PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers the requirements of HDMI Type A-D cable assemblies.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Cable assembly	68786
Type-D Plug Assembly	46770

DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings for information on dimensions, materials, plating and markings.

2.2 SAFETY AGENCY APPROVALS

UL File Number……

CSA File Number……..

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

EIA 364-1000

IEC 801

SD drawings

4.0 RATINGS

4.1 VOLTAGE

30 V

4.2 CURRENT

0.8 Amps @ 25℃

4.3 TEMPERATURE

Operating: - 20℃ to + 80℃

Storage: - 30℃ to + 85℃

5.0 PERFORMANCE REQUIREMENTS

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance**	**Mated connectors** Contact: Measure by dry circuit and apply a maximum voltage of **20** mV and a current of **10** mA. Shell: Measure by open circuit and apply a maximum voltage of **5** V and a current of **100** mA. Tested per EIA-364-06B	**10** milliohms MAXIMUM [initial]
2	**Insulation Resistance**	**Unmated connectors** Apply a voltage of **500** VDC between adjacent terminals or ground. **Mated connectors** Apply a voltage of **150** VDC between adjacent terminals or ground. Tested per EIA-364-21C	**100** Megohms MINIMUM (unmated) **10** Megohms MINIMUM (mated)
3	**Dielectric Withstanding Voltage**	**Unmated connectors** Apply a voltage of **250** VAC (RMS) for **1** minute between adjacent terminals or ground **Mated connectors** Apply a voltage of **150** VAC (RMS) for **1** minute between adjacent terminals or ground Tested per EIA-364-20C, Method A	**No breakdown** current leakage < 5 mA
4	**Contact Current Rating**	Test performed with all 19 Circuits Powered **55**°C maximum ambient **85**°C maximum temperature change Tested per EIA-364-70A	**0.3** A minimum
5	**Applied Voltage Rating**	**40** VAC (RMS) continuous maximum on any signal pin with respect to the shield.	**No breakdown** current leakage < **5** mA
6	**Electrostatic Discharge**	Test unmated connectors from **1**kV to **8**kV in **1**kV steps using an **8**mm ball probe. Tested per IEC-801-2	No discharge to contacts at **8**kV

5.1 ELECTRICAL REQUIREMENTS (continued):

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
7	**TMDS Signals Time Domain Impedance**	Rise Time ≤ **200**ps (10%-90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = **100** Ohm differential Source-side receptacle connector mounted on a controlled impedance PCB fixture. Tested per EIA-364-108	Connector **100** Ohm ± 25% Transition Area **100** Ohm ± 15% Cable Area **100** Ohm ± 10%
8	**TMDS Signals Time Domain Cross Talk (FEXT)**	Rise Time ≤ **200**ps (10%-90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = **100** Ohm differential Source-side receptacle connector mounted on a controlled impedance PCB fixture. Tested per EIA-364-90	**10%** MAXIMUM
9	**HEAC Signal Domain (if product need HEAC +/- line)**	Intra-pair skew max. Differential Attenuation 300kHz – 10MHz 10MHz – 100MHz 100MHz – 200MHz Differential impedance* Connection point and transition area: up to 1ns Cable area: 1ns – 2.5ns Common mode impedance* Cable area: 1ns – 2.5ns (*A single excursion is permitted out to a max/min of 100ohm+/-25% and of a duration less than 250ps)	**111ps** **<1.6dB** **<5dB** **<7.1dB** **100ohm+/-15%*** **100ohm+/-10%** **30ohm+/-20%**

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
10	**Insertion Force**	Mate and unmate connector at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. Tested per EIA-364-13	**44.1** N (**10** lbf) MAXIMUM insertion force
11	**Withdrawal Force (Initial)**	Mate and unmate connector at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. Tested per EIA-364-13	TypeA: **9.8**N MIN **39.2**N MAX TypeD: **5**N MIN **25**N MAX
12	**Withdrawal Force (After Durability)**	Mate and unmate connector at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. Tested per EIA-364-13	**3** N (**0.65** lbf) MINIMUM **25** N (**5.6** lbf) MAXIMUM
13	**Durability**	Type-A:Mate connectors **10,000** cycles at a maximum rate of **100** ± **50** cycles per hour Type-D:Mate connectors **5,000** cycles at a maximum rate of **100** ± **50** cycles per hour.	Contact: **30** milliohms MAXIMUM (change from initial) & Shell: **50** milliohms MAXIMUM (change from initial)
14	**Vibration**	Amplitude: **1.52**mm P-P or **147**m/s^2 (**15**G). Sweep Time: **50**-**2000**-**50**Hz in **20** minutes. Duration: **12** times in each X,Y,Z axis. Electrical Load: **100**mA DC current applied during test. Tested per EIA-364-28, Condition III	No damage Contact: **30** milliohms MAXIMUM (change from initial) & Shell: **50** milliohms MAXIMUM (change from initial) & Discontinuity < **1** microsecond
15	**Shock (Mechanical)**	Pulse Width: 11msec Waveform: half sine Mate connectors and shock at **490**m/s^2 (**50** G) in each of the X,Y,Z axis (**3** shocks in each axes) Tested per EIA-134-27, Condition A	No damage Contact: **30** milliohms MAXIMUM (change from initial) & Shell: **50** milliohms MAXIMUM (change from initial) & Discontinuity < **1** microsecond

