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# DYNAMIC Connector D-1000 SERIES

## 1. Scope

### 1.1 Contents

This specification covers the requirement for product performance, test method and quality assurance provisions of Dynamic Connector D1000 series, with high performance of contact retention force for Receptacle housing.

Application products description and part numbers are shown in the appendix 1.

### 2. Application document

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirement of this specification and the product drawing, the product drawing shall take precedence.

### 2.1 Test specification

A. 114-5377: Application specification

### 2.2 Commercial standards and specification

A. MIL-STD-202: Test methods for electronic and electrical Component Parts

B. IEC 512: Test Specification

C. EIA-364: Electrical Connectors / Socket Test Procedures Including Environmental Classifications

## 3. Requirements

### 3.1 Design and construction

Products shall be of the design, construction and physical dimension specified on the applicable product drawing.

### 3.2 Materials

#### A. Contacts

Material: Copper Alloy

Finish (Rec): Gold/Pre-Tin

Contact point: Gold/Pre-Tin

Solder point: Tin plating

#### B. Receptacle Housing

Material: Nylon

Color: Black

Flammability: UL 94V-0

#### C. Header Housing

Material: G. F. Polyester

Color: Black

Flammability: UL 94V-0

#### D. Retention Leg

Material: Pre-Tin Copper Alloy

**3.3 Ratings**

- A. Voltage Rating: 125V AC/DC
- B. Current Rating: See below Fig. 1
- C. Temperature rating: -55°C To 105°C
- D. Minimum Rating: 1mV, 1μA minimum

	Contact	Rec-Contact and Tab contact		
	Pos.	1Pos	2-20Pos.	21-40Pos.
Wire Size				
AWG #22		3	2.5	2

Fig. 1

Note: Contact with “L”, “2L” can not installed on Dynamic D1100, both for Rec and Tab contact. See product catalog.

**3.4 Performance Requirements and Test Descriptions**

This specification shall be designed to meet the electrical, mechanical, and environmental performance requirement specified in Fig.2. All test shall be performed in the room temperature, unless otherwise specified.

**3.5 Test Requirements and Procedures Summary**

Para.	Test items	Specification	Procedures
3.5.1	Examination of Product	Meet requirements of product drawing and TE application specification 114-5377	Visual inspection No physical damage

Electrical requirements			
3.5.2	Termination Resistance (Low Level)	10mΩ(initial) 20mΩ(final)	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA. Take the resistance of the wire only away from measurement
3.5.3	Insulation Resistance	1000MΩ Min. (initial) 100MΩ Min. (final)	Impressed voltage 500V DC. Test between adjacent circuits of mated connectors. EIA 364-21
3.5.4	Dielectric withstanding voltage	Neither creeping discharge nor flashover shall occur. Current leakage: 0.5mA Max.	1000V AC for 1 minute. Test between adjacent circuit of mated connector. EIA 364-20

3.5.5	Temperature rising	30°C Max. under loaded specified current of rating current.	Install contacts in the housing, energize, and measure the rise in heat by energizing. The measurement is measured on the condition of not receiving the influence of the convection of air. The thermo-couple is measured attaching to crimping of the wire barrel of contact. See figh.1, fig.6 EIA 364-40
<b>Mechanical Requirements</b>			
3.5.6	Vibration	No electrical discontinuity greater than 1μ Sec. shall occur. 20mΩ Max. (final)	Subject mated connectors to 10-500-10Hz traversed in 1 cycle per 15 minutes at 1.52mm amplitude 3 hours each of mutually perpendicular planes. 100mA applied. EIA 364-28 Condition 2
3.5.7	Physical Shock	No electrical discontinuity greater than 1μ Sec. shall occur. 20mΩ Max. (final)	Mated connector. Accelerated Velocity:490m/s <sup>2</sup> Waveform: Sign curve Duration:11m Sec. Number of drops: 3 drops each to normal and reversed directions of X, Y, and Z axes, total 18 drops EIA 364-27
3.5.8	Connector mating force	Specification Gold plating contact (1 <sup>st</sup> ~500 <sup>th</sup> ); Tin plating contact (1 <sup>st</sup> ~30 <sup>th</sup> ) Contact Point: Gold plating: 80N Max. Tin Plating: 100N Max.	Operation speed: 25mm/min. Measured the force required to the mated connectors. It should be measured with housing locked. EIA 364-13.
	Connector Unmating force	Gold plating contact: 0.58N X POS. Min.(1 <sup>st</sup> ) 0.29N X POS. Min.(500 <sup>th</sup> ) Tin plating contact: 0.58N X POS. Min.(1 <sup>st</sup> ) 0.29N X POS. Min.(30 <sup>th</sup> )	Operation speed: 25mm/min. Measured the force required to the mated connectors. It should be measured with housing locked. EIA 364-13.
3.5.9	Contact insertion force	7.84N Max. per contact	Measure the force required to insert the contact into housing.
3.5.10	Contact retention force	40N Min.	Apply an axis pull-out load to crimped wire. Operation speed: 100mm/minute EIA 364-29

