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Dynamic 1000 Slim Connector

All numerical values are in metric units. Dimensions are in millimeters. Figures and illustrations are for identification only and are not drawn to scale

1. INTRODUCTION

This specification contains the regulations for assembly of D1000 Slim connector and the handling of these connector.

2. SUPPORTING DOCUMENTS

2.1. Customer drawing

Please refer to the customer drawings of D1000Slim Connector

2.2. Product specification

The product specifications of the using articles are to be considered. The product specification describes the technical data as e.g. regulations, approvals, temperature range and rated voltage.

For further reference refer Product spec 108-140257.

2.3. Application Specification

Connectors shall be assembled as below mentioned application specifications to ensure correct connector assembly.

3. PRODUCT COMPOSITION

Product composition of D1000 Slim Connector are shown in Figure 1

Figure.1 Product composition(4POSN is shown as a representative)

Figure.2 Product Appearance of each POSN (The above six types are displayed as representatives.)

4. REQUIREMENT

4.1. Applicable Contacts and Housing

<u>Table 1</u>

Description	Contact	Contact	Crimp	
	Size	Tab Receptacle		Requirements
		Part Number	Part Number	
D1000 Slim Contact	S	2367819-1 : Reel	2367817-1 : Reel	114-5377
		2367820-1 : L/P	2367818-1 : L/P	
	М	□-2367819-2 : Reel	□-2367817-2: Reel	
		2367820-2 : L/P	2367818-2 : L/P	

※ See refer to each drawing for product details.

<u>Table 2</u>			
Description	Detail	Part Number	Applicable Contact
D1000 Slim Connector	2,3,5,7,9POSN X,Y Key	□-2375948-□	□-2367817-X
Receptacle Housing	4,6,8,12 POSN X,Y Key	□-2366515-□	2367818-X
	18 POSN X,Y Key	□-2423582-8	
	24 POSN X,Y Key	□-2420333-4	
D1000 Slim Connector	2,3,5,7,9 POSN X,Y Key	□-2375951-□	□-2367819-X
l ab Housing	4,6,8,12 POSN X,Y Key	□-2366600-□	2367820-X
	18 POSN X,Y Key	□-2423584-8	
	24 POSN X,Y Key	□-2420334-4	

※ See refer to each drawing for product details.

After crimped contact, do not deform the contact lance by external force when store crimped contact.

4.2. Assemble crimped contact to Housings

4.2.1. Insert Crimped Contact to Housing

Insert the contacts into the housing according to the following process.

① Before inserting contact, check that the housing to be inserted contact is the applicable housing. (Refer to Table.2 about applicable housing and contact)

Figure.3 Housing and Applicable contact

② Contact insertion direction Contact insertion direction are shown in Figure.4 and 5. Insert the contact by referring to the Row ID and contact lance direction shown in the below figures

4.2.2. Extracts of crimped contact

If crimped contact is extracted from housing, using the dedicated extraction tool. Regarding Etraction method, please refer to 408-78152

4.3.1. Mating connector

When mating the connector, check that mated connectors are same number of poles and the same keying, and push it straight in and slowly until hear a click sound while holding the connector. After finish mating, check that the connector is locked. (Figure. 7)

Different Keying or different position of connectors must not be mated as the connectors may be broken.

If the connector is mated diagonally, buckling of the contact and breakage of the housing may occur so connector is pushed straightly in.

4.3.2. Un-Mating connector

Push down the lock lever on the REC housing to release the lock. With the lock lever pushed down, pull out the connector

Figure.8 Un-Mating connector

5. STORAGE

5.1. Chemical exposure

Do not store the connectors near any chemical listed below as they may cause corrosion stress the connector contacts:

Alkalis, Ammonia, Citrates, Phosphates, Citrates, Sulfur, Amines, Carbonates, Nitrites, Sulfides, Nitrites, Tart rates.

5.2. Storage condition

The connectors should be stored in the air ventilation, no corrosive gas, no rain and no snow in the warehouse. Relative humidity: less than 85% RH. The connectors should remain in the shipping containers until ready for use to prevent deformation to the contacts. The connectors should be used on a first in, first out basis to avoid storage contamination that could adversely affect electrical functions.

