NUMBER	TYPE	
GS-12-433	PRODUCT SPECIFICATION	

TITLE	PAGE	REVISION
SUB DELTA-D RIGHT ANGLE PIP FCI P/N : D--P/S 13 A/B 4/6------LF(EUROPE STANDARD) D--P/S 33E 4/6------LF(US STANDARD) D--P/S 13A/B 4/6—108-LF(EUROPE REVERSE)	1 of 10	C
	AUTHORIZED BY: ALIAS BABU	DATE: 09 June 2015
	CLASSIFICATION: UNRESTRICTED	

DELTA D R/A PIP

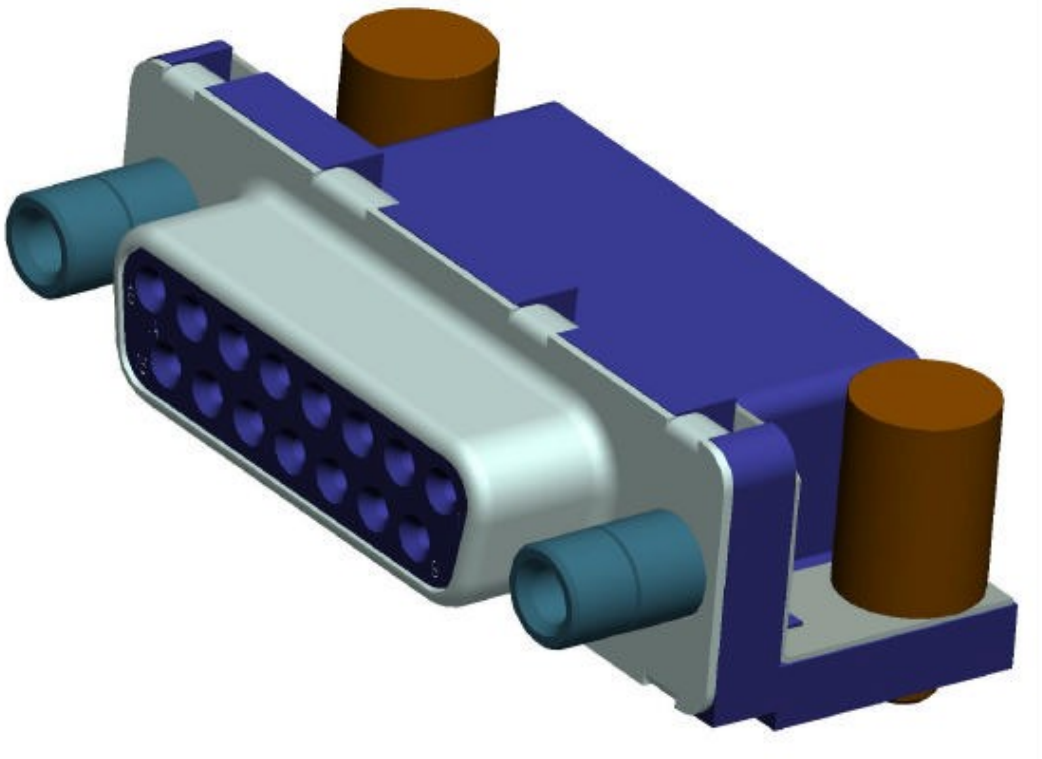

Fig: 1

1.0 Objective

This specification defines the performance, test, quality and reliability requirements of SUB DELTA D PIP Right Angle.

2.0 Scope

This product specification covers the requirements of a SUB DELTA D PIP Right Angle (Male & Female):

- US STANDARD 9,15, 25 & 37 POS
- EUROPE STANDARD 9,15, 25 & 37 POS
- EUROPE Reverse

For Product Pick Process: Hand Placing / Gripper / Vacuum Nozzle

3.0 Ratings

3.1 Rated Voltage = 300V

3.2 Test Voltage = 1000V

3.3 Max. Current Rating = 5A

3.4 Contact Resistance ≤ 25mΩ

3.5 Shell Resistance ≤ 5mΩ

3.6 Insulation Resistance ≥ 5000 MΩ

3.7 Operating Temperature Range = -55°C to 125 °C

4.0 Applicable Documents

4.1 FCI Specifications

4.1.1 Engineering drawings

4.1.2 Packing Specifications:

In accordance with GS-14-1139 for Tape & Reel Packaging
In accordance with GS-14-1157 for Tray Packaging

4.2 OTHER STANDARDS AND SPECIFICATIONS

4.2.1 IEC 512
4.2.2 CECC 75 301
4.2.3 DIN 41652
4.2.4 MIL-DTL-24308
4.2.5 Flammability: UL94 V-0
4.2.6 Lead free soldering
In accordance with: JSTD_020

5.0 Requirements

5.1 Qualification

Connectors furnished under this specification shall be capable of meeting the qualification test requirements specified herein.

