

Product Specification 108-101198

1 SCOPE

1.1 Content

This specification describes the design, characteristics, tests and quality requirements for the

REM-0.64 Contact System

1.2 Qualification


When testing the named products, the following specified specifications and standards shall be used. All tests have to be done using the applicable inspection plan and drawings

2 APPLICABLE DOCUMENTS

The following mentioned documents are part of this specification. In case of conflict between this specification and the referenced documents, this specification has got the precedence.

2.1 TE Specification

- A. 109-1 General Requirements for Test Specifications
- B. Customer drawing and naming
2050986 REM-0.64 Clean body
- C. C-114-18063-001 Connection drawing for REM-0.64, Contact pin

				DR S.WANG 21.Nov.2011	 TE Connectivity Shanghai, China		
				CHK I. Yin 22.Nov.2011			
				APP K. Oda 24.Nov.2011	NO. 108-101198	REV A	LOC ES
A	Released	S.W	25.Nov.2011	PAGE	REM-0.64 CONTACT SYSTEM (CLEAN BODY)		
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2.2 General Documents

- A. DIN IEC60512 Electromechanical components for electronic equipment, basic testing procedures and measuring methods in engagement.
- B. DIN EN60068 Environmental tests
- C. DIN IEC 68 Electrical Engineering, basic environmental testing procedures
- D. Test Guideline for Motor Vehicle Connectors Edition 1-04.96

3 REQUIREMENTS

3.1 Design and Construction

The product must correspond with the product drawing, concerning the design and the physical dimensions. The counterpart must correspond to the specification 114-18063-001.

3.2 Materials

Information on this can be found on the production drawings.

3.3 Technical data

- A. Nominal voltage
According to IEC664 / IEC 664A
- B. Current carrying capacity
See applicable current carrying capacity, Diagram 1
- C. Temperature ranges (ambient plus rise due to electrical heating) from -40°C to 105°C

3.4 Performance and test description

The product fulfils the electrical, mechanical and environmental performance requirements specified in section 3.5. All tests are performed at ambient environmental conditions per IEC512 unless otherwise specified.

All tests meet the test procedures and test guidelines.

- The specified tools must be used for the mechanical tests.
- The specimen must comply with the actual drawings.
- The wires used must have a watertight isolation and sufficiently heat resistance, if applicable. The wires used must be free of damage, holes and grooves.
- For waterproofness tests, standard rods whose diameter corresponds to a worst-case wire shall be used instead of FLR wires. In individual cases, the transferability of the results to wire insulation materials with sufficient temperature resistance must be proved by tests.
- Vibration examinations are valid only for the tested products, and deviating designs shall be examined separately.



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3.5 Test requirements and procedures

Para.	Test items	Requirements	Procedures		
ELECTRICAL TEST					
3.5.1	Confirmation of Product	Product shall be conforming to the requirements of applicable product drawing and Application Specification	Visually, Dimensionally and Functionally inspected per applicable inspection plan.		
3.5.2	Contact resistance	Contact resistance < 15 mΩ (wire 0.35mm ²) < 15 mΩ (wire 0.5 mm ²)	Acc. IEC 60512-2-1, Measuring points see figure 1		
3.5.3	Contact resistance in connection area (crimp)	Crimp resistance: < 2mΩ (wire 0.35mm ²) < 2mΩ (wire 0.5mm ²)	Acc. IEC 60512-2-1, Measuring points see figure 1		
3.5.4	Maximum current carrying capacity "in free air"	Max. 5A (wire 0.5mm ²) See applicable current carrying capacity in diagram 1	Acc. IEC 60512-5-1 Contact in free air, wire range: 0.50mm ² at room temperature		
3.5.5	Current carrying capacity "contact in housing"	See applicable current carrying capacity in diagram 1	Acc. IEC 60512-5-1 Contacts engaged in housing		
MECHANICAL TEST					
3.5.6	Contact retention force in housing	Primary lock: Min. 30N (clean body) Secondary lock: Min 55N	Acc. IEC60512-8 Test 15a Testing speed 25mm/min		
3.5.7	Crimp extraction force (Conductor pull out strength)	Crimp wire size(mm ²) > 50N 0.35 > 60N 0.5	Acc. IEC 60512-8 Test 16d Testing speed: 25mm/min.		
3.5.8	Mating and unmating forces	The following values apply to the first mating cycles: Mating force: 1 N ≤ F ≤ 4N Unmating force: F ≤ 4N	Acc. IEC 60512-7 Test 13b with reference tab acc. To TE PN: 1355893		
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Para.	Test items	Requirements	Procedures		
ENVIRONMENTAL TEST					
3.5.9	<p>Electrical stress test</p> <p>1.) Temperature cycle endurance test</p> <p>2.) humidity heat cycle</p>	<p>Contact resistance</p> <p>< 15 mΩ (0.35mm²)</p> <p>< 15 mΩ (0.5 mm²)</p>	<p>Acc. IEC 60512-2-1</p> <p>Acc. DIN EN 60068-2-14</p> <p>1.) Temperature: -40°C to +80°C, cycle=6h, 30cycles, see Fig. 2</p> <p>Current during warm phase: see the derating curves at 80°C ambient temperature</p> <p>Acc. DIN EN 60068-2-30</p> <p>2.) Tu =25°C, To= 55°C, rel. humidity 95% 1 cycle=1 day,21days</p>		
3.5.10	<p>Dynamic Load Vibration, Sinusoidal /random with interference of temperature change</p>	<p>Contact resistance :</p> <p>< 15 mΩ (0.35mm²)</p> <p>< 15 mΩ (0.5 mm²)</p> <p>Permissible interruption < 1us (contact resistance exceeds 7 Ω)</p> <p>No function-relevant damage must occur.</p>	<p>Acc. IEC 60512-2-1</p> <p>Acc. DIN EN 60068-2-6 (Sinusoida)</p> <p>Acc. DIN EN 60068-2-64</p> <p>See applicable vibration severity 3, shown in Table 1,</p>		
3.5.12	<p>Coastal climate test</p>	<p>Contact resistance</p> <p>< 15 mΩ (0.35mm²)</p> <p>< 15 mΩ (0.5 mm²)</p>	<p>Acc. IEC60512-2-1</p> <p>Test in mated state</p> <p>Acc. IEC60068-2-52</p> <p>Severity 1</p>		
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3.6 Qualification and requalification, test sequence

