



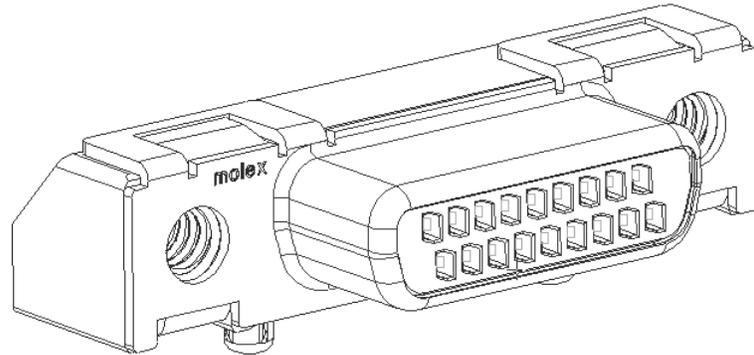
PRODUCT SPECIFICATION

TRIAD DIFFERENTIAL PAIR (TDP) /PCIE

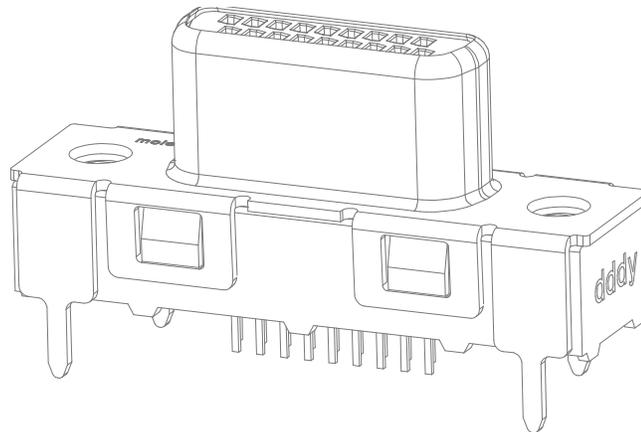
1.0 SCOPE

This Product Specification covers the TDP 18, 28, & 48 circuit, 1.27mm/.050" pitch, shielded dual row connector system, which includes the 74960 & 76641 series Receptacle Assembly, the mating 79925 series Cable Assembly and 75000 series Plug Connector Assembly.

2.0 PRODUCT DESCRIPTION



18 Circuit Right Angle Receptacle Assembly



18 Ckt Vertical Receptacle Assembly

2.1 RECEPTACLE ASSEMBLY

18 Ckt Vertical Receptacle	76641-0001
18 Ckt Right Angle Receptacle	74960-3018
28 Ckt Right Angle Receptacle	74960-3028
48 Ckt Right Angle Receptacle	74960-3048

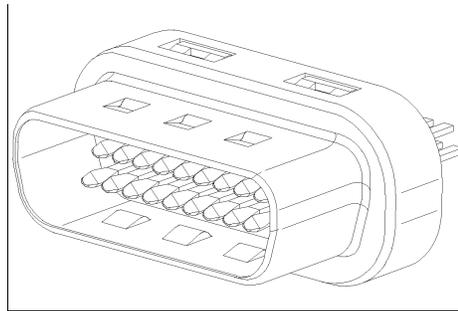
REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 1 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

2.2 RECEPTACLE ASSEMBLY DIMENSIONS

For dimensional details, recommended Printed Circuit Board layout and panel cut-out refer to Sales Drawing SD-74960-010



18 Circuit Plug Connector Assembly

2.3 PLUG CONNECTOR ASSEMBLY

The plug cable connector consists of, (1) housing, (1) shield, (2) overmolded sticks with trimmed solder tails. Refer to Application Specification AS-75000-001 for conductor termination details.