5.2 Materials

5.2.1 Housing dielectric material: Thermoplastic- PA 33% Glass Filled
UL94 V-0 rating Black colour

5.2.2 Terminal material: Copper Alloy
Brass/Phosphorous Bronze for male contact
Phosphorous Bronze for female contact

5.2.3 Shell Material: Steel

5.2.3 Accessory Material: Brass/Mild Steel

5.3 Finish

5.3.1 Terminal Plating: Gold over Nickel on mating area metal
Tin over Nickel on termination

5.3.2 Shell Plating: Nickel over Copper or Zinc Cr3+

5.3.3 Accessory Plating:
LIF Metal Peg: - Tin over Nickel.
Female Screw, Insert & Metal Bracket: - Nickel Sulfamate or Tin over Nickel

5.4 Design and Construction

Connectors shall be of the design, construction, and physical dimensions specified on the applicable product drawing. There shall be no cracks, burrs, or other physical defects that may impair performance.

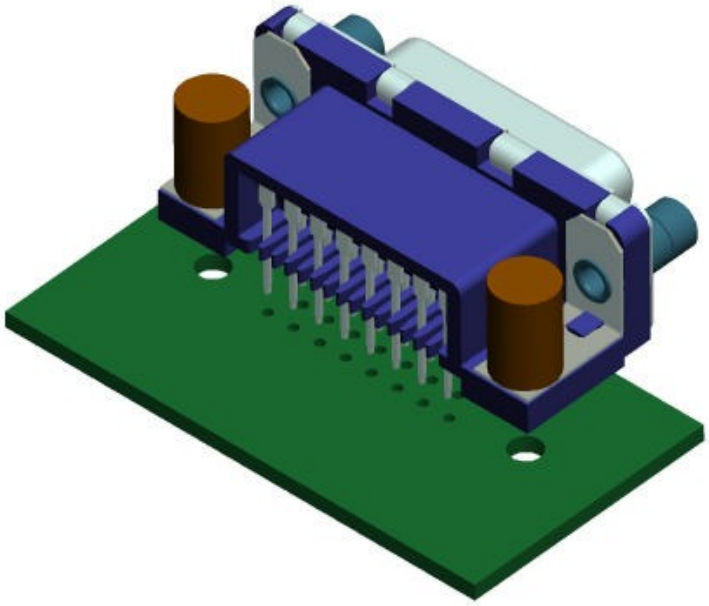

Fig: 2

PRODUCT LEAD FREE IN ACCORDANCE TO RoHS 2002/EC/95

5.4.1 Mating: The connector shall be capable of mating and unmating by hand without the use of special tools with specified temperature range.

5.4.2 Workmanship: Connectors shall be uniform in quality and shall be free from burrs, scratches, cracks, voids, chips, blisters, pin holes, sharp, edges and other defects that will adversely affect life or serviceability.

5.4.3 Interchangeability: Individual plugs and sockets shall be capable of mating with any appropriately constituted female or male standard D-subminiature connector of the same population without degradation in performance.

6.0 Electrical Characteristics

6.1. Contact Resistance, Low Level (LLCR)

The low level contact resistance shall not exceed 25 milliohms (Max. rise 10mΩ in relation to initial values in other tests) when measured in accordance with IEC 512-2, Method Test 2a.

The following detail shall apply:

a. Method of Connection - attach current and voltage leads as shown in figure 3.

b. Test Voltage: Not to exceed 20 millivolts DC or AC. Peak, open circuit.

c. Test Current: Not to exceed 100 milliamperes. AC or DC

6.2. Insulation Resistance

The insulation resistance of unmated connectors shall be not less than 5,000 megohms when measured in accordance with IEC 512-2, Method Test 3a.

The following detail shall apply:

a. Test Voltage: 100V±15V d.c

b. Electrification Time: 60 ± 5 sec

c. Point of Measurement: Between adjacent contacts.

6.3 Voltage Proof (DWV)

There shall be no breakdown or flashover and maximum permissible leakage current shall not be exceeded when voltage specified is applied and when the unmated connectors are tested in accordance with IEC 512-2, Method Test 4a.

The following detail shall apply:

a. Test Voltage

i. Contacts/Contacts: 1000 V r.m.s

ii. Contact/Test panel: 1200 V r.m.s

b. Test duration: 60 ± 5 sec

c. Test Condition: Standard atmospheric conditions

6.4 Current Rating

The temperature rise above ambient shall not exceed 30 °C at any point in system when all contacts are powered at 5 amperes

The following details shall apply:
Conditions: IES 512-3
Standard atmospheric conditions
Terminations are wired with 0.5mm2 wire.