SAMPLE QUANTITIES								
Test or examination	TEST GROUP							
	1	2	3	4	5	6	7	8
	TEST SEQUENCE							
Visual and dimensional inspection	1,8	1,6	1,5	1,8, 13	1,4	1,4	1	1
Total contact resistance	2,6	2,5	2,4	2,5,7, 10,12, 15	2	2	2,5	
contact resistance in connection area(crimp)	3,7							
Contact retention force								2
Conductor pull out strength							6	
Mating and unmating force							3	
Durability							4	
Derating without housing					3			
Derating with housing						3		
Temperature cycling/ current – duration test	4							
Humidity heat, cycle	5			11				
Dynamic load vibration, with interference of temperature change		3						
Coastal climate test			3					
Storage under dry heat				6				
Temperature cycling				4				
Temperature shock				3				
Industrial climate				9				
Dynamic load Broad-band random vibration				14				
Shock test		4						

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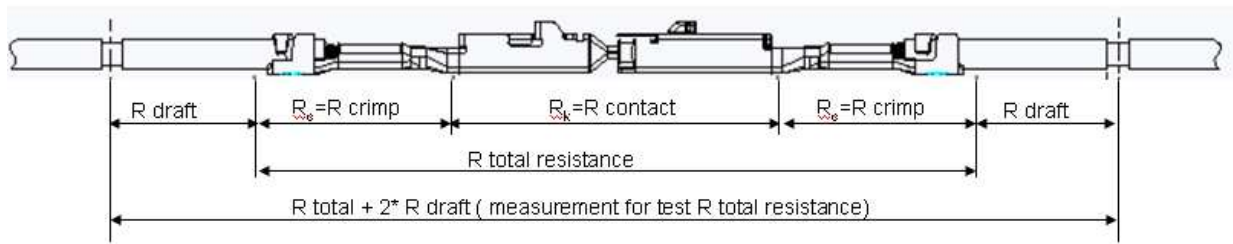


