
Multi 6p double lock Conn.

1. Scope:

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of "Multi 6p double lock Conn."

Applicable product description and part numbers are as shown in Appendix 1.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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 Tyco Electronics Document:

- A. 109-5000: Test specification, General requirements for Test methods
- B. 114-106071: Application specification
- C. 501-106071: Test report

2.2 Commercial Standards and Specification:

MIL-STD-202 Test Methods for Electronics and Electrical component parts

3. Requirements :

3.1 Design and Construction

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

3.2 Materials:

A. Contact:

- (1) Material: Copper Alloy
- (2) Finish: Pre Tinned all over
 - Rec: Pre Tinned all over
 - Tab: Pre Tinned all over

B. Housing:

- (1) Material: Thermoplastic.
- (2) Flammability: UL 94V-2/0,
- (3) Glow wire test: IEC 60695-2-11

C. Double lock Plate

- (1) Material: Thermoplastic
- (2) Flammability: UL 94V-2/0,

3.3 Ratings:

- A. Voltage Rating: 300V AC/DC
- B. Current Rating: 9A max.
- C. Temperature Rating: -30°C to 105°C
- D. T-rise (<30°C testing with fully loaded (6 positions))

Contact	Rec. contact:1983663-* Tab contact:1983661-*			Rec. contact:1983664-* Tab contact:1983662-*		
Wire size	Awg # 16	Awg #18	Awg #20	Awg #22	Awg #24	Awg #26
Current rating	9A	8A	7A	5A	4A	3A

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance Requirements Specified in Fig, 2. All tests shall be performed in the room temperature, unless otherwise Specified

3.5 Test Requirements and Procedures Summary (Fig.1)

No.	3.5.1
Test Items	Examination of Product
Requirements	Meets requirements of product drawing and TE Specification (114-5425) After test, no corrosion influence performance.
Procedures	Visual inspection No physical damage
Electrical Requirements	
No.	3.5.2
Test Items	Termination Resistance (Low Level)
Requirements	40 milliohms max

Procedures	TE Spec 109-5311-1. Subject mated contacts assembled in housing to 50 mV max open circuit at 100 mA, closed circuit. see Fig.4		
No.	3.5.3		
Test Items	Dielectric withstanding Voltage		
Requirements	Neither creeping discharge nor flashover shall occur. Current leakage: 0.5 mA max.		
Procedures	TE Spec 109-5301 MIL-STD-202 Method 301 Test between adjacent circuits of mated connectors.		
No.	3.5.4		
Test Items	Insulation Resistance		
Requirements	500 MΩ min		
Procedures	TE Spec. 109-5302 MIL-STD-202 Method 302 condition B Impressed voltage 500V DC. Test between adjacent circuits of mated connectors.		
No.	3.5.5		
Test Items	Temperature Rising		
Requirements	30°C max. Under loaded specified current or rating current.		
Procedures	TE Spec. 109-5310 Measure temperature rising by energized current. Subject measurement must do at the place of no influence from convection of air. And contacts assembled in housing all of circuits. The thermocouple attach to the contact of center circuit number.		
Mechanical Requirements			
No.	3.5.6		
Test Items	Contact Retention Force		
Requirements	41.16 N min.		
Procedures	TE Spec. 109-30 Apply axial pull-off load to crimped wire. Operation speed: 100 mm/min		
No.	3.5.7		
Test Items	Crimp Tensile Strength		
Requirements	Wire Size		Crimp Tensile(min.)
	mm ²	(Awg)	N
	0.14	#26	19.6
	0.22	#24	29.4
	0.34	#22	49
	0.51	#20	58.8
	0.89	#18	68.6
1.27	#16	78.5	
Procedures	TE Spec. 109-5205 Condition A Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation speed: 25 mm/min		
No.	3.5.8		
Test Items	Physical Shock		
Requirements	No electrical discontinuity greater than 1μsec. shall occur. Termination Resistance (Low Level)		
Procedures	TE Spec. 109-5208 Condition A MIL-STD-202, Method 213 Condition A Accelerated Velocity: 490m/s ² Waveform: Sin wave Duration: 11ms Velocity change: 3.4m/s Number of Drops : 3 drops each to normal and reversed directions of X, Y and Z axis, totally 18 drops		