3.5.11	Contact mating force per Pin	Gold plating contact: 5.88N X POS. Max. (1 <sup>st</sup> ~500 <sup>th</sup> ) Tin plating contact: 5.88N X POS. Max. (1 <sup>st</sup> ~30 <sup>th</sup> )	Operation speed: 100mm/min. Measured the force required to the mated connectors. EIA 364-13.				
	Contact Unmating force per Pin	Gold plating contact: 0.58N Min. (1 <sup>st</sup> ) 0.29N Min. (500 <sup>th</sup> ) Tin plating contact: 0.58N Min. (1 <sup>st</sup> ) 0.29N Min. (30 <sup>th</sup> )	Operation speed: 100mm/min. Measured the force required to the mated connectors. EIA 364-13.				
3.5.12	Contact Crimping Tensile strength	See table <table border="1" data-bbox="527 625 963 758"> <thead> <tr> <th>Wire size [mm<sup>2</sup>] (AWG #)</th> <th>Crimping tensile [N(kg)] Min.</th> </tr> </thead> <tbody> <tr> <td>0.34(#22)</td> <td>44.1(4.5kg)</td> </tr> </tbody> </table>	Wire size [mm <sup>2</sup> ] (AWG #)	Crimping tensile [N(kg)] Min.	0.34(#22)	44.1(4.5kg)	Apply an axis pull-out load to crimped wire of contact secured on the tester. Subjects take insulation barrel away. Operation speed: 100mm/minute EIA 364-08
Wire size [mm <sup>2</sup> ] (AWG #)	Crimping tensile [N(kg)] Min.						
0.34(#22)	44.1(4.5kg)						
3.5.13	Durability (Repeated mating/unmating)	Termination Resistance (Low level): 20mΩ(final)	No. of cycles: 30cycles (Tin plating) 500cycles (Gold plating)				
S3.5.14	Housing lock strength	24.5N Min.	Measure the connector lock strength. Operation speed: 100mm/minute. EIA 364-98				
3.5.15	Post retention force	9.8N Min.(V-HDR) 4.9N Min.(H-HDR)	Measured the post retention force. Operation speed: 100mm/minute				
3.5.16	Panel retention force	29.4N Min.	Measured the panel retention force. Operation speed: 100mm/minute EIA 364-98				

Environmental requirements			
3.5.17	Thermal shock	Termination Resistance (Low level): 20mΩ(final)	Mated connector. -55°C/30min, 85°C/30min. Making this a cycle, repeat 25 cycles. The measurement is held after being left indoor for 3 hours. EIA 364-32
3.5.18	Humidity-temperature cycling	Termination resistance: 20mΩ(final) Insulation resistance: 100MΩ(final) Dielectric withstanding voltage: Neither creeping discharge nor flashover shall occur. Current leakage: 0.5mA Max. 1000V AC for 1 minute.	Mating/Unmating connector. 25~65°C, 80~95% R.H Cold shock -10°C (not)performed 10 cycles. 1cycle=24hours The measurement is held after being left indoor for 3hours. MIL-STD-202 method 106
3.5.19	Salt spray	No corrosion influence performance for Termination Resistance (Low level): 20mΩ(final)	Subject the mated/unmating connectors to 5±1% salt concentration for 48hours. The measurement is held after remove the salt and dry up at indoor. EIA 364-26 condition A
3.5.20	Temperature life (Heat aging)	Termination Resistance (Low level): 20mΩ(final)	Mated connector. 105±2°C, duration: 96hours. The measurement is held after being left indoor for 3 hours. EIA 364-17
3.5.21	Industrial Gas (SO <sub>2</sub> )	No corrosion influence performance for Termination Resistance (Low level): 20mΩ(final)	Mated connector. SO <sub>2</sub> :10ppm, 95%R.H 25°C, 96hours
3.5.22	Solderability	Wet sold coverage: 95% Min.	Eutectic solder: Solder temperature: 235±5°C Immersion duration: 3±0.5 Sec. Lead-free-solder Solder temperature: 245±5°C Immersion duration: 3±0.5 Sec. EIA 364-52
3.5.23	Resistance to soldering heat	No physical damage shall occur	Test connector on PCB. Solder temperature: 260±5°C Immersion duration: 10±0.5 Sec. MIL-STD-202 Condition 210 EIA 364-56A procedure 3 condition C In case of manual iron, apply it to 360±10°C for 3±0.5 Sec. without forcing pressure to affect the time of contact

Fig.2

3.6 Product Qualification Test Sequence

Test Item	Test Group	Test Group									
		1	2	3	4	5	6	7	8	9	10
		Test sequence									
Test Examination											
Confirmation of product		1	1	1	1,3	1,3	1,3	1	1	1	1
Termination Resistance								2,5	2,6	2,4	2,6
Dielectric withstanding voltage											4,8
Insulation Resistance											3,7
Temperature rising					2						
Vibration (High Frequency)							3				
Physical Shock							4				
Connector Mating Force								3			
Connector Unmating Force								4			
Contact Insertion Force				2							
Contact Mating Force per PIN		2									
Contact Unmating Force per PIN		3									
Crimping tensile strength	2										
Durability								5			
Housing Locking Strength			2								
Panel Locking Strength											
Humidity-temperature cycling											5
Thermal Shock									3		
Salt Spray											
Contact Retention Force						2					
Temperature life											
Industrial SO <sub>2</sub>											
Post Retention Force											
Solderability											
Resistance to Solder Heat											

