

2.3 DIA CLUSTER BLOCK (Material: PBT GWT 750 & UL94 V-0)

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1. Scope

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of TE Connectivity (TE) Cluster Block Assembly consisting of three terminal leads and their containing housing block which is designed to mate with hermetic headers having the Three-Position 2.3 mm Dia. Pin (hereinafter referred to as Fusite Pin) for Refrigerator Motor. Applicable product description and part numbers are as shown in Appendix 1.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Fig.1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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. TE Documents :

- A. 109-1 : Test Specification (General Requirements for Test Specifications)
- B. 109-197 : Test Specification (TE Test Specifications vs. EIA and IEC Test methods)
- C. 114-5235 : Application Specification
- D. 501-61081 : Qualification Test Report.

2.2 Commercial Standards and Specifications :

- A. EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.
- B. IEC-60512: Electronic Equipment - Tests and Measurements

3. Requirements

3.1 Design and Construction :

Product should be of the design, construction and physical dimensions specified on the applicable product drawing. The shape and dimensions of the gauge pin shall be as indicated Fig.2.

3.2 Materials and Finish :

- A. Contact : Phosphor Bronze (Tin Plated)
- B. Housing : PBT resin GWT 750 & UL94 V-0

3.3 Ratings :

- A. Voltage Rating: 300 VAC
- B. Current Rating: The current rating shall be as follows according to the size of wires connected.
 - AWG #20 : 5A (Max)
 - AWG #18 : 7A (")
 - AWG #16 : 10A (")

3.5 Test requirements and Procedure Summary :

No.	Test Items	Requirements	Procedures
3.5.1	Examination of Product	Meets requirements of product drawing and Application Specification 114-5235. After test, no corrosion influence performance and no physical damage	Visual inspection EIA-364-18
Electrical Requirements			
3.5.2	Terminal Resistance (Low Level Contact Resistance)	5 mΩ Max.(Initial) 8 mΩ Max.(Final)	Subject mated contact assembled in housing to 20mV Max. open circuit at 100mA. Take the resistance of the wire and the Fusite pin away from measurement. See Fig.4 TE Spec. 109-5311-1 EIA-364-23
3.5.3	Dielectric withstanding Voltage	Neither creeping discharge nor flashover shall occur.	2.2 kV AC for 1 minute. Test between adjacent circuits of unmated connectors. Current leakage : 5 mA Max. EIA-364-20, Condition I
3.5.4	Temperature Rising	When subjected to test current of 10 amp d.c., mated connectors shall not show a temperature rise greater than 35°C	According to the test method specified in Fig.4, while increasing test potential by 5amp d.c., measurement shall be done until the temperature rises up to 150°C. The applicable pin shall be the Fusite Pin of Part No. 398-38. TE Spec. 109-5310 EIA-364-70, Method 1.
Mechanical Requirements			
3.5.5	Connector Mating Force	3 Positions : 134.4N (13.7kgf) Max. (Initial) 156.8N (16.0kgf) Max. (6th)	Measure the force required to mate connectors. Operation speed : 100mm/min TE Spec. 109-5206 Condition : The gauge pin shown in Fig.2 shall be used.
3.5.6	Connector Unmating Force	3 Positions : 37.3N (3.8kgf) Min.	Measure the force required to unmate connectors. Operation speed : 100mm/min. Amp Sped. 109-5206 Condition : The gauge pin shown in Fig.2 shall be used.
3.5.7	Durability(Repeated Mate/Unmating)	8 mΩ Max.	No. of Cycles : 6 cycles

Fig. 1 (End)

3.5.8	Contact Retention Force	68.6N (7kgf) Min. per contact.		The contacts crimped on an approximately 150mm long wire and then assembled in the housing shall be set to a tensile tester, and an axial pull-off load shall be applied to the crimped wire. Operation speed : 100mm/min. EIA-364-29
3.5.9	Contact Unmating Force	12.1N (1.23kgf) Min.		Measure the force required to unmate contact. Operation speed : 100mm/min. Condition : The applicable pin shown in Fig.5 shall be used.
3.5.10	Crimp Tensile Strength	Wire Size		Tensile Strength (Min)
		mm2	AWG	N (kgf)
		0.50	20	78.4 (8.0)
		0.75	18	98.0 (10.0)
		1.25	16	147.0 (15.0)
3.5.11	Contact Insertion Force	14.7N (1.5kgf) Max.		Measure the force required to insert contact in housing. AMP Spec. 109-5211
Environmental Requirements				
3.5.12	Thermal shock	8mΩ Max.(Final)		Mated connector, -40°C 30min./ 85°C 30min. Making this a cycle, repeat 250cycles. EIA 364-32 The Measurement is held after being left indoor for 3 hours.
3.5.13	Heat resistance	No crazing and deformations observed.		The housing shall be placed into an oven held at 160°C for 6 hours.
3.5.14	Glow Wire Test 750°C	1.Te-Ti ≤2s or no flame 2.Light tissue paper should not burns		1. The extremity of the wire is positioned horizontally and brought into contact with the sample with a force between 0.8 and 1.2N for a period of 30s. 2. Test temperature: 750°C 3. Execute visual check and take picture after the test. IEC 60695-2-11

Fig. 1 (To be continued)