Assembled Plug Connector

- 18 Ckt Plug Connector 75000-1018 (First Mate Last Break)
- 28 Ckt Plug Connector 75000-1028
- 48 Ckt Plug Connector 75000-1048

2.4 PLUG CONNECTOR ASSEMBLY DIMENSIONS

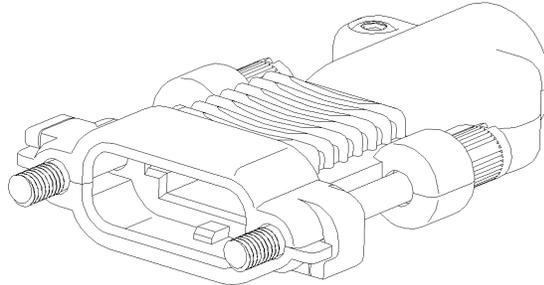
For dimensional details refer to Sales Drawing

- 18 Ckt Plug Connector SD-75000-000
- 28 Ckt Plug Connector SD-75000-001
- 48 Ckt Plug Connector SD-75000-001

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 2 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

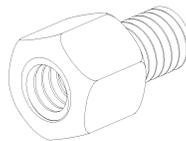


18 Circuit Plug Cable Kit

2.5 PLUG CABLE KIT

Consists of (2) Backshells, (2) Jackscrews & (2) Mounting Screws, refer to Sales Drawing for part numbers, circuit sizes, jackscrew thread types and recommended cable diameters;

Plug Cable Kit SD-75115-001 (black finish)



Jack Post

2.6 MOUNTING HARDWARE FOR JACKSCREWS

The jack post has an internal 4-40 or M3 thread to mate with the Plug Cable Kit jack screws. This provides a rigid mechanical connection and is suitable for applications that do not require frequent mating and unmating. The Molex jack post is recommended for this application to ensure proper mating of the contact interface when used with a 0.51-2.03 mm (.020"-.080") thick mounting panel.

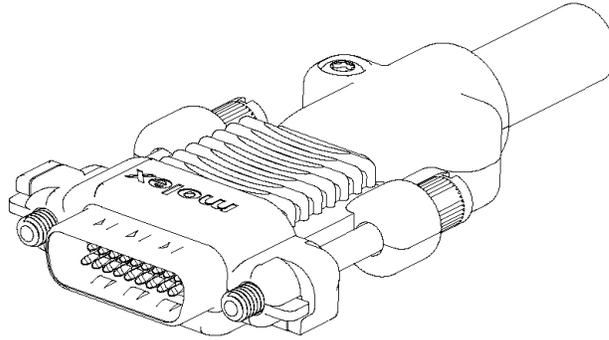
Refer to Sales Drawing for dimensional details and part numbers;

Jack Post SD-74962-000

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 3 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

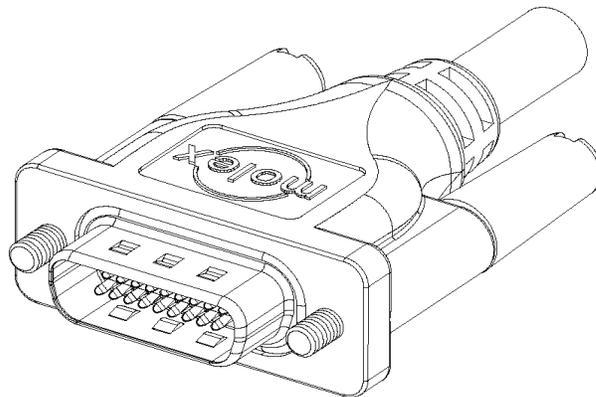


18 Circuit Cable Assembly

2.7 DIFFERENTIAL CABLE ASSEMBLY

Available in 1 & 3 meter lengths with either 4-40 (Standard) or M3 (Special) Jack Screws, refer to Sales Drawings for part numbers, electrical specifications and pin wiring details;

- 18 Ckt Cable assembly SD-79925-001
- 28 Ckt Cable Assembly SD-79925-006
- 48 Ckt Cable Assembly SD-79925-0014



PCIe 1x Cable Assembly

2.8 PCIE 1X CABLE ASSEMBLY

Available in multiple cable lengths with 4-40 Jack Screws, refer to Sales Drawings for part numbers, electrical specifications and pin wiring details;

