



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-II SLD 6P

1. SCOPE

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of MT-II SLD 6P.

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 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

- 2005372 : CUSTOMER DRAWING FOR MT-II SLD 6P PLUG ASSY
- 2188289 : CUSTOMER DRAWING FOR MTII 6P CAP ASSY

3. REQUIREMENTS

3.1. Design and Construction

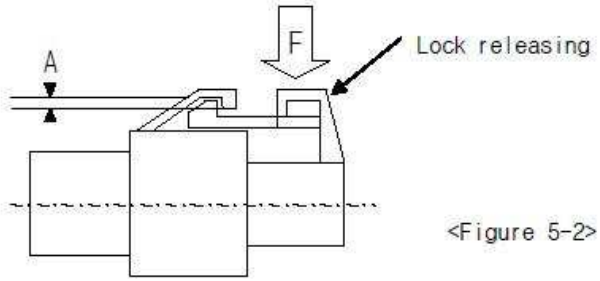
Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

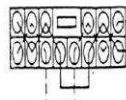
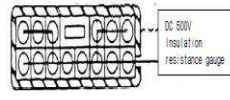
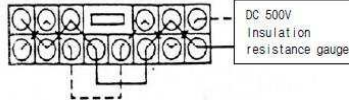
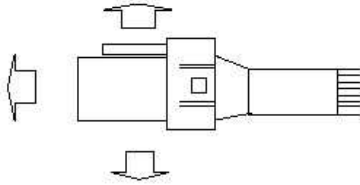
3.2. Ratings

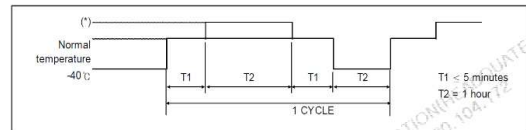
Voltage	Temperature	Humidity
12V DC	25±5°C	60±20%

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. 7.6kgf 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.												
Insertion force between terminal and HSG	Max. 1.5kgf	Insert terminal into fixed HSG at 50mm/min speed.												
Strength of HSG lock	Min. 10kgf	Combine housing only, fix the one side of housing in completely locked condition, and extend the other side in axial direction and 30 degree direction at a constant speed of 50mm/min. Then measure weight when lock structure is disengaged or destroyed.												
HSG lock releasing force	Max. 6kgf	<p>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.</p> 												
Terminal retention force	Min. 8kgf	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	Max. 5mV/A	<p>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> <p>1) HARNESS versus UNIT: $VD = V - (L3 + L4)$</p> <table border="1" data-bbox="857 1633 1490 1774"> <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>	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	Between terminals	Min. 250 MΩ	<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>   <p><Figure 5-6: Between neighboring terminals> <Figure 5-7: Between neighboring terminal and housing surface></p>	
	Between housing surface			
Leakage current	1 μA or less		<p>Measure it by applying DC 14V between neighboring terminals (figure 5-6).</p>  <p><Figure 5-6: Between neighboring terminals></p>	
High voltage test	No allowed Insulation breakdown		Measured by applying test potential of 1000 V AC for 1 minutes between the adjacent contact between the contact and housing.	
Connector Coupling sound	Min. 65dB(A)		Position the sound measuring equipment 350±50mm from the connector and measure the peak of the sound produced when the connector is fastened by hand in dB(A).	
Twisting Test - Connector Engage and Disengage Endurance Test	Appearance	No crack, damage, distortion are permitted		
	Voltage drop	Max. 10mV/A		
Cold temperature test	Appearance	No crack, damage, distortion are permitted		
	Voltage drop	Max. 10mV/A		
	Insulation resistance	Between terminals	Min. 100 MΩ	<p>Leave it in temperature chamber of -40℃ 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>  <p><Figure 6-1></p>
		Between housing surface		
	Current leakage	Max. 1 μA		
	Temperature rise	Max. 40℃		
	Sealing	Min. SQ	Min. 0.5kgf/cm ²	
Max. SQ				
Cold and hot temperature shock test	Appearance	No crack, damage, distortion are permitted		
	Voltage drop	Max. 20mV/A		
	Sealing	Min. SQ	Min. 0.5kgf/cm ²	
Max. SQ				

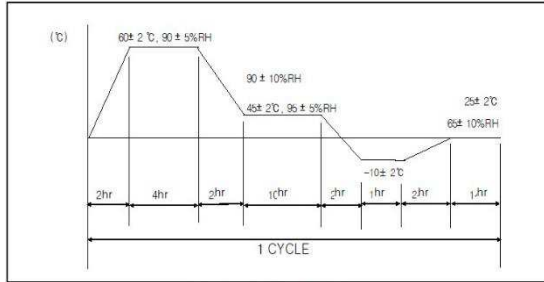


< Figure 6-2 : Test pattern >

Division	High temperature (*)	Connector using part
A	120℃	waterproof connector
B	80℃	Non- waterproof connector

