

Test Description	Requirement	Procedure
Analog RGB coaxial signals, time domain impedance.	75 ± 10% ohms. See Note 1.	EIA-364-108. Risetime = 700 pS (10-90%). S:G ratio per DVI pin designation. Single-end measurement. Specimen environment impedance = 75 ohm single ended. Source-side receptacle connector mounted on a controlled impedance printed circuit board fixture.
Analog RGB coaxial signals, time domain far-end crosstalk (FEXT).	3% maximum. See Note 1.	EIA-364-90. Risetime = 700 pS (10-90%). S:G ratio per DVI pin designation. Single-ended measurement. Specimen environment impedance = 75 ohm single-ended. Source-side receptacle connector mounted on a controlled impedance printed circuit board fixture with the load-side plug connector terminated to semi-rigid coax. 1 driven line and 1 victim line.
Analog RGB coaxial signals, rise time degradation.	140 pS maximum (converted bandwidth using $BW=0.35/t$ rise yields 2.5 GHz). See Note 1.	EIA-364-102. S:G ratio per DVI pin designation. Single-ended measurement. Specimen environment impedance = 75 ohm single-ended. Source-side receptacle connector mounted on a controlled impedance printed circuit board fixture with the load-side plug connector terminated to semi-rigid coax.
MECHANICAL		
Mating force.	4.5 kgf [10.0 lbf] maximum. See Note 2.	EIA-364-13, Condition A. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Unmating force.	4.0 kgf [8.8 lbf] maximum. 1.0 kgf [2.2 lbf] minimum. See Note 2.	EIA-364-13, Condition A. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Durability.	See Note 2.	EIA-364-09. Mate and unmate specimens for 100 cycles at a maximum rate of 100 cycles per hour.

Figure 1 (cont)

3.2. Materials

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

3.3. Ratings

- Voltage: 40 volts AC (rms)
- Current: Signal application only, 1.5 amperes minimum per circuit. 30°C maximum temperature rise and 55°C maximum ambient.
- Temperature:
 - Operating: -20 to 85°C
 - Nonoperating: -20 to 85°C

3.4. Performance 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.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing.	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		
Dry circuit resistance.	20 milliohms maximum initial per mated contact pair. ΔR 10 milliohms maximum from initial reading per mated contact pair.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage measured between plug and receptacle solder tails.
Shell resistance.	50 milliohms maximum initial. ΔR 50 milliohms maximum from initial reading.	EIA-364-06A-83. Subject specimens to 100 milliamperes maximum and 5 volts DC maximum open circuit voltage measured between the ground leg on the receptacle and the plug cable braid.
Insulation resistance.	1,000 megohms minimum.	EIA-364-21. 500 volts DC with 2 minute hold. Test between adjacent contacts and contacts and shell of unmated and unmounted specimens.

Figure 1 (cont)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)				
	1(b)	2	3	4	5
	Test Sequence (c)				
Initial examination of product	1	1	1	1	1
Dry circuit resistance	2,5,8,11,14	2,5,8			
Shell resistance	3,6,9,12,15	3,6,9			
Insulation resistance				5,7	
Dielectric withstanding voltage				2,4	
Electrostatic discharge					2
Mating force			2,5,8		
Unmating force			3,6,9		
Durability	4		4		
Vibration, random		4			
Mechanical shock, specified pulse		7			
Thermal shock	7			3	
Humidity-temperature cycling (d)	13			6	
Temperature life	10		7		
Final examination of product	16	10	10	8	3

NOTE

- (a) See paragraph 4.1.A.
- (b) Omit steps 3, 4 and 5 for one-half of the specimens.
- (c) Numbers indicate sequence in which tests are performed.
- (d) Test group 1 tested to Condition B, test group 2 tested to Condition A.

Figure 2

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. Test group 1 shall consist of 6 receptacles mounted on printed circuit boards and 6 cable assemblies, 25.4 cm [10 in] in length, with a plug assembled on 1 end. Test group 2 shall consist of 2 receptacles mounted on panels per receptacle panel cut-out specified on the Customer Drawing. Plugs shall be mated to receptacles with jackscrews fully engaged and other end of the cable clamped to the fixture 76.2 mm [3 in] from the mating face. Test groups 3 and 4 shall each consist of 2 receptacles and 2 cable assemblies, 25.4 cm [10 in] in length, with a plug assembled on 1 end. Test group 5 shall consist of 1 receptacle connector.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

Right Angle DVI Receptacle Connector**1. SCOPE**

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics right angle Digital Visual Interface (DVI) receptacle 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.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 31May01. The Qualification Test Report number for this testing is 501-512. This documentation is on file at and available from Engineering Practices and Standards (EPS).