- PCIe 1x Cable assembly SD-74576-000

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 4 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

2.9 MATERIALS

Receptacle Assembly

Housings: High temp glass filled thermoplastic, Black, UL94 V-0 rated

Terminals: Copper Alloy

Shield: Mild Carbon Steel

Threaded Inserts: Stainless Steel

Plug Connector Assembly

Housing: High temp glass filled thermoplastic, Black, UL94 V-0 rated

Terminals: Phosphor Bronze Alloy

Shield: Mild Carbon Steel

Plug Cable Kit

Backshells: Zinc Alloy

Jackscrews: Stainless Steel

Mounting screw: Steel

2.10 PLATINGS

Terminals: Selective Gold (Au) thickness in contact area;

15 microinches/0.38 micrometer minimum.

Selective matte Tin (Sn) thickness in pc tail area;

100 microinches/2.54 micrometer minimum over

50 microinches/1.27 micrometer minimum Nickel (Ni) overall.

Shields: 100 microinches/2.54 micrometer minimum bright Tin (Sn) over

50 microinches/1.27 micrometer minimum Nickel (Ni) over

100 microinches/2.54 micrometer minimum Copper (Cu).

2.11 MARKINGS

The Molex name is stamped on the front of each receptacle shield as an identifier.

Refer to Sales Drawings for additional information.

2.12 SAFETY AGENCY APPROVALS

UL File Number..... E29179

CSA File Number.....TBD

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 5 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

3.1 SPECIFICATIONS

All documents referenced shall be of the latest revision. The order of precedence detailing requirements of this specification is as follows :

1. Product drawings
2. This specification

3.2 REFERENCE DOCUMENTS

ANSI/EIA-364-1000.01 Environmental Test Methodology for Assessing the Performance of Electrical Connectors and Sockets Used in Business Office Applications.

IEC-801-2 International Electrotechnical Commission, Electro Discharge Requirements.

MIL STD-202 : Test methods for electronics and electrical component parts.

UL 94 : Tests for flammability of plastic materials.

Molex LFH .050 pitch interface durability testing, 5000 cycles (Test Report #4698).

Molex AS-75000-001 Application Specification, Plug Assembly Cable Termination.

4.0 RATINGS

4.1 VOLTAGE

40 Volts AC (RMS)

4.2 CURRENT

1.5 Amps per circuit at 30°C temperature rise.

30°C maximum temperature rise and 55°C maximum ambient per EIA-364-70.

4.3 TEMPERATURE

Operating: - 20°C to +85°C

Non-Operating: - 20°C to +85°C

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 6 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA . (Measurement locations in Section 7.0)	10 milliohms MAXIMUM [initial]
2	Contact Resistance @ Rated Current	Mate connectors: apply a maximum voltage of 20 mV at rated current. (Measurement locations in Section 7.0)	10 milliohms MAXIMUM [initial]
3	Contact Resistance of Wire Termination (Low Level)	Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA . (Measurement locations in Section 7.0)	2 milliohms MAXIMUM [initial]
4	Shell Resistance	Bulk resistance measured between ground tab leg on receptacle shield and the plug cable braid. Test current=100 mA; Test voltage=5 Volts DC open circuit maximum per ANSI/EIA-364-06A-83	50 milliohm maximum initial 50 milliohm maximum change from initial reading
5	Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	100 Megohms MINIMUM
6	Dielectric Withstanding Voltage	Unmated connectors: apply a voltage of 500 Volts DC +/- 50 V for 1 minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < 5 mA
7	Electrostatic Discharge	Test unmated from 1kV to 8kV in 1kV steps using 8mm ball probe per IEC 801-2. Contact discharge to shell, air discharge perpendicular to shell, air discharge at angle to shell.	No evidence of discharge to contacts at 8kV. Discharge to the shell is acceptable.
8	Capacitance	Measure between adjacent terminals at 1 MHz .	2 picofarads MAXIMUM
9	Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after: 96 hours (45 minutes ON and 15 minutes OFF per hour).	Temperature rise: +30°C MAXIMUM

