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

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3.3. Ratings

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

- Temperature rising: 30℃ MAX

Position	Current Rating				
	AWG 22	AWG 24	AWG 26	AWG 28	AWG 30
2-4POSN	4.5	3.9	3.2	1	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		

Figure 1

- Ambient temperature: 25℃ Temperature rising: 100℃

Position	Current Rating				
	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	6.4	5.1		
7-8POSN	7.0	5.8	4.8		
9-12POSN	6.5	5.2	4.4		

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 1minute. 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 Sinusoidal High Frequency	No electrical discontinuity greater than 1μs. Shall occur. Termination Resistance (Low Level)	Vibration Frequency:10～500Hz / 15 min. Amplitude : 1.52mm MAX Accelerated Velocity : 98 m/s^2 Vibration Direction : X,Y,Z Duration : 3 h each Fixed position of cable:100mm IEC60512-6-4 Test 6d EIA 364-28 Test Condition 2
3.5.7	Physical Shock	No electrical discontinuity greater than 1 μs. Shall occur. Termination Resistance (Low Level)	Accelerated Velocity :490 m/s^2 Waveform : Sin wave Duration : 11 m s 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 Unmating Force	(0.08N×POSN) Min.	Operation Speed : 20mm/min. Measure the force required to mate connectors. IEC 60512-13-1 Test 13a
3.5.10	Contact Insertion Force	9.8N Max. Per 1 contact	Measure the force required to insert contact into housing.

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	Wire Size: mm² / (AWG) — Crimp Tensile (min.) 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	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
3.5.13	Durability	Termination Resistance (Low Level).	Repeat Insertion／Extraction of connector assembly following times at 100mm/min operation speed. Number of cycles : 30 cycles IEC 60512-9-1 Test 9a
3.5.14	Housing Locking Strength	24.5 N Min.	Measure connector locking strength. Operation Speed : 100 mm/min. EIA 364-98
		ENVIRONMENTAL	
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℃, 80～95 % R. H. 10 cycles Cold shock －10℃(not) performed The measurement is held after being left indoor for 3 hours.1cycle=24hours EIA 364-31 Method 4 IEC60068-2-30
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

NOTE
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.

Figure 3

4. PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

Test Examination	Test Group											
	1	2	3	4	5	6	7	8	9	10	11	12
	Test Sequence (a)											
Examination ofProduct	1,3	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	2											
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

NOTE

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

Figure 4

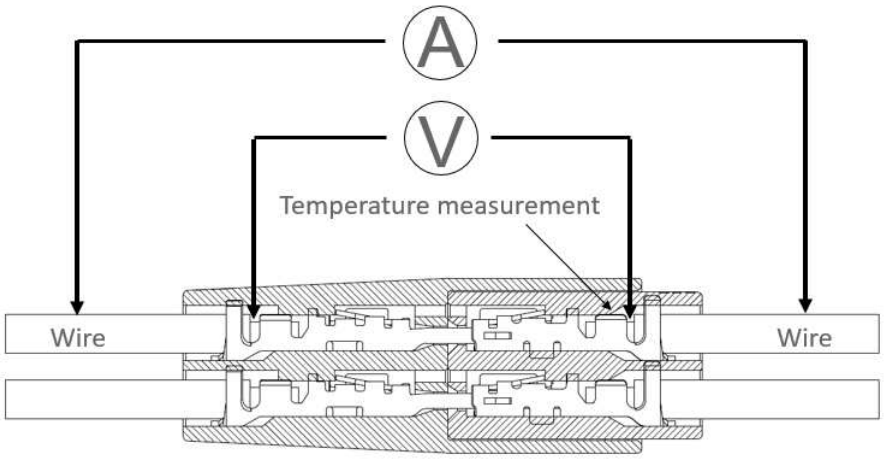


Figure 5 Termination Resistance (Low Level) and Temperature Rising vs. Current Measuring Methods

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℃
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

