



DYNAMIC CONNECTOR D5900 SERIES

1. SCOPE

1.1. Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of Dynamic connector D5900 series.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 501-78577: Test report
- 408-78067: Instruction sheet

2.2. Industry Documents

- MIL-STD-202: Test methods for Electronics and Electrical Component Parts
- IEC 60068: Environmental testing
- EIA364: Electrical Connector / Socket Test Procedures Including Environmental Classifications

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

- Contact
 - (1) Material: Copper Alloy
 - (2) Finish: Nickel plating all over
 - Mating contact point: Gold plating
 - Wire clamping point: Tin plating
 - Soldering point: Tin plating
- Spring
 - (1) Material: Stainless steel
- Retention leg
 - (1) Material: Copper alloy
 - (2) Finish: Tin plating over Nickel plating
- Housing
 - (1) Material: Glass fiber reinforced thermoplastic polyester
 - (2) Flammability: UL 94V-0

3.3. Ratings

Voltage	Current	Temperature
630V AC/DC UL1059: Use group C: 600V AC/DC	Fig. 1. Derating curve is paragraph 6	-55°C to 105°C Included temperature rising by energized current

Unit: A

Position	Current Rating					
	AWG 8	AWG 10	AWG 12	AWG 14	AWG 16	AWG 18
4 Pos.	42	30	20	15	10	7
6 Pos.	35	30	20	15	10	7

Fig. 1

3.4. Test Requirements and Procedures Summary

No.	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
3.4.1	Examination of product	Meets requirements of product drawing.	Visual inspection No physical damage.
ELECTRICAL			
3.4.2	Contact Resistance (Low Level)	2mΩ Max. (Initial) 10mΩ Max. (Final)	Subject mated contacts assembled in housing to 50mV Max open circuit at 50mA. Refer to Fig.4. EIA364-23
3.4.3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA Max.	2.2kVAC for 1 minute. Test between adjacent circuits of mated/unmated connectors.
3.4.4	Insulation Resistance	1000MΩ Min (Initial) 100MΩ Min (Final)	Impressed voltage 500 V DC. Test between adjacent circuits of mated/unmated connectors. EIA364-21
3.4.5	Temperature Rising	30°C Max. Under loaded rating current.	Measure temperature rising by energized current. Refer to Fig. 5 EIA364-70
MECHANICAL			
3.4.6	Vibration (low Frequency)	No electrical discontinuity greater than 1μsec. Shall occur. Meet requirement of Contact resistance 10mΩ Max. (Final)	Subject mated connectors to 10-55-10 Hz traversed in 1cycle per 1 minute with amplitude of 1.52mm, 2 hours each of 3 mutually perpendicular planes. Fix the cable to vibration test jig at the point of 10cm from the cable insert hole of housing. 100 mA applied. Refer to Fig. 6. EIA-364-28
3.4.7	Physical Shock	No electrical discontinuity greater than 1μsec. Shall occur. Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated connectors Accelerated Velocity: 490m/s ² Waveform: Half Sine Curve Duration: 11 m sec. Velocity Change: 3.4m/s Number of Drops: 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops EIA 364-27
3.4.8	Connector Mating Force	9.8N × Number of positions Max.	Operation Speed: 100 mm/min. Measure the mating force. Locking feature of housing shall be removed.
3.4.9	Connector Unmating Force	1.0N ~ 9.8N per contact (Initial)	Operation Speed: 100mm/min. Measure unmating force. Locking feature of housing shall be removed.
3.4.10	Wire pullout force	AWG18(0.82mm ²): 30N AWG16 (1.3mm ²): 40N AWG14 (2.1mm ²): 50N AWG12 (3.3mm ²): 60N AWG10 (5.3mm ²): 80N AWG 8 (8.4mm ²): 90N	Operation Speed: 100 mm/min. Measure the force of extraction or wire break.

3.4.11	Durability (Repeated Mating/Unmating)	Meet requirement of Contact resistance 10mΩ Max. (Final)	Number of Cycles: 25 cycles
3.4.12	Housing Locking Strength	49N Min.	Measure Unmating force when locking feature break. Operation Speed: 100 mm/min.