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 7 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
10	Terminal Insertion and Withdrawal Forces	Insert and withdraw terminal (male to female) at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	0.59 N (0.13 lbf) MAXIMUM insertion force & 0.15 N (0.03 lbf) MINIMUM withdrawal force
11	Connector Mate and Unmate Forces	Mate and unmate shielded connector (male to female) at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	0.88 N (0.20 lbf) per Ckt MAXIMUM insertion force & 0.39 N (0.09 lbf) per Ckt MINIMUM withdrawal force
12	Receptacle Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	4.4 N (1.0 lbf) MINIMUM retention force
13	Durability	Mate connectors 500 cycles minimum for a maximum rate of 10 cycles per minute prior to Environmental Tests.	Contact Resistance: 10 milliohms MAXIMUM Shell Resistance: 50 milliohms MAXIMUM (change from initial)
14	Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	Contact Resistance: 10 milliohms MAXIMUM Shell Resistance: 50 milliohms MAXIMUM (change from initial]) & Discontinuity < 1 microsecond
15	Shock (Mechanical)	Mate connectors and shock at 50 g's with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X$, $\pm Y$, $\pm Z$ axes (18 shocks total).	Contact Resistance: 10 milliohms MAXIMUM Shell Resistance: 50 milliohms MAXIMUM (change from initial]) & Discontinuity < 1 microsecond
16	Fretting Corrosion (Thermal Shock)	Mate connectors; expose for 1,000 cycles between temperatures 25 and 85°C ; dwell 0.5 hours at each temperature. {Note: Remove surface moisture and air dry for 1 hour prior to measurements; monitor low level contact resistance every 250 cycles.}	10 milliohms MAXIMUM (change from initial]) & Visual: No Damage

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 8 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

17	Cable Flex	Flex cable 180° for 100 cycles.	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
18	Cable Pullout Force (Axial)	Apply an axial pullout force on the cable at a rate of 25 ± 6 mm (1 ± ¼ inch).	89.0 N (20 lbf) MINIMUM pullout force
19	Normal Force	For reference only	0.74 N (75 grams) MINIMUM
20	Thread Torque	Mounted to panel; Test to failure; Tighten jackposts with torque gage until threads are stripped and jackpost turns freely	0.56 N m (5.0 lbf in) minimum

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 9 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT										
21	Shock (Thermal)	Mate connectors; expose to 10 cycles of: <table border="0"> <tr> <td><u>Temperature °C</u></td> <td><u>Duration (Minutes)</u></td> </tr> <tr> <td>-40 +0/-3</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> <tr> <td>+105 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> </table>	<u>Temperature °C</u>	<u>Duration (Minutes)</u>	-40 +0/-3	30	+25 ±10	5 MAXIMUM	+105 +3/-0	30	+25 ±10	5 MAXIMUM	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
<u>Temperature °C</u>	<u>Duration (Minutes)</u>												
-40 +0/-3	30												
+25 ±10	5 MAXIMUM												
+105 +3/-0	30												
+25 ±10	5 MAXIMUM												
22	Thermal Aging	Mate connectors; expose to: 240 hours at 105 ± 2°C	10 milliohms MAXIMUM (change from initial]) & Visual: No Damage										
23	Humidity (Steady State)	Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90-95% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage										
24	Humidity (Cyclic)	Mate connectors: cycle per EIA-364-31: 24 cycles at temperature 25 ± 3°C at 80 ± 5% relative humidity and 65 ± 3°C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage										
25	Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage										
26	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)										

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 10 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION

27	Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 245 ± 5°C Recommend same parameters as SMES-152.	Visual: No Damage to insulator material
28	IR Process Soldering	Molex IR Profile	Dimensional: Conformance to Sales Drawing requirements & Visual: No Damage

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.
 18 Ckt Vertical Receptacle Assembly packaged in tube per PK-76641-1000
 18 & 28 Ckt Right Angle Receptacle Assembly packaged in embossed tape & reel per PK-74960-995.
 48 Ckt Right Angle Receptacle Assembly packaged in embossed tape & reel per PK-74960-996.
 Assembled Plug Connector tube packed per PK-75000-991.
 Plug Cable Kit bulk packed per PK-75115-990.