DYNAMIC D1000 Slim Connector

1. SCOPE

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance DYNAMIC D1000 Slim Connector.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents form a part of this specification to the extent specified herein.

In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence.

In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

- 2.1. TE Documents
 - 114-5377: Application Specification
 - 501-78782: Qualification Test Report
 - 408-78197: Instruction Sheets
- 2.2. Industry Documents
 - MIL-STD-202: Test methods for Electronics and Electrical Component Parts
 - EIA364: Electrical Connector / Socket Test Procedures Including Environmental Classifications
 - IEC 512: Test Specification

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: Receptacle/ Tab: Nickel plating all over

Gold plating (Contact area)

- Housing
 - (1) Material: G.F. Thermoplastic
 - (2) Flammability: UL94 V-0

3.3. Ratings

Voltage	Current	Temperature
250V AC/DC	Figure 1,2, Derating curve is paragraph 6	-55°C to 125°C Included temperature rising by energized current

• Temperature rising: 30°C MAX

Desition	Current Rating						
Position	AWG 22	AWG 24	AWG 26	AWG 28	AWG 30		
2-4POSN	4.5	3.9	3.2	- 1.0	0.8		
5-6POSN	4.2	3.4	2.9				
7-8POSN	3.8	3.1	2.6				
9-12POSN	3.5	2.8	2.3				
13-18POSN	3.3	2.7	2.1				
19-24POSN	3.2	2.7	2.0				

Figure 1

• Ambient temperature: 25°C Temperature rising: 100°C

Desition	Current Rating						
Position	AWG 22	AWG 24	AWG 26	AWG 28	AWG 30		
2-4POSN	8.3	7.2	5.8	- 1.8	1.5		
5-6POSN	8.0	6.4	5.1				
7-8POSN	7.0	5.8	4.8				
9-12POSN	6.5	5.2	4.4				
13-18POSN	6.3	5.2	4.0				
19-24POSN	6.1	5.2	3.9				

Figure 2

3.4. Performance Requirements and Test Descriptions

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 3. All tests shall be performed in the room temperature, unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Para	TEST DESCRIPTION	REQUIREMENT	PROCEDURE					
3.5.1	Examination of Product	Meets requirements of product drawing and TE Specification 114- 5377	Visual inspection No physical damage					
	ELECTRICAL							
3.5.2	Termination Resistance (Low Level)	30 mΩ Max.	Subject mated contacts assembled in housing to 20 mV Max open circuit at 10 mA Max closed circuit. Figure. 5. IEC 60512-2-2 Test 2b					
3.5.3	Dielectric withstanding Voltage	No flashover or breakdown of voltage Current leakage:0.5mA Max.	Test voltage 1500V AC Duration 1 minute. Test between adjacent circuits of mated connectors. IEC60512-4-1 Test 4a					
3.5.4	Insulation Resistance	1000 MΩ Min. (Initial) 100 MΩ Min. (Final)	Test voltage 500V DC Time: 1minute Test between adjacent circuits of mated connectors. IEC 60512-3-1 Test 3a Method B					
3.5.5	Temperature Rising	Temperature rising: specified value Max. Under loaded specified current. Refer Figure 1 and 2	Measure temperature rising by energized current. Figure.1, Figure.2 and Figure.5 IEC 60512-5-1 Test 5a					
MECHANICAL								
3.5.6	Vibration	No electrical discontinuity greater	Vibration Frequency:10~500Hz / 15 min.					
	Sinusoidal	than 1µs. Shall occur.	Amplitude: 1.52mm MAX					
	High Frequency	Termination Resistance	Accelerated Velocity: 98 m/s ²					
		(Low Level)	Vibration Direction: X, Y, Z					
			Duration: 3 h each					
			Fixed position of cable: 100mm					
			IEC60512-6-4 Test 6d					
3.5.7	Physical Shock	No electrical discontinuity greater	Accelerated Velocity :490 m/s ²					
	-	than 1 us. Shall occur.	Waveform : Sin wave					
		Termination Resistance	Duration : 11 m s					
		(Low Level)	Number of Drops: 3 drops each to normal and					
			reversed directions of X, Y and Z axes, totally 18					
			drops. Fixed position of cable:100mm IEC60512-6-3 Test 6c					
3.5.8	Connector Mating Force	(1.6×POSN) N Max.	Operation Speed: 20mm/min.					
			Measure the force required to mate connectors. IEC 60512-13-1 Test 13a					
3.5.9	Connector	(0.08N×POSN) Min.	Operation Speed: 20mm/min.					
	Unmating Force		Measure the force required to mate connectors. IEC 60512-13-1 Test 13a					
3.5.10	Contact Insertion	9.8N Max.	Measure the force required to insert contact into					
	Force	Per 1 contact	nousing.					

