MINI SUPERSEAL CONNECTOR

Product code: T.B.A. G.P.L.: T.B.A.

1. SCOPE

This specification covers the requirements for products performance, test methods and quality assurance provisions of following products:

1879980-1: Mini superseal connector (assembly)
167301-3, 167301-4: MODU contact, wire range 22-24 AWG

1	First emission	MZ	26 Nov 2012	JC	26 Nov 2012
rev	rev. record	DR	Date	CHK	Date

DR. M. ZUCCA — DATE 20JUN2012
APVD J. CATCHPOLE — DATE 20JUN2012

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2. APPLICABLE AND REFERENCED DOCUMENTS

The following document 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 requirements of this Specification and Product Inspection Drawings, Product Inspection Drawings shall take precedence.
In the event of conflict between requirements of this Specification and referenced documents, this Specification shall take precedence.

2.1 TE Connectivity documents

- TE Connectivity drawing 1879980
- TE Connectivity application specification 114-111000 (Mini superseal connector)
- TE Connectivity drawing 167301 (MODU socket contact)

2.2 Other documents

- IEC 60335-1: Household and similar electrical appliances – safety
- IEC 60529: Degrees of protection provided by enclosures
- IEC 60664-2: Insulation coordination for equipment within low-voltage systems
- UL1977: Component connectors for use in data, signal, control and power applications

3. REQUIREMENTS

3.1 Design and construction

Product shall comply with the design, construction and physical dimensions specified in the applicable product drawing.

3.2 Materials

- Housing and cover: Polyamide
- Seal part: Silicone
- Contacts: Phosphor bronze (selective gold plating)
- Cables: range 22-24 AWG

3.3 Ratings

3.3.1 Current rating: min. >0.5 A, max. 3 A
3.3.2 Voltage rating: 250 V AC max, 24 V DC max
3.3.3 Operating temperature: -40°C to +125°C (including the temperature increasing due to working current flow
3.3.4 Protection degree: IP44 and IP67, acc. to IEC 60529
3.3.5 Flammability: UL94V0

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3.4 Quality assurance provision

3.4.1 Sample preparation
Samples to be used for tests shall be prepared by randomly selection from the current production and the contact crimped in accordance with the Application specification 114-111000. No samples shall be re-used, unless otherwise specified.

3.4.2 Test environment
All tests shall be performed under any combination of the following test conditions, unless otherwise specified:

Room temperature: 23°C ± 3°C
Relative humidity: 45% – 70%
Atmospheric pressure: 860 – 1060 mbar

3.4.3 Re-qualification testing
If any changes that are made on the product or on the manufacturing process affect significantly form, fit or function or have a negative influence on the quality of products, the product assurance shall coordinate the re-qualification testing, consisting of all or a part of the original test sequence as determined by development/product, quality and reliability engineering.

3.4.4 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.

4. TESTS AND PROCEDURES SUMMARY – IEC NORM

Item	Features	Test conditions	Limits	Procedure
1	Visual inspection	Meet requirements of product drawing		Visual inspection before (and after) unmating connectors for conditions such as water or dust ingress
2	Marking and instructions			Acc. to IEC 60335, part 7
3	Insulation resistance	Mated connectors. Between adjacent contacts apply 500 V DC for 1 min.	⩾200 MΩ with new contacts	
4	Dielectric withstanding voltage	Between adjacent contacts apply 1000 V AC for 1 min.	No breakdown or flashes	
5	Connector mating force	Mate connectors with their contacts loaded at a speed of 25-100 mm/min	≤ 100 N	
6	Connector unmating force	Unmate connectors with their contacts loaded at a speed of 25-100 mm/min	100 N max.	