7.0 GAGES AND FIXTURES

8.0 OTHER INFORMATION

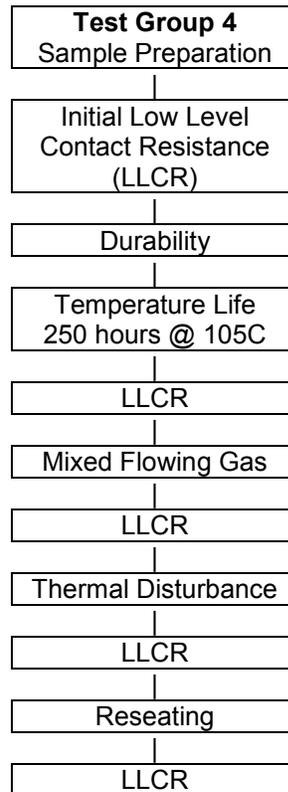
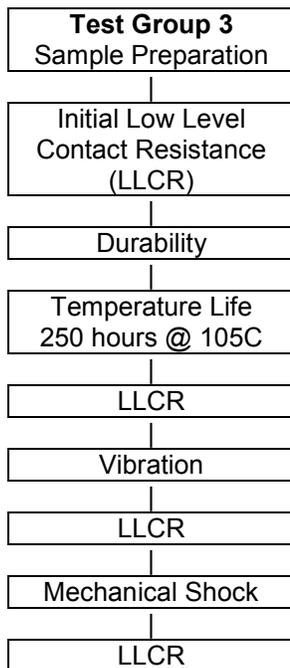
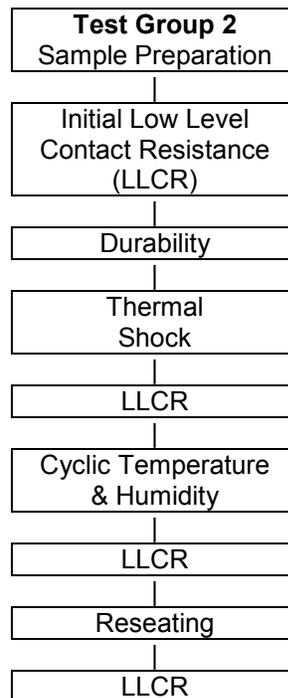
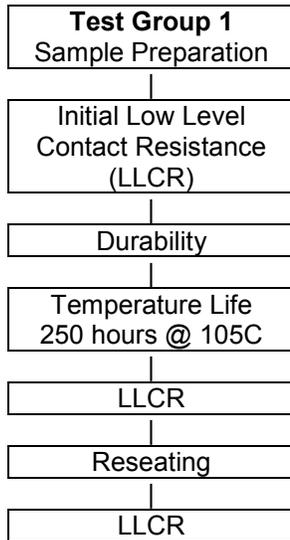
9.0 TEST SEQUENCES:

Reliability Test Sequences (per EIA-364-1000 Test Groups 1, 2, 3 & 4):

REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 11 of 12	
DOCUMENT NUMBER: PS-74960-000		CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS



PRODUCT SPECIFICATION



REVISION: C	ECR/ECN INFORMATION: EC No: UCP2009-0485 DATE: 2008 / 08 / 22	TITLE: PRODUCT SPECIFICATION TRIAD DIFFERENTIAL PAIR RECEPTACLE & PLUG ASSEMBLY	SHEET No. 12 of 12
DOCUMENT NUMBER: PS-74960-000	CREATED / REVISED BY: T. McCLELLAND	CHECKED BY: T. McCLELLAND	APPROVED BY: M. BANAKIS