HB Housing series for housing mating housing application

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1. SCOPE

1.1. Content

This specification covers the performance, tests and quality standards for housings for heavy duty connector series **HB size 6/10/16/24.** The housings are for the insertion and protection of contact inserts of various series and sizes.

1.2. Qualification

When tests are performed, the following specified specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. In the case of a conflict between the requirements of this specification and the product drawing or of conflicts between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. TE Connectivity Documents

A. Customer drawing and name

T1420240000001 / H24B-AG-BO	(mating with H24B-AG-SL to test)
T1420160000001 / H16B-AG-BO	(mating with H16B-AG-SL to test)
T1420100000001 / H10B-AG-BO	(mating with H10B-AG-SL to test)
T1520060000001 / H6B-AG-RO	(mating with H6B-AG-SL-LB to test)

2.2. Other Documents

- EN 61984: Connectors - Safety requirements and tests
- EN 60068: Environmental testing
- EN 60512: Connectors for electronic equipment -Test and measurements
- EN 61373: Railway application - Rolling stock equipment - Shock and vibration test

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Rated

- Operation Temperature -40°C ~+125°C

3.4. Performance and Test Description

Product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Paragraph 3.5. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EN 61984.

3.5. Test Requirements and Procedures Summary

General			
No.	**Test Items**	**Requirements**	**Condition according to**
3.5.1	Visual and dimensional examination	Meets requirements of product drawing	Visual and dimensional examination IEC 60512-1-1/-2, Test 1a and 1b

Mechanical			
3.5.2	Mechanical strength impact	No damage likely to impair function	Dropping height: - 750mm for specimens of mass≤ 250g - 500mm for specimens of mass>250g Dropping cycles:8 positions in 45° step, one cycles per position IEC 60512-7-2 Test 7b
3.5.3	Locking and unlocking force	Locking force: 100N max. Un-locking force: 100N max.	The specified force shall be applied in operating direction like normal use with the speed of 20mm/min. IEC 60512-13-1 Test 13a

3.5.4	Mechanical Operation (Durability)	1) 100 operation cycles 2) No damage likely to impair normal use	Shall operate to open /close the locking system by means of A) a device simulating normal use B) manual open/close 200 Max. cycle per hour
3.5.5	Vibration, Random	No damage likely to impair function No discontinuities greater than t>1μs	Frequency:5~150Hz Per EN 61373, Category 1, Class B (IEC60068-2-6 Test Fc)
3.5.6	Shock	No damage likely to impair function No discontinuities greater than t>1μs	Acceleration:50m/s^2 Duration:30ms Total 18 shocks(three positive and three negative in each of the three orthogonal axes) Per EN 61373

Environmental			
3.5.7	Cold	No damage likely to impair function	Subject mated specimen to -40℃ Duration time:16h, Test Ab Per IEC 60512-11-10 Test 11j (IEC 60068-2-1)
3.5.8	Dry Heat	No damage likely to impair function	Subject mated specimen to +125℃ Duration time:168h Test Bb Per IEC 60512-11-9 Test 11i (IEC 60068-2-2)
3.5.9	Rapid Change of temperature (Temperature Cycle)	No damage likely to impair function	Subject mated specimen to T_a=-40±2℃ to T_b=+125±2℃, duration: t_a=1h, t_b=1h, 100 cycles IEC 60512-11-4 Test 11d (IEC 60068-2-14 Test Na)
3.5.10	Salt Mist Cyclic Test	No damage likely to impair function	Mated connector and expose to the following salt mist condition. Atmosphere: salt spray from a 5±1% concentration solution; PH value: 6.5~7.2 per IEC60068-2-52, Severity 1, 1 Cycle

Number of Specimen as below table 1:

Table 1 - Number of Specimen		
Test	**Description**	**Numbers**
Group A	Mechanical Strength Test	3 sets connectors
Group B	Operating Cyclic Life Test	3 pairs connectors
Group C	Environmental Test	3 sets connectors
Group D	Vibration and Shock Test	3 pairs connectors
Group E	Salt Mist Cyclic Test	3 sets connectors
Note: For connector family of the same design and comparable size, test may be made only on that member of the family which represents the worse case for that test.		

3.6. Test Sequence

Visual and dimensional examination	Test Group				
	A	B	C	D	E
	Test Sequence [1)]				
Visual and dimensional examination	1,3	1,5	1,5	1,4	1,3
Mechanical strength impact	2				
Locking and unlocking force		2,4			
Mechanical Operation (Durability)		3			
Vibration, Random				2	
Shock				3	
Cold			2		
Dry Heat			3		
Rapid Change of temperature (Temperature Cycle)			4		
Salt Mist Cyclic Test					2

Notes:

1) Numbers indicate the sequence in which the tests are performed.

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

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

B. Test Sequence

The samples shall be prepared in accordance with product drawings. They shall be selected at random from current production.

4.2. Requalification Testing

If changes significantly affecting form, fit or functions are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of paragraph 3.5. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification. Bulk wire resistance shall be subtracted from resistance readings.