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Item	Features	Test conditions	Limits	Procedure
7	Pull out force	All leads together. Apply an axial force to pull out contacts from relevat housing at a tensile speed of 50-70 mm/min.	⩾ 100 N	
8	Water resistance: IP44			Acc. to IEC 60529
9	Water resistance: IP67			Acc. to IEC 60529
10	Thermal cycling	Mated connectors subjected to 14 cycles composed of: - 16 hours at +40°C - 2 hours at -40°C - 2 hours at +125°C - 4 hours at +23°C (max. time to change condition: 3 min.)	1) No damages 2) Insulation resistance and dielectric withstanding resistance as above specified 3) Contact reteintion in housing, mating/unmating forces as above specified	
11	Ageing resistance	Mated connectors subjected to: -100 hours at +125°C -10 mating/unmating operations	1) No damages 2) Insulation resistance and dielectric withstanding resistance as above specified 3) Contact reteintion in housing, mating/unmating forces as above specified	
12	Ozone gas resistance	Mated connectors exposed for 70 hours at an atmosphere with 0/5 ppm of ozone at 50°C	No damages; contact retention in housing, mating/unmating forces as aboce specified	
13	Vibration test	Mated connectors subjcted to vibrations with the following parameters: - Frequency of 10-500-10 Hz - Speed of frequency variation 1 octave/min, - Displacement: 0.75 mm for frequencies below 70 Hz. Over 70 Hz maintain constant acceleration of 150 m/s² - Duration: 2 hours each axis - 10 cycles mating/unmating	1) No damages 2) Dielectric withstanding resistance as above specified 4) Contact retention in housing, mating/unmating forces as above specified 5) No circuit break greater than 1 µs	

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Item	Features	Test conditions	Limits	Procedure
14	High temperature resistance with current load	Mated connectors subjected to a temperature of 80°C for 5 hours with all contacts loaded with max. current of 3 A	Max. increase of temperature detected on transition between contact body and wire barrel: 50°C	
15	Current overload	Mated connectors subjected to 500 cycles with current of 4 A. Each cycle composed of: - 45 min. current ON - 15 min. current OFF	Max. increase of temperature detected on transition between contact body and wire barrel: 60°C	
16	Clearances and creepage distances			Acc. to IEC 60335, part 29
17	Resistance to heat and fire	Glow wire test: 750°C		Acc. to IEC 60335, part 30

5. TEST SEQUENCES – IEC NORM

Item	Test	Test group										
		A	B	C	D	E	F	G	H	I	J	K
1	Visual inspection	1, 4	1, 3	1, 3	1, 11	1, 7	1, 11	1, 7	1, 3	1, 3	1, 3	1, 3
2	Marking and instructions	2										
3	Insulation resistance				4, 7		4, 7					
4	Dielectric withstanding voltage				5, 8		5, 8					
5	Connector mating force				2, 10	2, 6	2, 10	2, 6				
6	Connector unmating force				3, 9	3, 5	3, 9	3, 5				
7	Pull out force								2			
8	Water resistance: IP44									2		
9	Water resistance: IP67										2	
10	Thermal cycling				6							
11	Ageing resistance						6					
12	Ozone gas resistance							4				
13	Vibration test					4						
14	High temperature resistance with current load		2									
15	Current overload			2								
16	Clearances and creepage distances	3										
17	Resistance to heat and fire											2

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6. TESTS AND PROCEDURES SUMMARY – UL NORM

Item	Features	Test conditions	Limits	Procedure
1	Visual inspection	Meet requirements of product drawing		
2	Mold stress relief test	Mated devices placed in oven for 7 hours in a uniform temperature of not less than 70°C and at least 10°C higher than either: - the maximum operating temperature of the device (up the maximum thermal index rating) - the maximum temperature of the connector as measured during the temperature test	No warpage, shrinkage or distortions	Acc. to UL 1977, part 14
3	Overload test	The device shall be tested at 150% of the rated current corresponding to the maximum rated voltage		Acc. to UL 1977, part 15
4	Temperature test	The test shall be conducted on the minimum wire size at the rated current	Temperature shall not exceed the RTI of the insulating material	Acc. to UL 1977, part 16
5	Dielectric voltage - withstand test	The device shall withstand at 1500 V and a frequency of 40-70 Hz	The device shall withstand without arc-over or breakdown	Acc. to UL 1977, part 17
6	Conductor secureness test	24 AWG: 6 lbf for 1 min. on each lead 22 AWG: 8 lbf for 1 min. on each lead		Acc. to UL 1977, part 18
7	Markings			Acc. to UL 1977, part 23

7. TEST SEQUENCES – UL NORM

Item	Test	Test group				
		A	B	C	D	E
1	Visual inspection	1, 3	1, 5	1, 3	1, 3	1
2	Mould stress relief test	2				
3	Overload test		2			
4	Temperature test		3			
5	Dielectric voltage - withstand test		4			
6	Conductor secureness test			2	2	
7	Markings					2

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