Test Group \ Test Item	Test Group						
	11	12	13	14	15	16	17
	Test Sequence						
Test Examination							
Confirmation of product	1,4	1	1	1	1	1,3	1
Termination Resistance	2,5	2,4	2,4				
Dielectric withstanding voltage							
Insulation Resistance							
Temperature rising							
Vibration (High Frequency)							
Physical Shock							
Connector Mating Force							
Connector Unmating Force							
Contact Insertion Force							
Contact Mating Force per PIN							
Contact Unmating Force per PIN							
Crimping tensile strength							
Durability							
Housing Locking Strength							
Panel Locking Strength							2
Humidity-temperature cycling							
Thermal Shock							
Salt Spray	3						
Contact Retention Force							
Temperature life		3					
Industrial SO <sub>2</sub>			3				
Post Retention Force				2			
Solderability					2		
Resistance to Solder Heat						2	

- a) Number indicate the sequence in which the tests are performed.
- b) 5 samples per group are performed.

**1. Quality Assurance Provisions:**

**4.1 Test Condition:**

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

Temperature	15~35°C
Relative Humidity	45~75%
Atmospheric Pressure	86.6~106.6Kpa

**4.2 Test :**

**4.2.1 Test Specimens:**

The test specimens to be employed for tests shall be conforming to the requirements specified in the applicable product drawing. The crimped contacts shall be prepared in accordance with the requirements of application specification, 114-5377, crimping of DYNAMIC CONNECTOR D1100 Series, on the wires specified in Fig. 5 of the application.

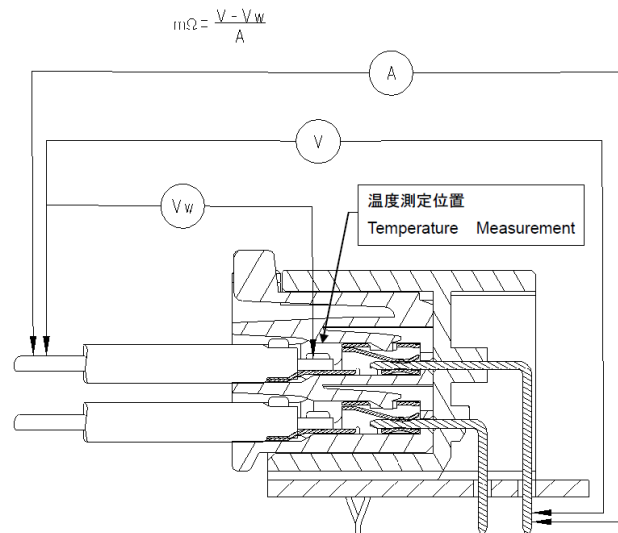
**4.2.2 Applicable wires:**

The wire to be used for crimping the samples for performance testing shall be conforming to the requirements specified in Fig. 5.

Calculated Cross-sectional Area(mm <sup>2</sup> )	AWG	Diameter of the conductor (mm)	Number of conductors	Insulation outer Diameter(mm)
0.34	22	0.16	17	1.60

Fig. 5

**Wire-to-board Termination Type:**



- Take the resistance of the wire only away

Fig. 6 Termination Resistance and Temperature rising VS Current Methods



The applicable product descriptions and pars number are shown in Appendix. 1.

Description	Part No.	Remark
DYNAMIC D1000 Receptacle Contact M-type-Gold plating	1827570-2(Reel)	
	1827587-2(L/P)	
DYNAMIC D1000 Receptacle Contact M-type-Tin plating	1871303-1(Reel)	
	1871743-1(L/P)	
DYNAMIC D1000 Tab Contact M-type-Gold plating	1903112-2(Reel)	
	1903116-2(L/P)	
DYNAMIC D1000 Tab Contact M-type-Tin plating	1903120-1(Reel)	
	1903124-1(L/P)	
D1100D Receptacle Housing 10~20Pos.	1-2333149-*(black)	Nylon
D1100D Receptacle Housing 22~40Pos.	1-2333134-*(black)	Nylon
D1100D TAB Housing, 40POS.	1-2350416-0 (black)	Nylon
D1200D Receptacle Housing 4~20Pos.	1-2349949-*(black)	Nylon
D1100D Header Assembly V-HDR 10~20Pos.	1-2040516-*(black)	Gold plating
D1100D Header Assembly V-HDR 22~40Pos.	/	
	1-1827872-*(black)	Gold plating
D1100D Header Assembly H-HDR 10~20Pos.	1-1827873-*(black)	Gold plating
D1100D Header Assembly H-HDR 22~40Pos.	1-1939638-*(black)	Gold plating
	1-2372488-*(black)	Pre-Tin