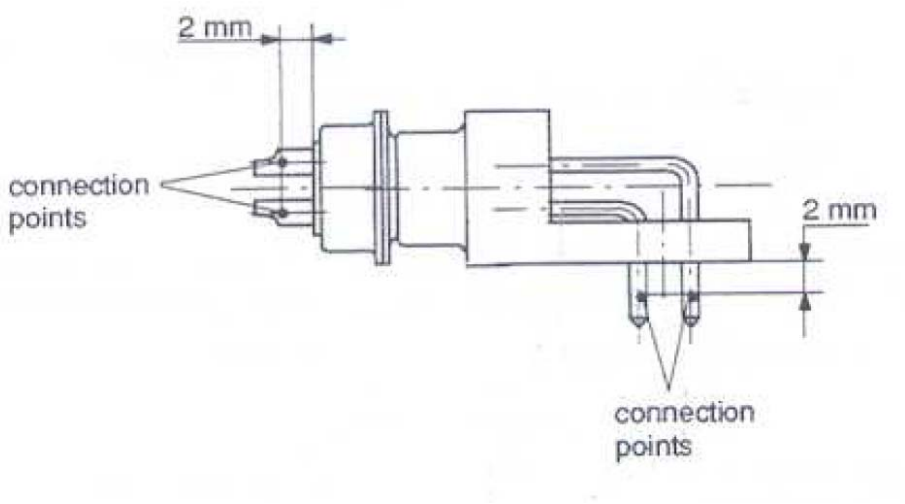

Fig: 3

7.0 Mechanical Characteristics

7.1 Mechanical operation

The specimen shall be subjected to a mechanical operational endurance test in accordance with IEC 512-5, Test 9a

The number and speed of the operation shall be as shown below:

a. Speed: 10mm/s max.
b. Rest: 10 s min. (unmated)

Performance level	Operations
1	500
2	200

7.2 Insertion and withdrawal forces

Insertion and withdrawal forces of a mating component shall be checked in accordance with IEC 512-7, Test 13b

Sl.No.	Number of contacts	Insertion and Withdrawal force				
		Withdrawal			Insertion	
		Min.N	Max.N		Max. N	
1	9	3.3	20	Min. 0.3N/Cts. with pin Ø 0.99mm	30	Max. 3.3N/Cts. with pin Ø 0.99mm
2	15	4.5	33		50	
3	25	7.8	56		83	
4	37	11	82		123	

7.3 Insert retention in housing (axial)

Insert retention in housing (axial) shall be checked in accordance with IEC 512-8, Test 15b

Number of contacts	F in N
9	53
15	80
25	124
37	180

7.4 Vibration

The specimen shall be subjected to vibration testing in accordance with IEC 512-4, Test 6d

Performance level	Severity
1	10Hz to 2000 Hz and 1.5mm or 20g.3x2.5h
2	10Hz to 500 Hz and 0.35mm or 5g. 3x2h

7.5 Retention requirement for Accessories

Insert M3 or UNC 4-40: Retention against torque 0.7Nm Max
Female screw lock: Retention against torque 0.5Nm Max
Metal PIP: Retention against force 15N Min.

8.0 Environmental Conditions

8.1 Climatic category

Performance level	Category Temperature		Damp heat , Steady state		Days
	Lower ° C	Upper ° C	Temp ° C	Rel. Humidity	
1	-55	125	40	93%	56
2	-55	100	40	93%	21

9.0 QUALITY ASSURANCE PROVISIONS

9.1 Equipment Calibration

All test equipment and inspection facilities used in the performance of any test shall be maintained in a calibration system in accordance with ANSI Z-540 and ISO 9000.

9.2 Inspection Conditions

Unless otherwise specified herein, all inspections shall be performed under the following ambient conditions:

a. Temperature: 25 +/- 5 deg C
b. Relative Humidity: 30% to 60%
c. Barometric Pressure: Local ambient

9.3 Sample Quantity And Description

Test Groups as defined in CECC 75 301

Test group	Number of specimen	
	Performance level	
	1	2
P	24	24
AP	4	4
BP	4	4
CP	4	4
DP	4	4
EP	4	4
FP	4	4

9.4 Acceptance

9.4.1 Electrical and mechanical requirements placed on test samples as indicated in paragraphs 6.0 and 7.0 shall be established from test data using appropriate statistical techniques or shall otherwise be customer specified, and all samples tested in accordance with this product specification shall meet the stated requirements.

9.4.2 Failures attributed to equipment, test setup, or operator error shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

9.5 Qualification Testing

Qualification testing shall be performed on sample units produced with equipment and procedures normally used in production. Data shall be provided with the samples noting production history: production lot codes for components and assemblies, print revisions for component and assemblies, and plating composition and thickness

9.6 Re-Qualification Testing

If any of the following conditions occur, the responsible product engineer shall initiate requalification testing.

a. A significant design change is made to the existing product which impacts the product form, fit or function. Examples of significant changes shall include, but not be limited to, changes in the plating material composition or thickness, contact force, contact surface geometry, insulator design, contact base material, or contact lubrication requirements.

b. A significant change is made to the manufacturing process which impacts the product form, fit or function.

c. A significant event occurs during production or end use requiring corrective action to be taken relative to the product design or manufacturing process.

REVISION RECORD

Rev	Page	Description	EC#	Date
A	ALL	NEW	I07-0017	2007/04/16
B	ALL	Climatic category, electrical & Mechanical characteristics are added	I08-0137	2008/10/10
C	ALL	Product specification format standardization and updating Material Details	ELX-I-21108	2015/06/09