



MAG-MATE 2 SLOT TYPE POKE-IN TERMINALS & .187 TAB TERMINALS

1. SCOPE**1.1. Content**

This specification covers the requirements for product performance, test methods and quality assurance provisions of 2 Slot MAG-MATE Terminal (Poke-In Terminals & .187 Tab Terminals). Applicable product description and part numbers are shown in Appendix 2.

1.2. Qualification

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

2. APPLICABLE DOCUMENTS AND FORMS

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 Connectivity Specifications

114-106533	Application Specification
501-160244	Qualification Test Report
502-160169	Engineering Test Report

2.2. Commercial Standards and Specifications

EIA-364	Electrical Connector/Socket Test Procedures Including Environmental Classifications
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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

Materials used in the construction of this product shall be as specified on the applicable TE drawing.

A. Contact

Material: Brass

Finish: Tin Plated

B. Housing (Cavity)

PBT (Glass Filled), PPS (Glass Filled)

Nylon (Glass Filled) or equivalent.

C. Wire

Conductor: Copper, Aluminum

Insulation: Polyester with polyimide overcoat. In case of one slot accepts two wires, the wire should be no insulated covering type.

3.3. Ratings

- A. Voltage Rating: (See Appendix 1)
- B. Temperature Rating: -30°C to +120°C

3.4. Performance Requirements and Test Description

The product should meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions otherwise specified.

Current Rating (Appendix 1)

	#18	#18	#19	#20	#21	#21	#21	#22	#23	#24
Bare wire diameter	1.05Ø	1.0Ø	0.9Ø	0.85Ø	0.8Ø	0.75Ø	0.7Ø	0.65Ø	0.60 Ø	0.5 Ø
Current	12A	11A	10A	10A	9A	9A	8A	8A	7A	6A

3.5. Test Requirements and Procedure Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and AMP Specification 114-5318.	Visual inspect ion. No physical damage.
Electrical		
Termination Resistance (Low Level)	See Fig. 3	Subject terminated contacts assembled in cavity to 50 mV MAX open circuit at 100 mA. See Fig. 4 EIA-364-23
Current Cycling	Termination resistance at stated test current. See Fig. 3 and 4.	Applied Current Fig. 3 15 minutes "ON" 15 minutes "OFF" 480 cycles. Read initially and final.
Temperature Rising	Temperature Rising 30°C MAX.	Measure temperature rising at current rating that indicate Appendix I. See Fig. 4
Mechanical		
Contacts Retention Force	29. 4N (3.0 kgf) MIN PBT, PPS (30% glass filled)	Measure force required to pull terminal out of cavity.
Contact Insertion Force	490N (50kgf) MAX. PBT, PPS (30% glass filled)	Measure force to terminate terminal into test-cavity (30% glass)
Vibration (Low Frequency)	No electrical discontinuity greater than 1µ sec, shall occur.	10-55-10Hz traversed in 1 minute at 1. 52mm amplitude 2 hours each of 3 mutually perpendicular planes. see Fig. 5

		100mA applies. AMP spec. 109-5201 EIA-364-28 Condition I
Environmental		
Resistance to Cold	Termination resistan. dry circuit: See Figure 3 (Initially and Final)	-30°C ± 2°C 96 hours
Thermal Shock	Termination resistan. See Figure 3 and 4.	25 cycles between -65°C and 125°C (each 1 hour) Measure termination resistance initially and final. EIA-364-32 Condition I
Humidity-Temperature Cycling	Termination resistan, dry circuit: See Figure 3 and 4.	25 ~ 65°C 95% R.H., Cold shock -10°C 10 Cycles Measure termination resistance initially and final. EIA-364-31 Method IV
Salt Spray (See NOTE 2)	Termination resistan. Confirm the product. See Figure 3 and 4.	5±1% salt concentration for 48 hours: The measurement is held after remove the salt and dry up at in door. EIA-364-26 Condition A
Temperature Life (Heat Aging)	Termination resistan, dry circuit: See Figure 3 and 4.	118°C Duration: 33days Measure termination resistance initially and final. EIA-364-17 Condition 4
H ₂ S	Termination resistance See Figure 3 and 4. See Confirm the product.	3±1ppm 40±2°C 96hr.

Figure 1



NOTE

1. 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 2.