Fig.1: Measurement points at the receptacle

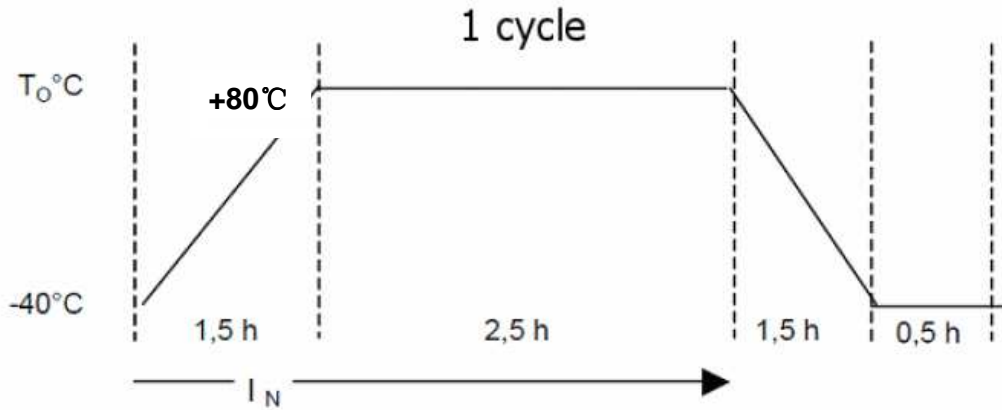

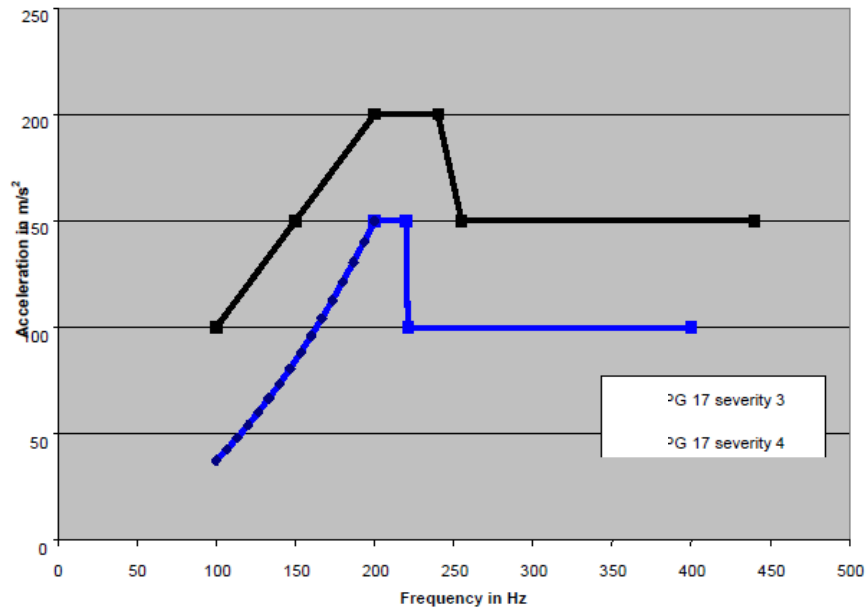


Fig.2: Change of temperature cycle

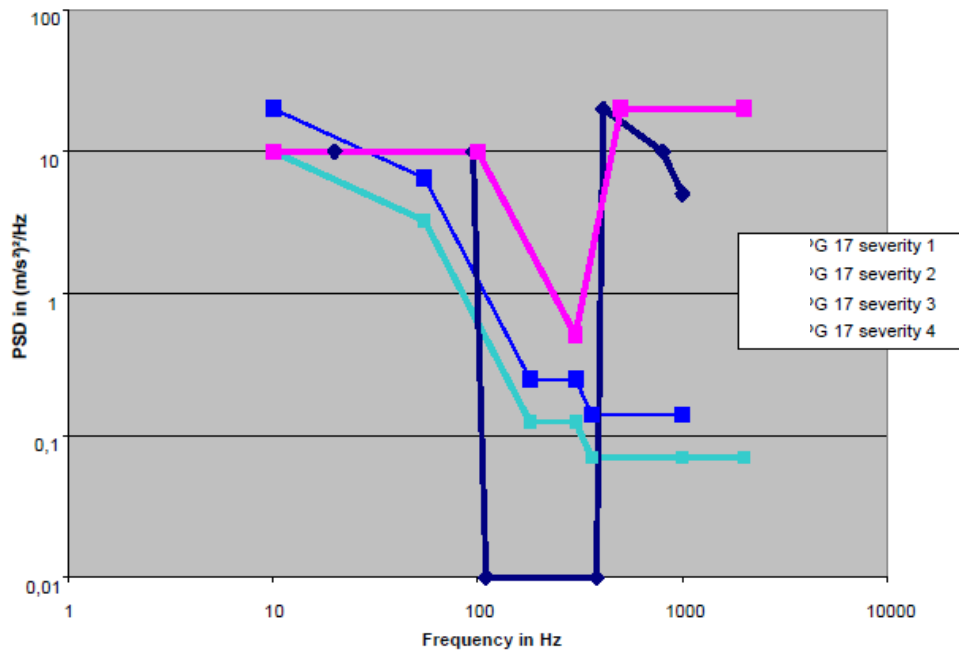
Table 1 Vibration severity

Severity	TC (Temperature cycle)	Random vibration with TC		Sine wave with TC	
3) "Applications close to the power-train"	0 min./ 20°C	22 h per axis		22 h per axis	
	60 min./ -40°C	RMS value of acceleration 105.5m/s ²			
	90 min./ -40°C				
	240 min./ 120°C	Hz	(mm/s ²)/Hz	Hz	Mm
	420 min./ 120°C	20	10	100	0.095
	480 min./ 20°C	95	10	Hz	m/s ²
		110	0.01	200	150
		380	0.01	220	150
	410	20	221	100	
	800	10	400	100	
	1500	5			