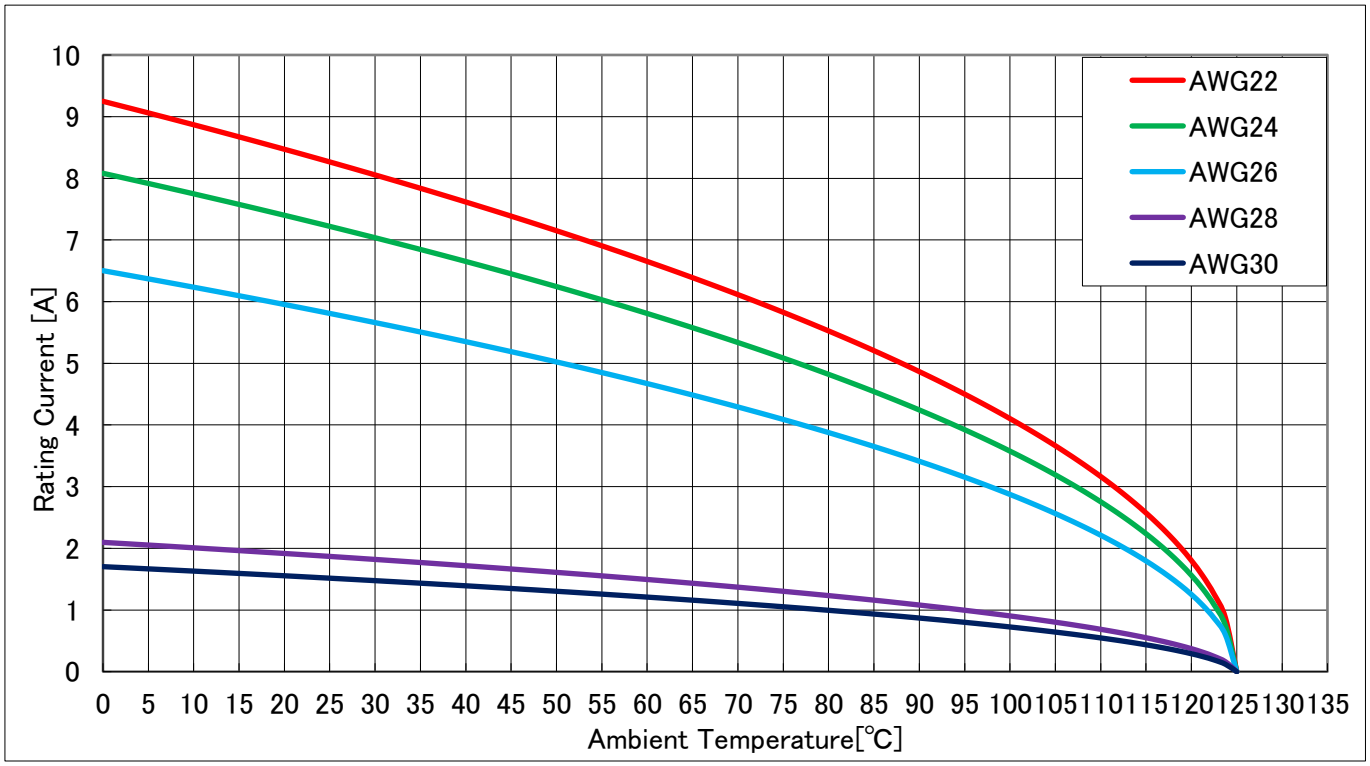
Acceptance is based on verification that the product meets the requirements of Figure.3. Failures attributed to equipment,test get up, or operator deficiencies shall not disqualify the product. When product failure occurs,corrective action shall be taken and samples resubmitted for qualification.Testing to confirm corrective action is required before resubmittal.

5.4. Quality Conformance Inspection

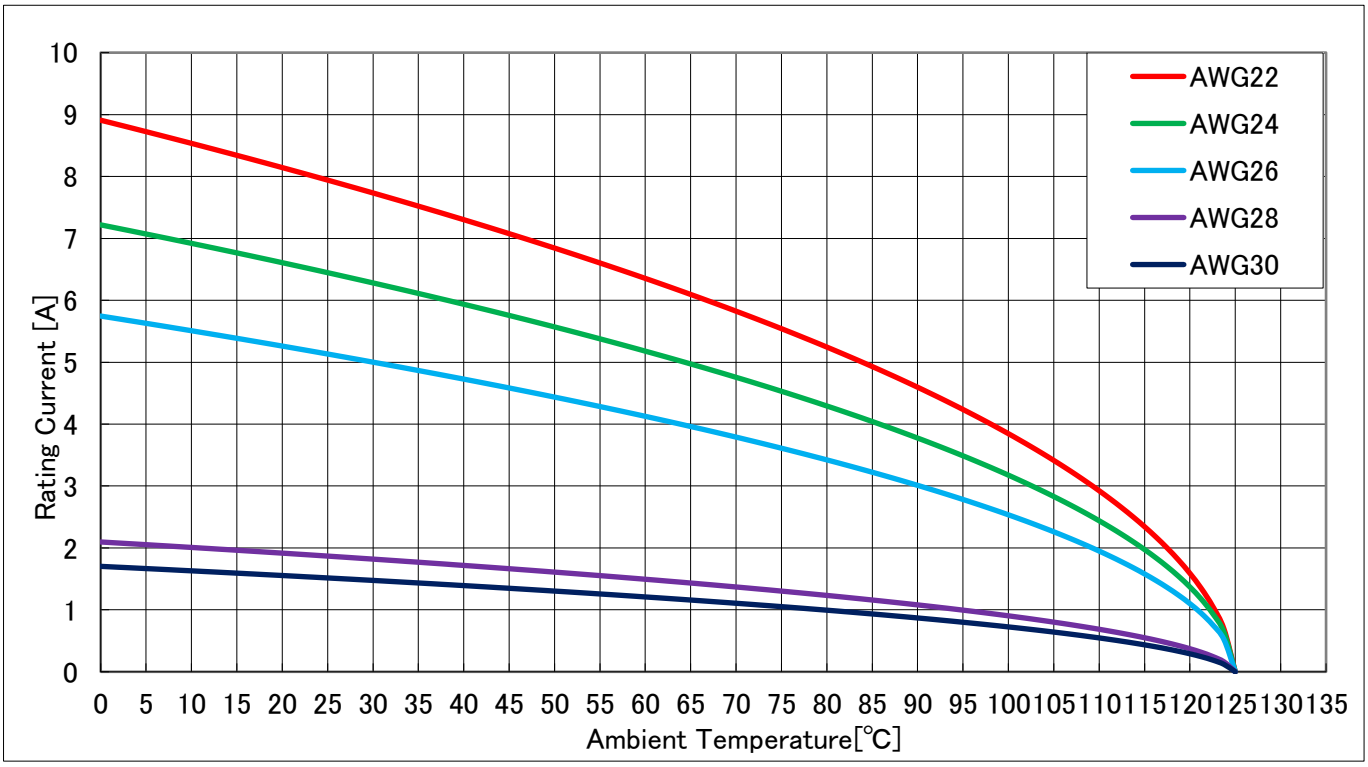
The applicable TE quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

