩ | Between terminals | | housing surface |
| | | | | | |
| Current Leakage | Max 100μA | | | | |
| Complex environment endurance test | Appearance | No crack, damage, distortion are permitted | | Engage and disengage connector with terminal assembled 10 times with hands, and leave it in combined state in the temperature chamber of 120°C or 80°C (follows table 7) for 48 hours. | |
| | Crimp Tensile Strength | 1.25SQ (110) | Min 17kgf | | And then perform the following vibration test. Then measure instant short circuit according to the method of clause 4.16 for 4 hours for X, Y, Z each. |
| | | 0.5SQ (060) | Min 9Kgf | | |
| | | 0.5SQ (250) | Min 9kgf | | |
| | | 2.5SQ (250) | Min 25kgf | | |
| | Voltage Drop | Max 10mV/A | | | |
| | Temperature Rise | Max 40°C | | | |
| Instant short circuit | Max 10μS | | | | |

| Division | Condition | |
|------------------------------|---|--|
| | Sine test | Random test |
| Ambient temperature/humidity | 120°C | |
| Applied current | Basic current (Connector electrodes in series.) | |
| Current application cycle | 120 CYCLE (45 minutes-ON, 15 minutes-OFF) | 24 CYCLE (45 minutes-ON, 15 minutes-OFF) |
| Vibration acceleration | Table | Table |
| Frequency | 20Hz ~ 200Hz (sweep time: 3 minutes or less) | |
| Vibration time | 40 hours for X, Y, Z each | 8 hours for X, Y, Z each |
| Connector attaching method | Test mode A, B, C | Test mode D, E, F |