
HDMI Connector

1. SCOPE

1.1. Contents

This specification covers the performance, tests and quality requirements for the Tyco Electronics HDMI 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.
- 501-57583: 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: 40 volts AC.
- B. Current: 0.5 amperes.
- C. Temperature: -20 to 85°C.

3.4. Performance Requirement and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	EIA-364-18 Visual dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Low level contact resistance.	Initial Terminal & Shell: 50 mΩ max. After test (ΔR) (Change from initial value) Terminal: 30 mΩ max. Shell: 50 mΩ max.	EIA-364-23C Terminal: measure by dry circuit, 20 mV maximum, 10 mA. EIA-364-06C Shell: measure by open circuit, 5 V maximum, 100 mA.
Insulation resistance.	Unmated: 100 MΩ min. Mated: 10 MΩ min.	EIA-364-21C After 500 V DC for 1 minute, measure the insulation resistance between the adjacent contacts of mated and unmated connector assemblies.
Dielectric withstanding voltage.	1 minute hold with no breakdown or flashover.	EIA-364-20C, Method A Unmated: Test between adjacent contacts or ground. Voltage: 500 VAC. Mated: Test between adjacent contacts and ground. Voltage: 300 VAC.
TMDS signals time domain impedance.	Connector Area: 100 Ω ±15%. Transition Area: 100 Ω ±15%. Cable Area: 100 Ω ±10%.	EIA-364-108 Rise time ≤ 200 psec (10% to 90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 Ω differential. Source-side receptacle connector mounted on a Controlled impedance PCB fixture.
TMDS signals time domain cross talk FEXT.	5% Max.	EIA-364-90 Rise time ≤ 200 psec (10% to 90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 Ω differential. Source-side receptacle connector mounted on a Controlled impedance PCB fixture. Driven pair and victim pair.
Contact current rating.	0.5 amperes min.	EIA-364-70A Initial ambient temperature: 55°C Max. After temperature change: 85°C Max.
Applied voltage rating.	No breakdown.	40 VAC (rms.) continuous maximum, on any signal pin with respect to the shield.
MECHANICAL		
Mating force.	4.5 kgf (44.1 N) max.	EIA-364-13C Measure force necessary to mate the connector assemblies at a max of 25 mm/minute.

Figure 1 (continued)

Test Description	Requirement	Procedure
MECHANICAL		
Unmating force.	4 kgf (39.2 N) max. 1 kgf (9.8 N) min.	EIA-364-13C Measure force necessary to mate the connector assemblies at a max of 25 mm/minute.
Durability.	See note.	EIA-364-09C Mate and unmated connector assemblies for 10000 cycles at a maximum rate of 100 cycles/hour.
Mechanical shock.	No discontinuities of 1 μ s or longer duration. See note	EIA-364-27B test condition A Subject mated connectors to 50g's half-sine shock pulses of 11 milliseconds duration. There shocks in each direction applied along three mutually perpendicular planes For a total of 18 shocks.
Vibration.	No discontinuities of 1 μ s or longer duration. See note.	EIA-364-28E Test Condition III Accelerate: 1.52 mm. Duration: 20 minutes in each of three mutually perpendicular planes.
ENVIRONMENTAL		
Thermal shock.	See note.	EIA-364-32D Test condition I Subject mated connectors to 10 cycles (half hour/cycle) between -55°C and 85°C.
Humidity.	See note.	EIA-364-31B Test condition A Subject mated connectors to 96 hours (4 cycles) at 25°C to 85°C with 80% to 95% RH.
Temperature life.	See note.	EIA-364-17B test condition 4, method A Subject mated connectors to 105 \pm 2°C for 250 hours.
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 \pm 15 min. 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 \pm 5°C, 10 \pm 0.5 sec.
Resistance to reflow soldering heat.	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	H	I	J
	Test Sequence (a)									
Examination of product.	1, 5	1, 7	1, 7	1, 5	1, 7	1, 3	1	1, 4	1, 3	1, 4
Low level contact resistance.	2, 4	2, 4, 6	2, 4, 6	2, 4						
Insulation resistance.					2, 5					
Contact current rating.								2		
Applied voltage rating.								3		
Dielectric withstanding voltage.					3, 6					
TMDS signals time domain impedance.							2			
TMDS signals time domain cross talk FEXT.							3			
Mating force.										2
Unmating force.										3
Durability.	3									
Vibration.		3								
Mechanical shock.		5								
Temperature life.				3						
Thermal shock.			3							
Humidity.			5		4					
Retention force.										
Solderability.									2	
Resistance to reflow soldering heat.						2				

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

Figure 2