2. Salt Spray is excluded for Aluminum Magnet wires.

3.6. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)									
	1	2	3	4	5	6	7	8	9	10
	TEST SEQUENCE (b)									
Examination of Product	1,5	1	1,5	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Termination Resistance (Low Level)	2,4	2	2,4		2,4	2,4	2,4	2,4	2,4	2,4
Current Cycling	3									
Temperature Rising		3								
Vibration (Low Frequency)			3							
Contact Insertion Force				2						
Contacts Retention Force				3						
Thermal Shock					3					
Humidity (Temperature Cycling)						3				
Salt Spray							3			
Temperature Life (Heat Aging)								3		
Resistance to Cold									3	
H ₂ S										3

Figure 2



NOTE

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

The applicable product descriptions and part numbers are as shown in Appendix. 2

Part Number	Description	Applicable Wire	Finish
2990000-2	300 Box Mag-Mate 2 Slot Type Poke-In Terminal	(Magnet wire range) 0.70~1.05 Dia	Tin Plated
2990001-2	300 Box Mag-Mate 2 Slot Type 187 Faston Terminal		
2990000-4	300 Box Mag-Mate 2 Slot Type Poke-In Terminal	(Magnet wire range) 0.50~0.7 Dia	Tin Plated

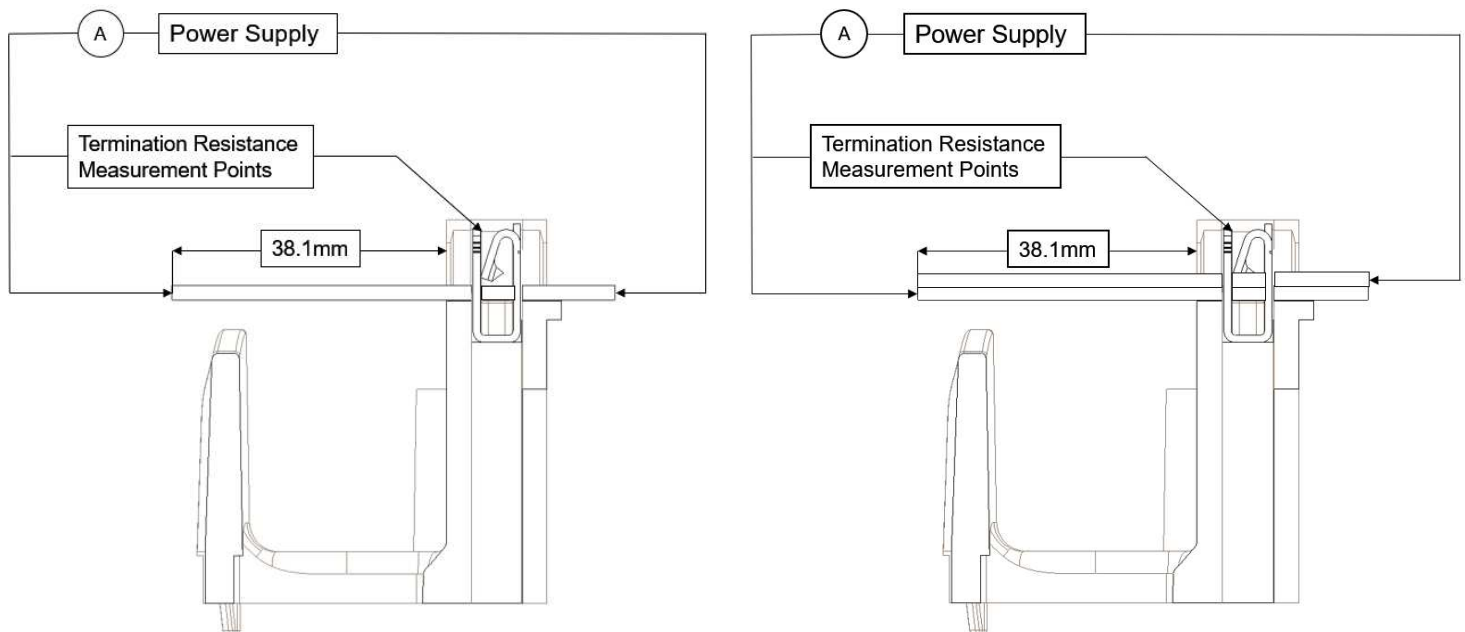
Note 1: It is approved one slot of 2990000-2/ 2990001-2 accepts two copper magnet wires. No insulated covering copper magnet wire should be used. Wire combination should only be as table. Otherwise combination, evaluation should be performed

