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**7 Pin Header Serial ATA II Connector**

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**1. SCOPE**

## 1.1. Contents

This specification covers the performance, tests and quality requirements for the Tyco Electronics 7 Pin Serial ATA II connector.

## 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.

**2. APPLICABLE DOCUMENT**

The following Tyco documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

## 2.1. Tyco Electronics Documents

- 109-201: Component Heat Resistance to Lead-Free Reflow Soldering.
- 109-202: Component Heat Resistance to Wave Soldering.
- 501-57539: Qualification Test Report.

## 2.2. Commercial Standard

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.
- JESD22-B102D: Solderability Test Method.

**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. Ratings

- A. Voltage: 12 volts DC.
- B. Current: 1.5 amperes.
- C. Temperature: -40 to 105 °C.

## 3.4. Performance Requirement and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364.

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3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	Visual and dimensional inspection per product drawing.
<b>ELECTRICAL</b>		
Low Level Contact Resistance	30 mΩ max	EIA-364-23B Subject mated contacts assembled in housing to 20 mV Max open circuit at 100 mA Max
Insulation Resistance	1000 MΩ min	EIA-364-21C After 500 VDC for 1 minute, measure the insulation resistance between the adjacent contacts of mated and unmated connector assemblies.
Dielectric Withstanding Voltage	The dielectric shall withstand 500VAC for 1 minute at sea level	EAI-364-20B Method B Test between adjacent contacts of mated and unmated connector assemblies
<b>MECHANICAL</b>		
Mating Force	20 N Max	EIA 364-13B Measure the force necessary to mate the connector assemblies at Max. rate of 12.5mm/min
Un-mating Force	4 N Min	EIA 364-13B Measure the force necessary to unmate the connector assemblies at Max rate of 12.5 mm/min
Durability	No physical damage Meet requirements of additional tests as specified in the test sequence.	EIA 364-09C 50 cycles for internal cabled application; 500cycles for backplane/blindmate application. Test done at a maximum rate of 200 cycles per hour
Physical shock	No discontinuities of 1 μs or longer duration. No physical damage	EIA 364-27B H Subject mated connectors to 30 G's half-sine shock pulses of 11msec duration. Three shocks in each direction applied along three mutually perpendicular planes for a total of 18 shocks.
Vibration	No discontinuities of 1 μs longer duration.	EIA 364-28D Subject mated connectors to 5.35 G's RMS. 30 minutes in each of three mutually perpendicular planes.
<b>ENVIRONMENTAL</b>		
Humidity	See NOTE	EIA 364-31B. Subject mated connectors to 96 hours at 40 °C with 90% to 95% RH.
Temperature	See NOTE	EIA 364-17B Subject mated connectors to temperature life at 85°C for 500 hrs
Thermal shock	See NOTE	EIA 364-32C Test Condition I Subject mated connectors to 10 cycles between -55°C and 85°C

Figure 1 (continued)

Test Description	Requirement	Procedure
<b>ENVIRONMENTAL</b>		
Solderability	The inspected area of each lead must have 95% solder coverage minimum.	JESD22-B102D, Condition C Steam Aging Preconditioning: 93 +3/-5°C, 8 hours ±15 min.
		<b>For DIP</b> Solder Temperature: 245 ±5°C. Solder Immersion Time: 5 ±0.5 s.
		<b>For SMT</b> Reflow Temperature: 230-245°C Reflow Time: 50-70 s.
Resistance to Wave Soldering Heat	See note	Tyco spec. 109-202, Condition B. Solder Temp.: 265±5°C, 10±0.5 sec.
Resistance to Reflow Soldering Heat <b>(Housing material in LCP only)</b>	See note.	Tyco spec. 109-201, Condition B Moisture Soak Preconditioning: 85°C and 85% RH. for 168 hours. Preheat Temp.: 150-200°C, 60-180 s. Time over liquidus (217°C): 60-150 s. Peak Temp.: 260 +0/-5°C, 20-40 s. Duration: 3 cycles.

**NOTE** Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group						
	A	B	C	D	E	F	G
	Test Sequence (a)						
Examination of the connector	1, 5	1, 9	1, 5	1, 8	1, 3	1, 3	1, 3
Low Level Contact Resistance	2, 4	3, 7	2, 4				
Insulation Resistance				2, 6			
Dielectric Withstanding Voltage				3, 7			
Mating Force		2					
Unmating Force		8					
Durability	3(b)	4(b)					
Physical Shock		6					
Vibration		5					
Humidity				5			
Temperature Life			3				
Thermal Shock				4			
Resistance to Wave Soldering heat					2		
Solderability						2	
Resistance to Reflow Soldering Heat							2

**NOTE** (a) Numbers indicate sequence in which test are performed.

(b) Preconditioning, 20cycles for the 50-durability cycles requirement, 50cycles for the 500-durability cycles requirement. The insertion and removal cycle is at the maximum rate of 200cycles per hours.

Figure 2