No.	3.5.9	
Test Items	Connector Mating Force	
Requirements	24.5 N max. per 1 contact	
Procedures	TE Spec. 109-5206 Condition B Operation speed: 100mm/min Measure the force required to mate connectors	
No.	3.5.10	
Test Items	Connector un-mating Force	
Requirements	1.47N min per 1 contact	
Procedures	TE Spec. 109-5206 Condition B Operation speed: 100mm/min Measure the force required to mate connectors	
No.	3.5.11	
Test Items	Contac Insertion Force	
Requirements	14.7 N max. per 1 contact	
Procedures	Measure the force required to insert contact into housing.	
Environmental Requirements		
No.	3.5.12	
Test Items	Vibration Sinusoidal High Frequency	
Requirements	No electrical discontinuity greater than 1µ sec shall occur	
Procedures	TE Spec. 109-5202 Condition A MIL-STD-202 Method 204, Condition A Vibration frequency: 10~500 HZ /15 min Accelerated velocity: 98m/s ² Vibration direction: X,Y,Z Duration: 2 hours each	
No.	3.5.13	
Test Items	Durability (repeated mating / un-mating)	
Requirements	Termination resistance (Low Level).	
Procedures	TE Spec. :109-27	
	Plating	Cycles
	Tin (0.8µm)	15
No.	3.5.14	
Test Items	Housing Locking Strength	
Requirements	49 N min.	
Procedures	TE spec: 109-5210 Measure housing locking strength. Operation speed: 12.5mm/min	
No.	3.5.15	
Test Items	Housing Panel retention force	
Requirements	78.4 N min.	
Procedures	TE spec: 109-5214 Measure Panel retention force using panel of nominal cut-out dimensions as specified in the TE customer drawing	
No.	3.5.16	
Test Items	Thermal Shock	
Requirements	Termination Resistance (Low Level)	
Procedures	TE spec: 109-5103 condition A MIL-STD-202 method 107 condition A-1 Mated/Unmated connector -30°C/30min, +85°C/30min Making this a cycle, repeat 25 cycles.	
No.	3.5.17	
Test Items	Humidity-Temperature cycling	

Requirements	Insulation resistance Dielectric strength Termination resistance (Low Level)
Procedures	TE spec: 109-5106 MIL-STD-202 method 106 Mated connector, 25-65°C 90-95% R.H. 10cycles Cold shock -10°C
No.	3.5.18
Test Items	Industrial Gas (SO ₂)
Requirements	Termination Resistance
Procedures	TE spec: 109-5107 condition C Mated connector SO ₂ gas: 10ppm, 90% R.H. 25°C, 96 hours
No.	3.5.19
Test Items	Temperature life (Heat Aging)
Requirements	Termination resistance (Low Level)
Procedures	TE spec: 109-5104-3 condition C MIL-STD-202 Method 108 Mated connector 105°C, Duration: 250 hours

Fig. 2 (End)

*** Notes**

A) Product must be without rust, corrosion transformation, crack and discoloration.

B) Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification.