5.2 MECHANICAL REQUIREMENTS (continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
16	**Cable Flex**	**100** cycles in each of 2 planes Dimension X = 3.7 x Cable Diameter Tested per EIA-364-41C, Condition I	Dielectric Withstanding Voltage: No Breakdown at **150** VAC & Insulation Resistance: **10** Megohms MINIMUM & Discontinuity < **1** microsecond
17	**Wrenching Strength**	**Mated Connectors** Apply a perpendicular force to a plug at a **15**mm distance from the edge of the receptacle. Forces applied in **4** directions (up, down, left, and right) See Section 7.0 (Figure 1) for detailed test set-up	**0-20**N No Plug or Receptacle Damage & **20-40**N No Receptacle Damage
18	**Cable Pull-Out**	Apply an axial load to the cable for **1** minute Tested per EIA-364-38C	**40** N (**9** lbf) Type D **49** N (**11** lbf) Type A MINIMUM pullout force Cable shall have no electrical discontinuity & Cable shall have no mechanical separation from the connector

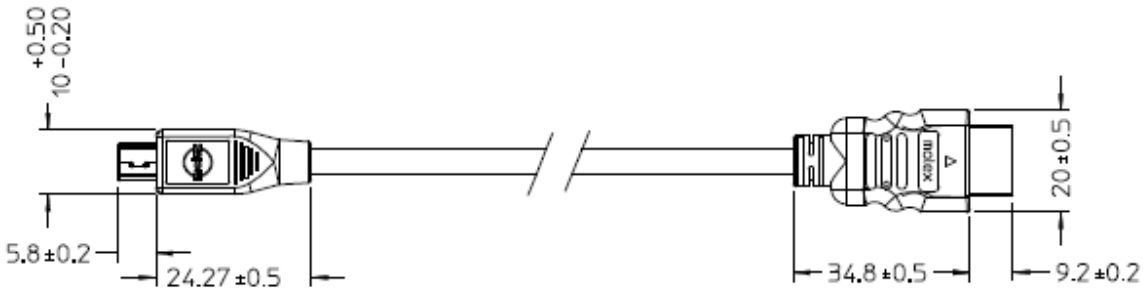
5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
19	**Shock (Thermal)**	Mate connectors and expose to **10** cycles of: **-55**℃ for 30 minutes +**85**℃ for 30 minutes Tested per EIA-364-32C, Condition I	Contact: **30** milliohms MAXIMUM (change from initial) & Shell: **50** milliohms MAXIMUM (change from initial) & Visual: No Damage
20	**Humidity**	Mated Connectors: Temperature: +**25 to 85**℃ Relative Humidity of **80 to 95**% Duration: **4** cycles (**96** hours) Note: Remove surface moisture & air dry for **24** hour prior to measurements. Tested per EIA-364-31B	Contact: **30** milliohms MAXIMUM (change from initial) & Shell: **50** milliohms MAXIMUM (change from initial) & Visual: No Damage
		Unmated Connectors Temperature: +**25 to 85**℃ Relative Humidity of **80 to 95**% Duration: **4** cycles (**96** hours) Note: Remove surface moisture & air dry for **24** hours prior to measurements. Tested per EIA-364-31B	Dielectric Withstanding Voltage: No Breakdown at **150** VAC & Insulation Resistance: **10** Megohms MINIMUM & Visual: No Damage
21	**Thermal Aging**	Mate connectors; expose to +**105±2**℃ for **250** hours. Note: Remove surface moisture & air dry for **2** hours prior to measurements. Tested per EIA-364-17B, Condition 4, Method A	Contact: **30** milliohms MAXIMUM (change from initial) & Shell: **50** milliohms MAXIMUM (change from initial) & Visual: No Damage

6.0 PACKAGING

Parts will packaged per related PKG drawing.

7.0 CABLE ASSEMBLY SKETCH



REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
C	EC No: N/A DATE: 9/14/2010	HDMI TYPE A-D CABLE ASSEMBLY	7 of 7

DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
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