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7 Sine wave test profile



8 Random vibration test profile

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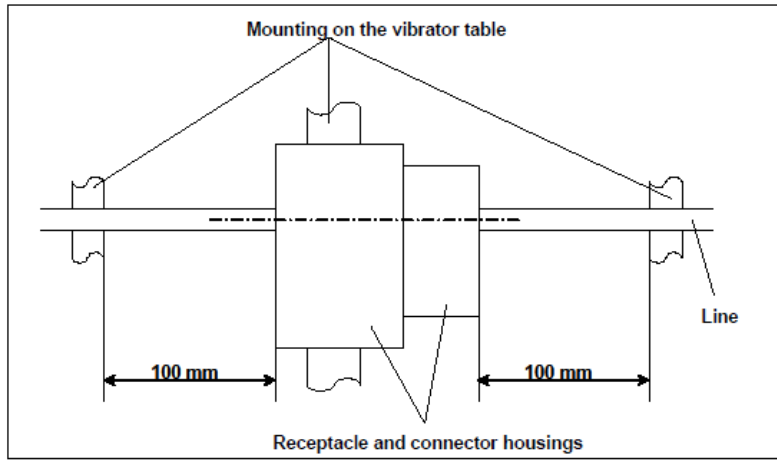


Figure B.1 Mounting on vibrator table, coupling

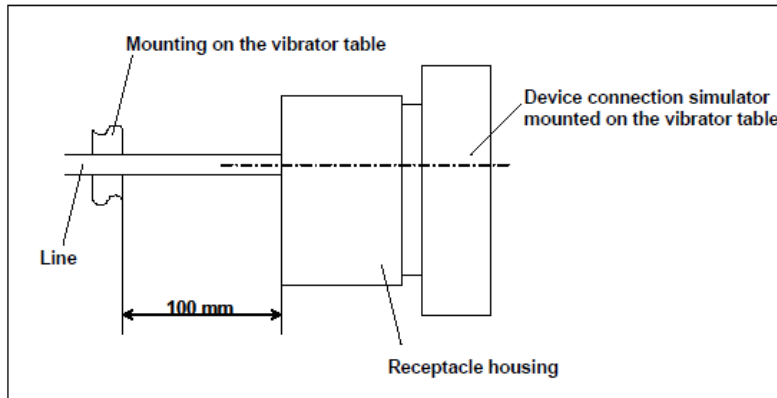


Figure B.2 Mounting on vibrator table, device connection

Fig4. : Vibration check

REM0.64 Clean Body (Sn)

REM0.64 CB: PN: 2050986-1	Tab contact material: CuSn4
Material: CuSn8	Wire Size: 0.35/ 0.5 mm ² FLR
Wire Size: 0.35/ 0.5 mm ² FLR	

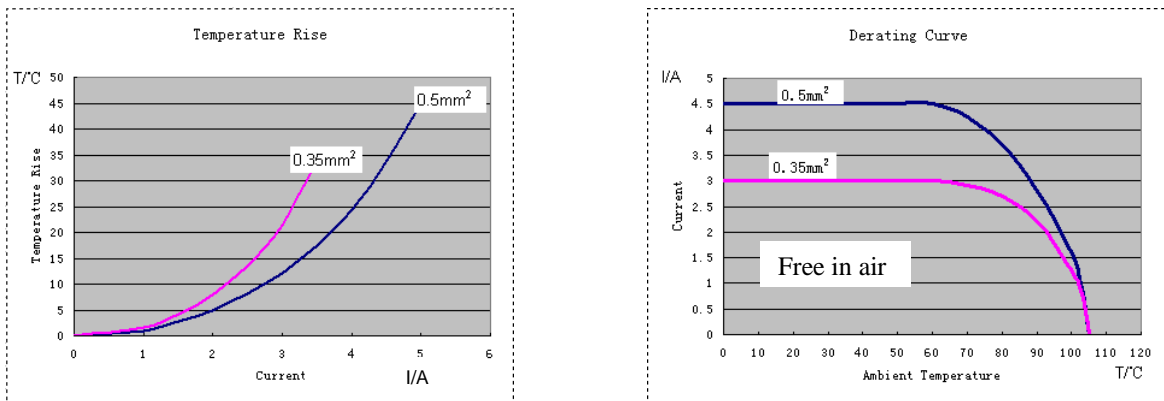



Diagram 1 (FEM result, only for reference)

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4 QUALITY ASSURANCE PROVISIONS

4.1 Qualification Testing

A. Sample Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing specimens specified in section 3.6.

4.2 Requalification Testing


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

4.3 Acceptance

Acceptance is based on verification that product meets requirements in section 3.4. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples shall be resubmitted for qualification. Testing to confirm corrective action is required before re-submission.

4.4 Quality Conformance Inspection

The applicable quality inspection plan shall specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable production drawing and this specification.

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