

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.

MQS 6P(new)

1. SCOPE

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of MQS 6P(new)

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

- 2109233 : CUSTOMER DRAWING FOR MQS 6P PLUG HSG
- 2109234 : CUSTOMER DRAWING FOR MQS 6P RETAINER HSG

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℃	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 HSG	Min. 3kgf	Crimp cable of maximum size on terminal and then insert it into housing by end of insulation barrel in the reserve direction.			
Insertion force between terminal and HSG	Max. 1.5kgf	Insert terminal into fixed HSG at 50mm/min speed			
Strength of HSG lock	Min. 8kgf	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	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.			
Terminal retention force	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.			
		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). 			
Voltage drop	Max. 10mV/A	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			
		<table5-1></table5-1>			



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Cold and hot temperature shock test Normal temperature -40°C Normal temperature -40°C TI TI S minutes TI Voltage drop Max. 20mV/A Max. 20mV/A - - - - Division High temperature (*) Connector using part A - - Connector using part A - B 80°C Non-waterproof connector					times with hands, and leave it in combined state at -40° C for 2 hours, and perform 200 cycles according of the method specified in the figure 6-2. Then leave it at room temperature for 2 hours		
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Voltage drop Max. 20mV/A Division High temperature (*) A 120 °C B 80 °C Non-waterproof connector	•				T2 = 1 hour		
A 120 °c Waterproof connector B 80 °c Non- waterproof connector		Voltago dran	Max. 20mV/A		< Figure 6-2 : Test pattern >		
B 80 °C Non- waterproof connector		voltage utop					
< Table 0-1 2					< Table 6- 1 >		

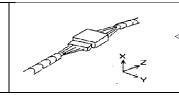


High	Appearance	No crack, damage, distortion are permitted		Engage and disengage connector with terminal assembled 10 times with hands, and leave it in combined state at the temperature chamber of the table 6-1 for 300 hours. Then pick it out and leave it until it returns to normal temperature.		
temperature test	Voltage drop	Max. 20mV/A		High temperature(*) Connector using part 80°C Non-waterproof connector		
	Appearance Voltage drop	No crack, damage, distortion are permitted Max. 20mV/A		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		
Temperature humidity test	Insulation resistance	Between terminals Between housing surface	Min. 100 MΩ	(°C) 60± 2°C, 90± 5%RH 90± 10%RH 45± 2°C, 96± 5%RH 85± 10%RH		
	Current leakage	Max. 1 🖉		2hr 4hr 2hr 1chr 2hr 1hr 2hr 1,hr 1 CYCLE		
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.		
	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		
Waterproof test	Insulation resistance	Between terminals Between housing surface	Min. 100 ^M	then spray water of normal temperature for 20 minutes according to S2 of JIS D0203. Repeat 48 cycles of this.		
	Current leakage	Max. 1 ^{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. Immerge connector in combined state for 2 hours in mixed oil of 50± 2°C ENG oil (SAE10W) or equivalent oil and B. Immerge connector in combined state for1 hour in car gasoline (JIS K2202) at normal temperature, and then pick it out. C. Immerge connector in combined state for 1 hour in brake liquid (pure product) at normal temperature, and then pick it out. 		
	Voltage drop Max. 20mV/A		20mV/A	 D. Immerge connector in combined state for 1 hour in 100% washer liquid (pure product) at normal temperature, and then pick it out. E. Immerge connector in combined state for 1 hour in 50% LLC (Long life coolant) at normal temperature, and then pick it out. 		



	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.		
Ozone test	Voltage drop	Max. 10mV/A				
Sulfur (SO2)	Appearance		, damage, re permitted	Engage and disengage connector with terminal assembled 10 times with hands, and expose it in combined state to sulfur gas		
gas test	Voltage drop	Max. 20mV/A		of 40±3℃, density 10ppm, humidity 90~95%, for 24 hours. Then pick connector out of chamber and dry it for 2 hours or more.		
	Appearance	No crack, damage, distortion are permitted		times with hands, and least temperature chamber of	connector with terminal assembled 10 ave it in combined state in the 80°C for 48 hours. And then perform	
	Crimp	0.3SQ	Min. 6kgf		st. Then measure instant short circuit of below for 4 hours for X, Y, Z each.	
	tensile strength	0.75SQ	Min. 1kgf	Follow figure 6-7 for con		
	Voltage drop	Max. 20mV/A		Mounting Bracket Shaker	Shaker	
	Temperature rise	Max. 40℃			H to WH fixing WH to Unit test Mode B test Mode C Module C Inting Bracket Module B	
Complex environment endurance test	Instant short circuit	Max	10 <i>µ</i> s	test Mode D <- Figure 6-7 C	Shaker to WH fixing WH to Unit test Mode E test Mode F connector attaching method on-waterproof connector) Condition 80°C, 90~95% Basic current (Connector electrodes in series.) 120 CYCLE (45 minutes-ON, 15 minutes-OFF) 4.4g 20Hz ~ 200Hz (sweep time: 3 minutes or less) 40 hours for X, Y, Z each Test mode A, B, C PSD (Gr/Hz) 0.01 0.	





<Figure 6-8 : X, Y, Z vibration direction>

3.4. Applied Part No List

TE Part no	Description
2109233-2	MQS 6P PLUG HSG BLACK
2109234-2	MQS 6P RETAINER HSG