2. APPLICABLE DOCUMENTS

The following 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

- 109-197: AMP Test Specifications vs EIA and IEC Test Methods
- 501-512: Qualification Test Report
- 502-1116: Engineering Report

2.2. Commercial Standards

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC-61000-4-2: Electromagnetic Compatibility (EMC) - Part 4.2.: Testing and Measurement Techniques - Electrostatic Discharge Immunity Test

2.3. Government Standard

MIL STD-202: Test Methods For Electronics And Electrical Component Parts

3. REQUIREMENTS

3.1. Design and Construction

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

Test Description	Requirement	Procedure
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note 2.	EIA RS-364-28, Method 5A. 15 minutes in each of 3 mutually perpendicular planes.
Mechanical shock, specified pulse.	No discontinuities of 1 microsecond or longer duration. See Note 2.	EIA-364-27, Condition A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Board insertion force.	4.5 kgf [10.0 lbf] maximum. See Note 1.	Measure force required to fully seat connectors onto printed circuit boards at a maximum rate of 1 inch per minute.
Thread torque.	5.0 inch-pounds minimum. See Note 1.	Test specimens mounted to panel to failure. Tighten jackposts using torque gage until threads are stripped and jackpost turns freely.
Resistance to soldering heat.	No visual damage. See Note 1.	Immerse soldertails in $260 \pm 5^{\circ}\text{C}$ solder bath for 10 seconds.
Solderability.	Minimum of 95% solder coverage. See Note 1.	MIL-STD-202, Method 208.

ENVIRONMENTAL

Thermal shock.	See Note 2.	EIA-364-32, Condition I. Subject mated specimens to 10 cycles between -55 and 85°C .
Humidity-temperature cycling.	See Note 2.	EIA-364-31, Method III. Subject mated and unmated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life.	See Note 2.	EIA-364-17, Condition 4, Method A. Subject mated specimens to 105°C for 250 hours.

NOTE

1. *This test was performed to obtain data only, not as part of the Qualification Test Sequence, see Engineering Report 502-1116 for details.*
2. *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)

4.2. Requalification Testing

If changes significantly affecting form, fit or function 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 Figure 1. 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 resubmittal.

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.

Test Description	Requirement	Procedure
Dielectric withstanding voltage.	1 minute hold with no breakdown or flashover.	EIA-364-20, Method C. 500 volts DC. Test between adjacent contacts of unmated and unmounted specimens.
Contact current rating.	1.5 amperes minimum. See Note 1.	EIA-364-70, TP-70. 55°C maximum ambient. 30°C maximum temperature change.
Electrostatic discharge.	No evidence of discharge to contacts at 8 kV. Discharge to shell is acceptable.	IEC-61000-4-2-2. Subject unmated specimens to 8 kV using 8 mm ball probe. Contact discharge to mating face. Air discharge perpendicular to shell. Air discharge at angle to shell.
TMDS signals, time domain impedance.	100 ± 15% ohms. See Note 1.	EIA-364-108. Risetime = 330 pS (10-90%). S:G ratio per DVI pin designation. Differential measurement. Specimen environment impedance = 100 ohm differential. Source-side receptacle connector mounted on a controlled impedance printed circuit board fixture.
TMDS signals, time domain far-end crosstalk (FEXT).	5% maximum. See Note 1.	EIA-364-90. Risetime = 330 pS (10-90%). S:G ratio per DVI pin designation. Differential measurement. Specimen environment impedance = 100 ohm differential. Source-side receptacle and load-side plug connector mounted on a controlled impedance printed circuit board fixture. 1 driven pair and 1 victim pair.
TMDS signals, rise time degradation.	160 pS maximum (converted bandwidth using $BW=0.35/t$ rise yields 2.2 GHz). See Note 1.	EIA-364-102. S:G ratio per DVI pin designation. Differential measurement. Specimen environment impedance = 100 ohm differential. Source-side receptacle and load-side plug connector mounted on a controlled impedance printed circuit board fixture.

Figure 1 (cont)