< Table 6-1 >

High temperature 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 at the temperature chamber of the table 6-1 for 300 hours. Then pick it out and leave it until it returns to normal temperature.	
	Voltage drop	Max. 20mV/A			
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	
	Voltage drop	Max. 20mV/A			
	Insulation resistance	Between terminals	Min. 100 MΩ		
		Between housing surface			
	Current leakage	Max. 1 μA			
	Sealing	Min. SQ	Min. 0.5kgf/cm ²		
Max. SQ					
Dust test	Voltage drop	Max 20mV/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.	
	Sealing	Min. SQ	Min. 0.5kgf/cm ²		
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 (waterproof), 80°C (non_waterproof) ambient temperature for 40 minutes and then spray water of normal temperature for 20 minutes according to S2 of JIS D0203. Repeat 48 cycles of this. ※ Jis D0203 S2 condition: Attach specimen at 400mm distance from the waterproof pipe with water spray hole or water discharge hole, and rotate waterproof pipe 23 times per minute around the axis(XX).	
	Insulation resistance	Between terminals	Min. 100 MΩ		
		Between housing surface			
	Current leakage	Max. 1 μA			
Sealing	Min. SQ	Min. 0.5kgf/cm ²			
Max. SQ					
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 for 1 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. 20mV/A			
	Sealing	Min. SQ	Min. 0.5kgf/cm ²		
Max. SQ					



< Figure 6-3 : Test pattern >

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 Ozone for 100hour. Then pick connector out of chamber and dry it for 2hours or more.				
	Voltage drop	Max. 10mV/A						
	Sealing	Min. SQ	Min. 0.5kgf/cm ²					
Max. SQ								
Salt water test(for waterproof connector)	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. 20mV/A						
	Insulation resistance	Between terminals	Min. 100 MΩ					
		Between housing surface						
Current leakage	Max. 1 μA							
Sulfur (SO ₂) gas test	Appearance	No crack, damage, distortion are permitted		Engage and disengage connector with terminal assembled 10 times with hands, and expose it in combined state to sulfur gas of 40±3°C, density 10ppm, humidity 90~95%, for 24 hours. Then pick connector out of chamber and dry it for 2 hours or more.				
	Voltage drop	Max. 20mV/A						
	Sealing	Min. SQ	Min. 0.5kgf/cm ²					
Max. SQ								
Complex environment endurance test	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 in the temperature chamber of 120°C for 48 hours. And then perform the following vibration test. Then measure instant short circuit according to the method of below for 4 hours for X, Y, Z each. Follow figure 6-7 for connector attaching method.</p> <p><Figure 6- 7 Connector attaching method></p> <p>■ Vibration test B (for non-waterproof connector)</p> <p>Perform both of sine wave and random wave tests</p> <p>1) Sine wave test</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Division</th> <th>Condition</th> </tr> </thead> <tbody> <tr> <td>Ambient temperature/humidity</td> <td>120°C, 90~95%</td> </tr> </tbody> </table>	Division	Condition	Ambient temperature/humidity	120°C, 90~95%
	Division	Condition						
Ambient temperature/humidity	120°C, 90~95%							
Crimp tensile strength	0.3SQ	Min. 6kgf						
	0.75SQ	Min. 11kgf						

Voltage drop	Max. 20mV/A		Applied current	Basic current (Connector electrodes in series.)																					
			Current application cycle	120 CYCLE (45 minutes-ON, 15 minutes-OFF)																					
Temperature rise	Max. 40°C		Vibration acceleration	Follow figure 6-9																					
			Frequency	20Hz ~ 200Hz (sweep time: 3 minutes or less)																					
Instant short circuit	Max 10 μ S		Vibration time	40 hours for X, Y, Z each																					
			Connector attaching method	Test mode A, B, C																					
Sealing	Min. SQ	Min. 0.5kgf/cm ²	<p><Figure 6- 9 ></p>																						
	Max. SQ				<p>2) Random wave test</p> <table border="1"> <thead> <tr> <th>Division</th> <th>Condition</th> </tr> </thead> <tbody> <tr> <td>Ambient temperature/humidity</td> <td>120°C, 90~95%</td> </tr> <tr> <td>Applied current</td> <td>Basic current (Connector electrodes in series.)</td> </tr> <tr> <td>Current application cycle</td> <td>120 CYCLE (45 minutes-ON, 15 minutes-OFF)</td> </tr> <tr> <td>Vibration acceleration</td> <td>Follow figure 6-10</td> </tr> <tr> <td>Vibration time</td> <td>8 hours for X, Y, Z each</td> </tr> <tr> <td>Connector attaching method</td> <td>Test mode D, E, F</td> </tr> </tbody> </table> <p><Figure 6- 10></p> <table border="1"> <thead> <tr> <th>Breakpoint (Hz)</th> <th>Magnitude (G²/Hz)</th> </tr> </thead> <tbody> <tr> <td>60.0</td> <td>0.00100</td> </tr> <tr> <td>200.0</td> <td>1.50000</td> </tr> <tr> <td>210.0</td> <td>0.10000</td> </tr> <tr> <td>1000.0</td> <td>0.10000</td> </tr> </tbody> </table>	Division	Condition	Ambient temperature/humidity	120°C, 90~95%	Applied current	Basic current (Connector electrodes in series.)	Current application cycle	120 CYCLE (45 minutes-ON, 15 minutes-OFF)	Vibration acceleration	Follow figure 6-10	Vibration time	8 hours for X, Y, Z each	Connector attaching method	Test mode D, E, F	Breakpoint (Hz)	Magnitude (G²/Hz)	60.0	0.00100	200.0	1.50000
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60.0	0.00100																								
200.0	1.50000																								
210.0	0.10000																								
1000.0	0.10000																								

3.4. Applied Part No List

TE Part no	Description
2005372-2	MT-II SLD 6P PLUG ASSY(A) BLK
2005372-3	MT-II SLD 6P PLUG ASSY GRAY
2005372-4	MT-II SLD 6P PLUG ASSY BRN
2188289-2	MTII 6P CAP ASSY-A
2-2188289-3	MTII 6P CAP ASSY-B