Para	TEST DESCRIPTION	REQUIREMENT	PROCEDURE					
3.5.11	Contact Retention Force	14.7 N Min.	Apply an axial pull-off load to crimped wire. Operation Speed: 20 mm/min. Test 15a of IEC 60512-15-1					
3.5.12	Crimp Tensile Strength Durability	Wire Size Crimp Tensile (min.) mm² (AWG) N 0.05 #30 4.9 0.08 #28 9.8 0.12 #26 19.60 0.20 #24 29.40 0.30 #22 44.10 Termination Resistance (Low Level).	Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed: 50 mm/min. IEC 60512-16-4. Test16d Repeat Insertion / Extraction of connector assembly following times at 100mm/min operation speed.					
3.5.14	Housing Locking Strength	24.5 N Min.	Mumber of cycles: 30 cycles IEC 60512-9-1 Test 9a Measure connector locking strength. Operation Speed: 100 mm/min. EIA 364-98					
3.5.15	Thermal Shock	Termination Resistance (Low Level)	Subject mated specimen to Ta=-55±2°C to Tb=+125±2°C, duration t1: 30min each extreme, 25 cycles IEC 60512-11-4 Test 11d (IEC 60068-2-14 Test Na)					
3.5.16	Humidity- Temperature Cycling	Insulation resistance Dielectric Strength Termination resistance (Low Level)	Mated connector, 25~65°C, 80~95 % R. H. 10 cycles Cold shock					
3.5.17	Humidity, Steady State	Termination Resistance (Low Level)	Mated connector, 90-95 % R. H. 40 °C 96h MIL-STD-202 Method 103 Condition B					
3.5.18	Industrial Gas (SO ₂)	Termination Resistance (Low Level)	Mated connector SO ₂ Gas: 10±3 ppm, 95% R. H. 25°C, 96h					
3.5.19	Temperature Life (Heat Aging)	Termination Resistance (Low Level)	Subject mated specimen to +125°C Duration time:250h Test Bb IEC 60512-11-9 Test 11i (IEC 60068-2-2)					
3.5.20	Salt Spray	Termination Resistance (Low Level)	Subject mated specimen to 5±1% salt spray Temperature : 35±2°C Duration time: 96h IEC 60512-11-6					

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 4.

4. PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

Test Examination		Test Group										
		2	3	4	5	6	7	8	9	10	11	12
		Test Sequence (a)										
Examination ofProduct		1,6	1,9	1	1	1	1,5	1,9	1,9	1,5	1,5	1,5
Termination Resistance (Low Level)		2,5	3,8				2,4	2,8	2,8	2,4	2,4	2,4
Dielectric withstanding Voltage								4,7	4,7			
Insulation Resistance								3,6	3,6			
Temperature Rising												
Vibration		3										
Physical Shock		4										
Connector Mating Force			2,7									
Connector Unmating Force			4,6									
Durability			5									
Contact Insertion Force				2								
Contact Retention Force				3								
Crimp Tensile Strength					2							
Housing Locking Strength						2						
Thermal Shock							3					
Humidity-Temperature Cycling								5				
Humidity (Steady State)									5			
Industrial SO ₂ Gas										3		
Temperature Life											3	
Salt Spray												3

i NOTE

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

Figure 4

Figure 5 Termination Resistance (Low Level) and Temperature Rising vs. Current Measuring Methods

5. QUALIFICATION 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 4.
- 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.3. 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 (REFERENCE)

2-4POSN

9-12POSN

