
Internal Mini-SAS HD Connector System

1. SCOPE

1.1. Content

This specification defines performance, tests and quality requirements for the TE Connectivity (TE) Internal Mini-SAS HD Connector System.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Table 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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 Connectivity Documents

- A. [114-32101](#): Application Specification (Mini-SAS HD Internal Receptacle)
- B. [501-134037](#): Qualification Test Report (Internal Mini-SAS HD Connector System)

2.2. Industry Document

EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Document

[109-197](#): Test Specification (TE Test Specifications vs. EIA and IEC Test Methods)

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

- A. Voltage: 30 volts AC (RMS) / DC MAX
- B. Current: Signal application only
- C. Temperature: -55° to 85°C

3.3. Test Requirements and Procedures Summary

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

Test Description	Requirement	Procedure
Initial examination of product	Meets requirements of product drawing and Application Specification 114-32101	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low level contact resistance (LLCR)	ΔR 20 milliohms maximum for signal contacts	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Insulation resistance	1000 megohms minimum	EIA-364-21. 100 volts DC, 2 minute hold. Test between adjacent contacts.
Withstanding voltage	One minute hold with no breakdown or flashover	EIA-364-20, Condition I. 300 volts AC at sea level. Test between adjacent contacts, signal to signal and signal to ground as applicable.
MECHANICAL		
Random vibration	No discontinuities of 1 microsecond or longer duration. See note.	EIA-364-28, Test Condition VII, Condition Letter D. Subject mated specimens to 3.10 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes. Both mating halves rigidly fixed to not contribute to relative motion of one contact against another.
Mechanical shock	No discontinuities of 1 microsecond or longer duration. See note.	EIA-364-27, Method H. Subject mated specimens to 30 Gs half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. Both mating halves rigidly fixed to not contribute to relative motion of one contact against another.
Durability	See note	EIA-364-9. Mate and unmate specimens for 250 cycles at a maximum rate of 500 cycles per hour with latches engaged.
Plug insertion force	50 N [11.25 lbf] maximum per port	EIA-364-13. Measure force necessary to mate specimens with latches engaged at a maximum rate of 12.7 mm [.50 in.] per minute.
Plug extraction force	25 N [5.625 lbf] maximum per port	EIA-364-13. Measure force necessary to un-mate specimens with latches disengaged at a maximum rate of 12.7 mm [.50 in.] per minute.

Figure 1 (cont)

Test Description	Requirement	Procedure
Latch retention	40 N [8.992 lbf] minimum	Apply specified load to engaged cable plug connector and hold for minimum 60 seconds.
Right angle cable pull	15 N [3.375 lbf] minimum without displacement of cage assembly or connector from printed circuit board (PCB)	Load cabled module into cage/connector assembly applied to PCB. Apply specified load to cable at 90 degree angles from the connector mating direction. The load should be applied towards either side of the connector and held for one minute. Then, apply load towards the connector latching mechanism and away from the latch, each for one minute.
Cable retention in plug	Cable shall remain terminated to plug. See note	EIA-364-38 Apply axial load of 135 newton to cable and plug housing and hold for 5 seconds. Test shall be performed in unmated condition.

ENVIRONMENTAL

Thermal shock	See note	EIA-364-32, Test Condition I. Subject mated specimens to 10 cycles between -55 and 85°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
Humidity/temperature cycling	See note	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life	See note	EIA-364-17, Method A, Test Condition 2, Test Time Condition C. Subject mated specimens to 85°C for 500 hours.
Mixed flowing gas	See note	EIA-364-65, Class IIA (4 gas). Subject specimens to environmental Class IIA for 14 days. Seven days unmated and 7 days mated.
Minute disturbance	See note	Manually unmate and remate the specimen one time

Figure 1 (end)



NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional testing as specified in the product qualification and requalification test sequence as shown in Figure 2

3.4. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Initial examination of product	1	1	1	1	1
LLCR	2(e),4,6	3,5,8	2(e),4(e),6(e), 8		
Insulation resistance				2,6	
Withstanding voltage				3,7	
Random vibration		6			
Mechanical shock		7			
Durability	5(c)	4			
Plug insertion force		2			
Plug extraction force		9			
Latch retention					2(e)
Right angle cable pull					3
Cable retention in plug					4
Thermal shock				4(d)	
Humidity/temperature cycling				5	
Temperature life	3				
Mixed flowing gas			3,5		
Minute disturbance			7		
Final examination of product	7	10	9	8	5

Figure 2



NOTE

- (a) Each test group shall consist of 4 specimens.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Latches engaged.
- (d) Precondition specimens with 25 durability cycles with latches engaged.
- (e) Precondition specimens with 5 durability cycles with latches engaged.