3.6 Product Qualification Test Sequence

Test or Examination	Test group											
	1	2	3	4	5	6	7	8	9	10		
	Test sequence											
Examination of product	1	1	1	1	1	1	1	1	1	1		
Termination Resistance (Low Level)		2,5	2,4,6,8,10	2,5								
Dielectric withstanding Voltage						3,6						
Insulation Resistance						2,5						

Temperature Rising					2							
Vibration		3										
Physical Shock		4										
Connector Mating Force	2,5											
Connector Un-mating Force	3,6											
Housing Locking Strength							2					
Contact Insertion Force								2				
Contact Retention Force									3			
Crimp Tensile Strength										2		
Durability	4		3	3								
Thermal Shock			7									
Humidity- Temperature cycling			9			4						
Industrial SO ₂ GAS				4								
Temperature life			5									
Housing Panel Retention Force										2		

Fig. 3

*** Notes:**

Numbers indicate the sequence in which the tests are performed.

$$m \Omega = (V - V_w) / A$$

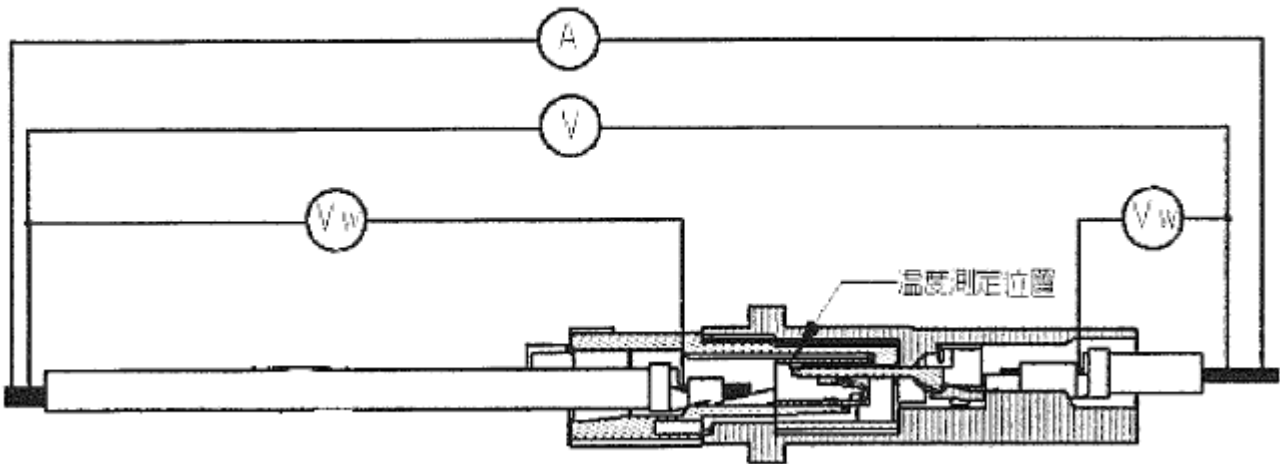


Fig. 4

4. Quality Assurance Provisions:

4.1 Test Conditions :

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

Temperature :	15~35°C
Relative Humidity :	45~75 %
Atmospheric Pressure :	866.6~1066.6 Kpa

4.2 Tests:

4.2.1 Test Specimens:

The test specimens to be employed for the tests shall be conforming to the requirements specified in the applicable product drawings.

4.2.2 Test sequence:

Qualification inspection shall be verified by testing specimens as specified in Fig3

4.3 Requalification Testing:

If changes significantly affecting form, fit or function are made to the 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.

4.4 Acceptance:

Acceptance is based on verification that the product meets the requirement of Fig.2

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 re-submittal.

4.5 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.

5 The applicable product descriptions and part numbers are as shown in Appendix,1.

The applicable product description and part numbers are as shown in Appendix 1.

Product Part No	Description
1983658-1	6p housing
1983659-1	4p housing
1983660-1	2p housing
1983661/2-1	Rec. contact(16-20,22-26Awg)
1983663/4-1	Tab contact(16-20,22-26Awg)
1983665-1	1p double lock plate
1983666-1	2p double lock plate
1983667-1	3p double lock plate
1971882-1	2p housing(HV)
1971883-1	4p housing(HV)
1971884-1	6p housing(HV)

Appendix,1

LTR	REVISION RECORD	DR	CHK	APRD	DATE
A	First Release	Hapye Wu	Hapye Wu	Eric Kong	24Jan2011