7. DERATING CURVE (REFERENCE)

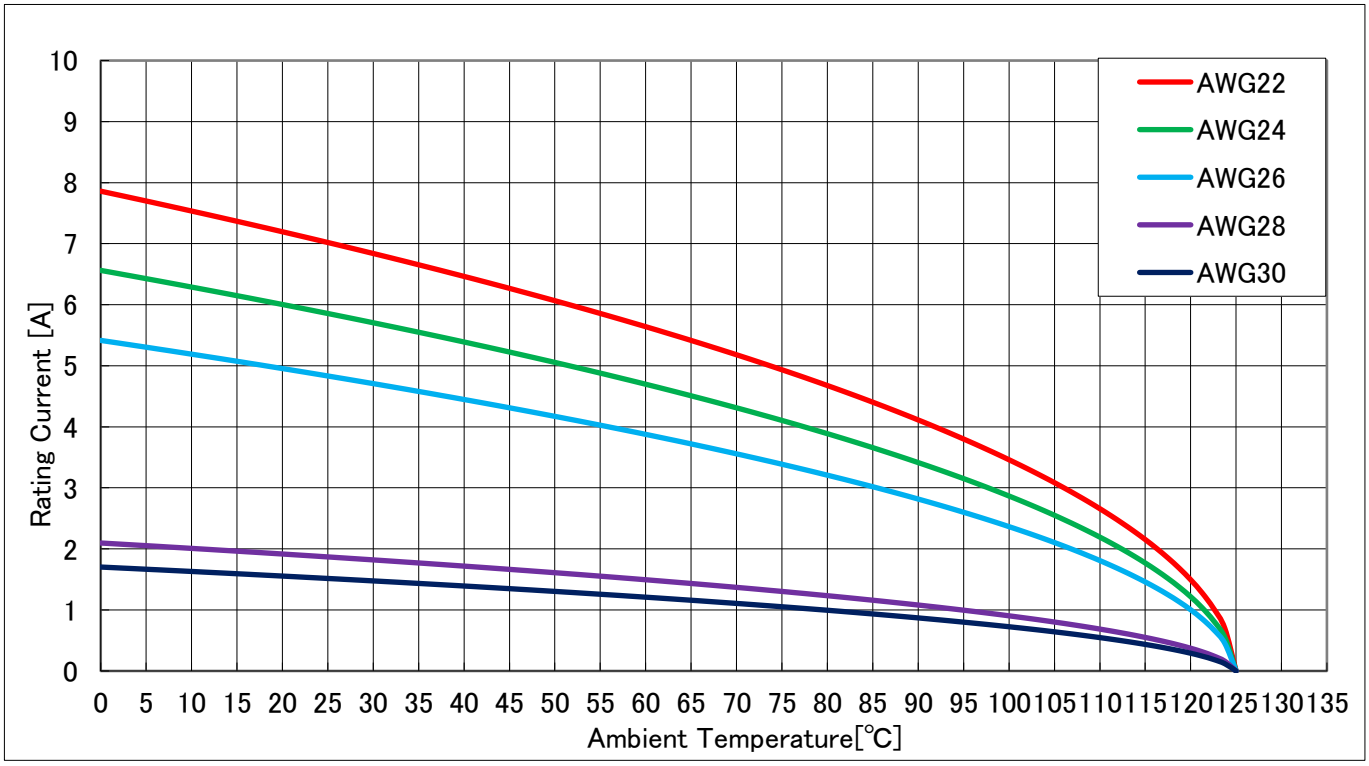
◆ **2-4POSN**



◆ **5-6POSN**



◆ **7-8POSN**



◆ **9-12POSN**