ENVIRONMENTAL

3.4.13	Thermal Shock	Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated connector. -55°C/30 min., 85°C/30 min. Making this a cycle, repeat 25 cycles. Measurement shall be conducted after 3hours cooling in the room. EIA 364-32
3.4.14	Humidity-Temperature Cycling	Shall satisfy the requirements of Dielectric withstanding voltage and Insulation resistance after the test. Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated Connector, 25~65°C, 80~95 % R.H. 10 cycles Cold shock -10°C performed. 1 cycle=24hours. Measurement shall be conducted after 3hours cooling in the room. EIA 364-31 method IV
3.4.15	Humidity	Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated Connector, 90-95%R.H. 40°C 96hours EIA 364-31 method II
3.4.16	Salt Spray	Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated Connector. 5±1% Salt spray 48hours Measurement shall be conducted after removing salt by water and natural drying. EIA 364-26
3.4.17	Heat Aging	Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated connector 105±2°C, Duration :250hours Measurement shall be conducted after 3hours cooling in the room. EIA 364-17
3.4.18	SO ₂ Gas	Meet requirement of Contact resistance 10mΩ Max. (Final)	Mated Connector SO ₂ gas 10ppm, 90 % R.H 25°C, 96hours
3.4.19	Solderability	Wet solder coverage 95% Min.	Dip in solder bath with following conditions. Used solder: Lead-free solder. Solder Temperature: 240±5°C Immersion time: 5±0.5seconds
3.4.20	Resistance to Soldering Heat	Appearance of the specimen shall be inspected after the test. No physical damage such as cracks, chips or melting.	Dip in solder bath with following conditions. Used solder: Lead-free solder. Solder Temperature: 260±5°C Immersion time: 10±0.5seconds. In case of manual soldering, 360±10°C, 3±0.5sec iron shall be applied.



NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests specified in the Product Qualification and Requalification Test Sequence shown in Fig. 3.

Fig. 2

4. PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

TEST OR EXAMINATION	TEST GROUP														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	TEST SEQUENCE (a)														
Examination of product	1,3	1,3	1,3	1,7	1,5	1,5	1,9	1,5	1,5	1,5	1,5	1,5	1,3	1,3	1,5
Contact Resistance (Low Level)					2,4	2,4	2,8	2,4	2,4	2,4	2,4	2,4			2,4
Dielectric Withstanding Voltage				3,6											
Insulation Resistance				2,5											
Temperature Rising			2												
Vibration					3										
Physical Shock						3									
Conn. Mating Force							3,6								
Conn. Unmating Force							4,7								
Wire pullout force	2														
Durability (Repeated Mate/Unmating)							5								
HSG Locking Strength		2													
Thermal Shock								3							
Humidity-Temperature Cycling				4					3						
Humidity															3
Salt spray										3					
Heat Aging											3				
SO ₂ Gas												3			
Solderability													2		
Resistance to Soldering Heat														2	



NOTE

(a) Numbers indicate sequence in which tests are performed.