MAGNET WIRE Wire Size (AWG [MM])	Current Cycling				Vibration, Resistance to Cold Humidity-Temperature Thermal Shock Salt Spray, Temperature Life, H ₂ S	
	Copper		Aluminum		Copper	Aluminum
	Resistance (mΩ) MAX	Test Current (A)	Resistance (mΩ) MAX	Test Current (A)	Resistance (mΩ) MAX	
17 [1.15]	1.4	22.0	2.9	15.0	1.1	2.2
18 [1.02]	1.8	20.0	3.6	13.5	1.4	2.8
19 [0.91]	2.2	18.0	4.4	12.0	1.7	3.4
20 [0.81]	2.7	16.0	5.5	11.0	2.1	4.2
21 [0.72]	3.5	14.0	7.0	9.5	2.7	5.4
22 [0.64]	4.3	12.5	8.6	8.5	3.3	6.6
23 [0.57]	4.6	11.0	9.1	7.5	3.5	7.0
24 [0.51]	5.7	9.5	11.4	6.5	4.4	8.8

Current which produces 100°C initial temperature on the magnet wire.

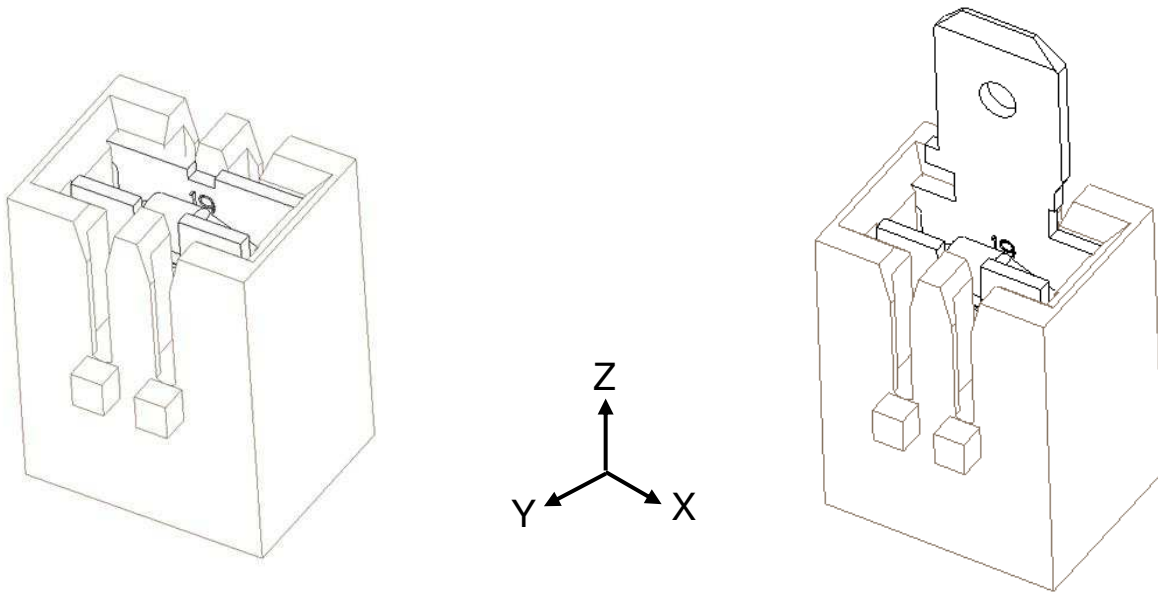
Average reading from 3 thermocouples equally spaced on 12inch length of magnet wire.

Fig. 3 Resistance Values



Note: Termination resistance equals millivolts divided by test current, to the inclusion of wire resistance.

Fig. 4 Termination Resistance Measurement Points



A. Poke-In Terminals

B. .187 Tab Terminals

Fig. 5 Direct ion of Vibration (Low Frequency)

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 shown in Figure 6.

Temperature	15°C – 35°C
Relative Humidity	45% – 75%
Atmospheric Pressure	86.6 – 106.6 kPa

Figure 6

4.2. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.3. Requalification Testing

If changes significantly affecting form, fit or function 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 in Figure 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 resubmittal.

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.