3.6 Product Qualification Test Sequence

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence(a)									
Examination of Product	1,3	1,3	1,7	1,3	1,3	1,3	1,3	1,5	1,3	1,3
Terminal Resistance (LLCR)			2,6					2,4		
Dielectric withstanding Voltage	2									
Temperature Rising		2								
Connector Mating Force			3							
Connector Unmating Force			4							
Durability(Repeated Mate/Unmating)			5							
Contact Retention Force				2						
Contact Unmating Force					2					
Crimp Tensile Strength						2				
Contact Insertion Force							2			
Thermal shock								3		
Heat resistance									2	
Glow Wire Test 750°C										2

Fig. 3

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

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

Part Number	Description
171370-4	2.3 DIA CLUSTER BLOCK (GWT)
5-170063-2	2.3 DIA Cluster Pin Receptacle

Appendix 1

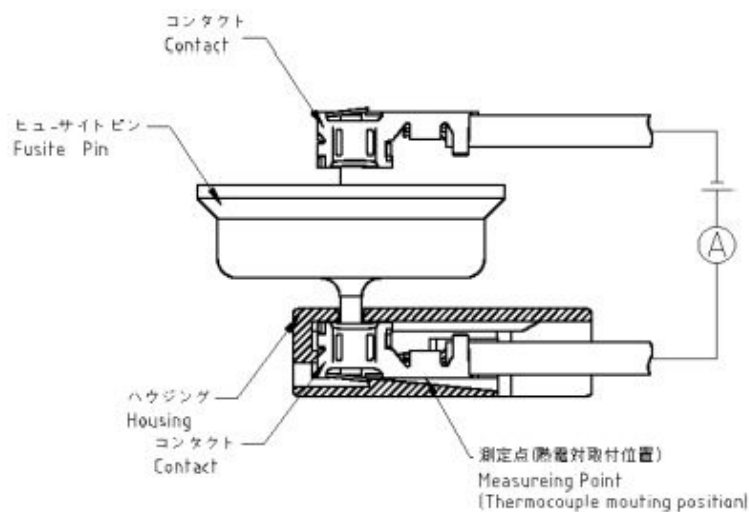


Fig.4 総合抵抗(ローレベル) 温度上昇

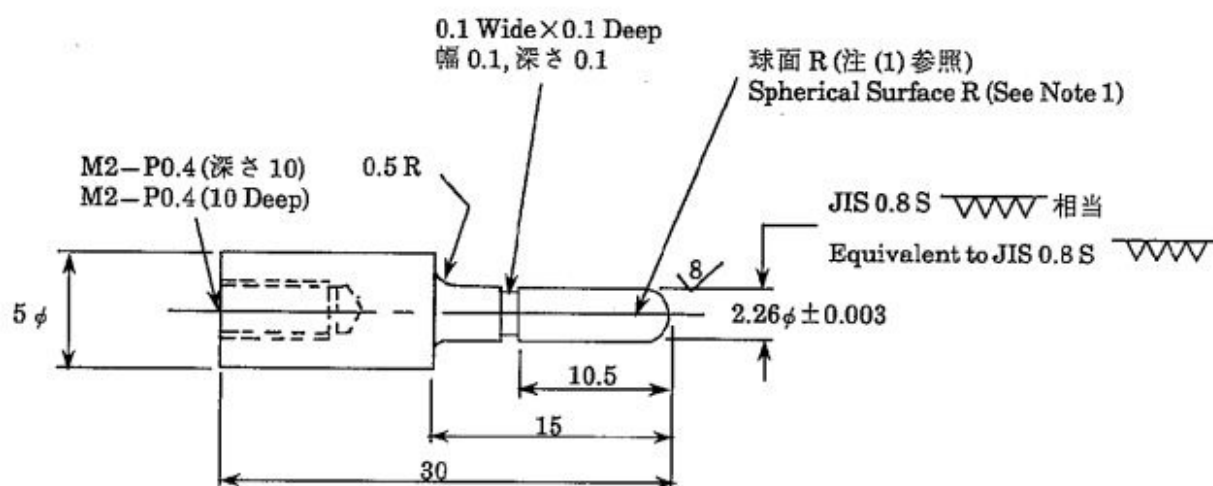
Termination Resistance (Low Level) and Temperature Rising

温度上昇

リード線の長さは熱の発散のため150mmとし試験電線は0.75mm²(AWG#18)とする。

Temperature Rising

The lead length shall be 150mm for heat dissipation and the test wire shall be 0.75mm² size. (AWG#18)



注 (1) 表面は縦方向に良く磨き、先端は滑らかな球面 R とする。
(熱処理 RC 60~65)

(2) ゲージピン材質: 工具鋼 JIS SKS-3

Notes (1) The surface shall be well polished vertically and the end shall be a spherical surface R.

(2) Gauge Pin Material: Tool Steel JIS SKS-3

Fig. 5

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℃
Relative Humidity	45~75%
Atmospheric Pressure	86.6~106.6 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. The crimped contacts shall be prepared in accordance with the requirements of applicable specification (114-5235) and should be selected at random from the part list in appendix 1.

4.3 Requalification Testing :

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

4.4 Acceptance :

Acceptance is based on verification that the product meets the requirements of Fig.1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

4.5 Quality Conformance Inspection :

The applicable quality inspection plan shall 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. REVISION HISTORY

Revision	Changes	Reason for Change	EC No.(DATE)
A	RELEASED PER ECR-14-013761	RELEASED	06OCT2014

6. SPECIFICATION APPROVAL

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