Fig. 3

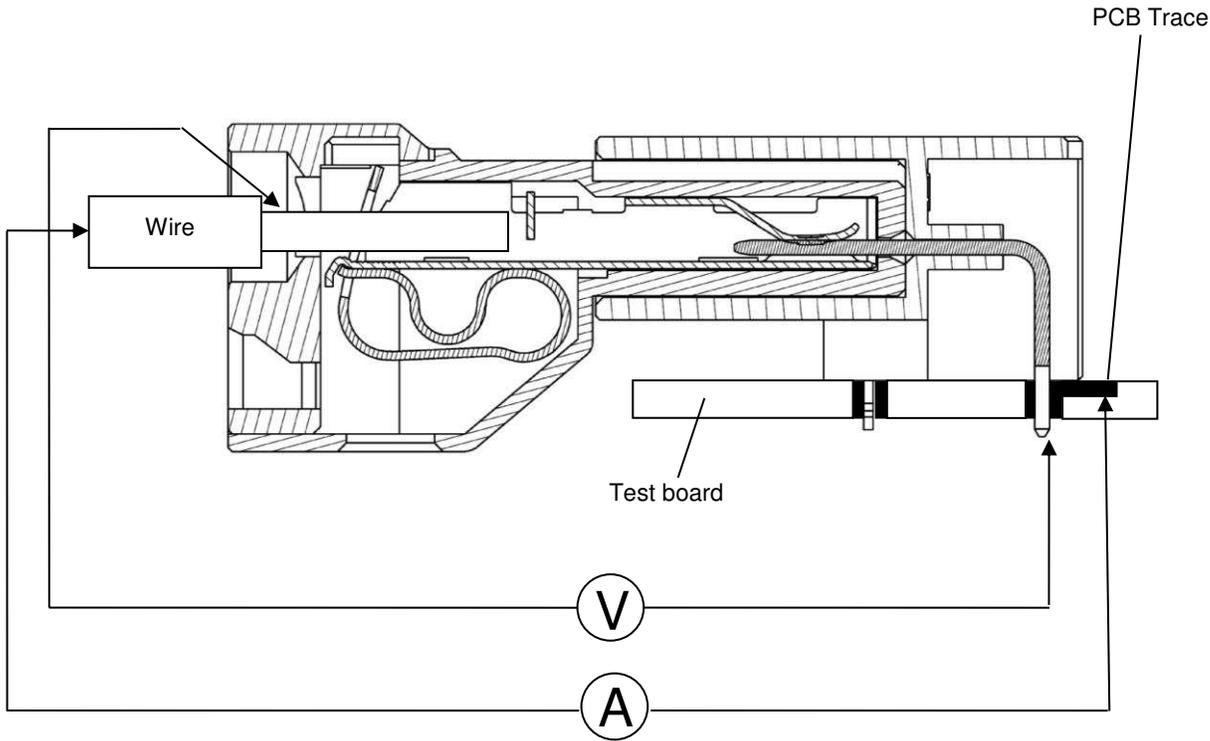


Fig.4. Measurement of contact resistance

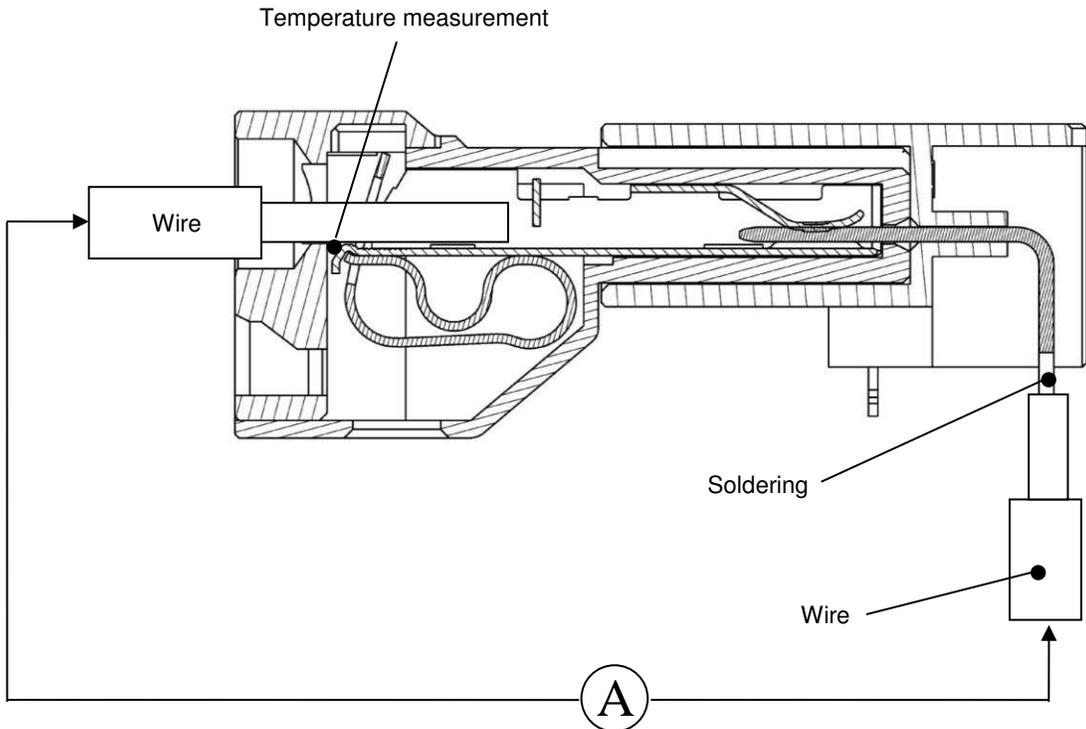


Fig.5. Temperature rising measurement

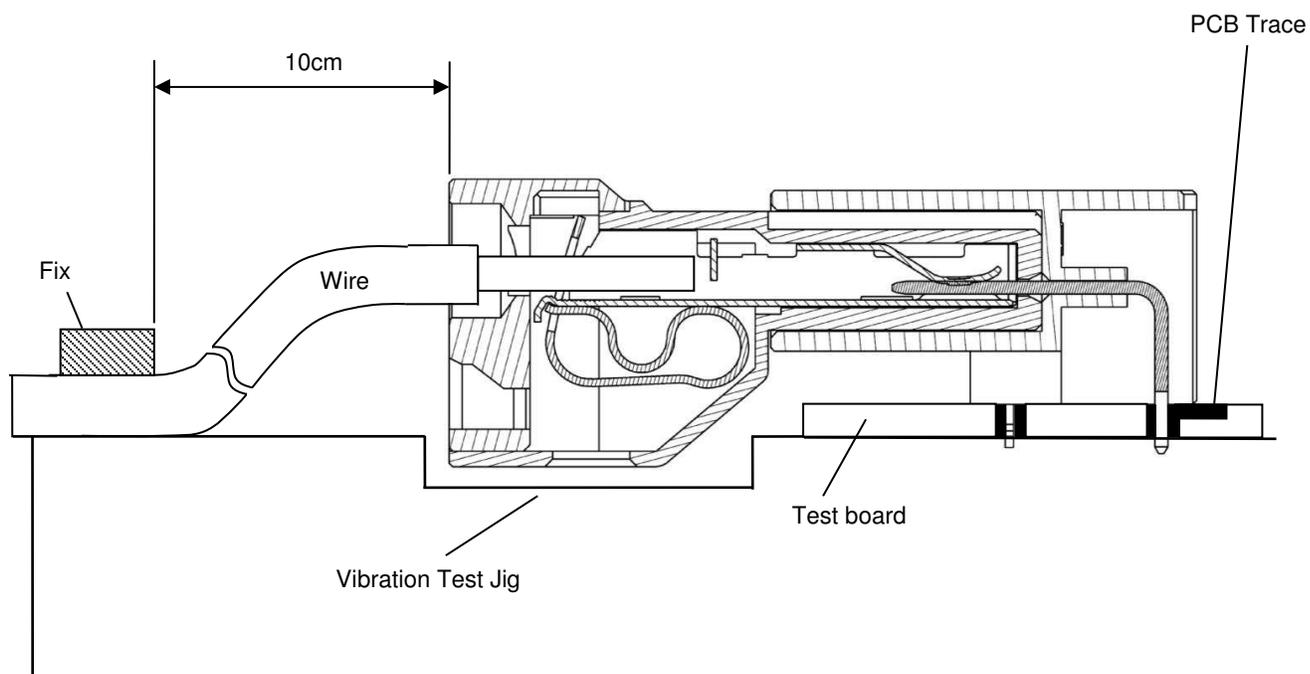


Fig.6. Vibration Test Setting

5. REQUIREMENTS:

5.1. Qualification Testing

- Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production.

- Test Sequence

Qualification inspection shall be verified by Testing samples as specified in Figure 5.

- Test conditions

Unless otherwise specified, all the tests shall be performed in any combination of the test condition

Temperature	15-35°C
Relative humidity	45-75%
Atmospheric Pressure	866.6-1066.6hPa

5.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by envelopment product, quality and reliability engineering.

5.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure.4. Failures attributed to equipment, test get up, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

5.4. Quality Conformance Inspection

The applicable TE quality inspection plan will 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.

6. DERATING CURVE

Derating factor 0.8

