
Medical Circular Plastic Connector

1. SCOPE**1.1. Content**

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) Medical Circular Plastic Connectors with push/pull locking.

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.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 16Apr07. The Qualification Test Report number for this testing is 501-655. This documentation is on file at and available from Engineering Practices and Standards (EPS).

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

- 109-197: Test Specification (TE Test Specifications vs EIA and IEC Test Methods)
- 114-13184: Application Specification (Push-Pull Latch Miniature Circular Plastic Connectors (CPC))
- 501-655: Qualification Test Report (Medical Circular Plastic Connector)

2.2. Industry Standard

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

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

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

3.3. Ratings

- Voltage: 300 volts AC
- Current: Signal application only. Current per individual mated contact pair in free air shown in Figure 1.

Pin Diameter (mm)	Current (amperes)
0.9	7
0.7	5
0.5	3

Figure 1

- Temperature: -50 to 170°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 2. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low level contact resistance.	20 milliohms maximum.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage. See Figure 4.
Insulation resistance.	5000 megohms minimum initial. 1000 megohms minimum final.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts.
Withstanding voltage.	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1500 volts AC at sea level for 5, 6 and 7 position specimens; 1200 volts AC at sea level for 10 position specimens. Test between adjacent contacts.

Figure 2 (continued)

Test Description	Requirement	Procedure
MECHANICAL		
Solderability, dip test.	Solderable area shall have a minimum of 95% solder coverage.	EIA-364-52, Class 2, Category 3. Subject loose piece contacts to solderability. Insert solder cup into solder bath at a 15 to 20 degree angle with solder cup facing upward.
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Test Condition VII, Condition Letter D. Subject mated specimens to 3.10 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Method H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note.	EIA-364-9. Mate and unmate specimens for 2500 cycles at a maximum rate of 500 cycles per hour.
Mating force.	13 N [3 lbf] maximum.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [0.5 in] per minute.
Unmating force.	3 N [0.7 lbf] minimum.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [0.5 in] per minute.
ENVIRONMENTAL		
Thermal shock.	See Note.	EIA-364-32. Subject mated specimens to 5 cycles between -50 and 170°C.
Humidity/temperature cycling.	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.
Temperature life.	See Note.	EIA-364-17, Method A, Test Condition 4, Test Time Condition C. Subject mated specimens to 105°C for 500 hours.

Figure 2 (continued)

Test Description	Requirement	Procedure
Mixed flowing gas.	See Note.	EIA-364-65, Class IIA (4 gas). Subject mated specimens to environmental Class IIA for 20 days.

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 3.

Figure 2 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5(b)
	Test Sequence (c)				
Initial examination of product	1	1	1	1	1
Low level contact resistance	3,7	2,4	2,4		
Insulation resistance				2,6	
Withstanding voltage				3,7	
Solderability, dip test					2
Vibration, random	5				
Mechanical shock, half sine	6				
Durability	4				
Mating force	2				
Unmating force	8				
Thermal shock				4	
Humidity/temperature cycling				5	
Temperature life		3(d)			
Mixed flowing gas			3(d)		
Final examination of product	9	5	5	8	3

NOTE

- (a) See paragraph 4.1.A.
- (b) Specimens in this test group are loose piece contacts
- (c) Numbers indicate sequence in which tests are performed.
- (d) Precondition specimens with 10 durability cycles.

Figure 3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of a minimum of 5 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 3.

4.2. 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.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 2. 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.

4.4. 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.

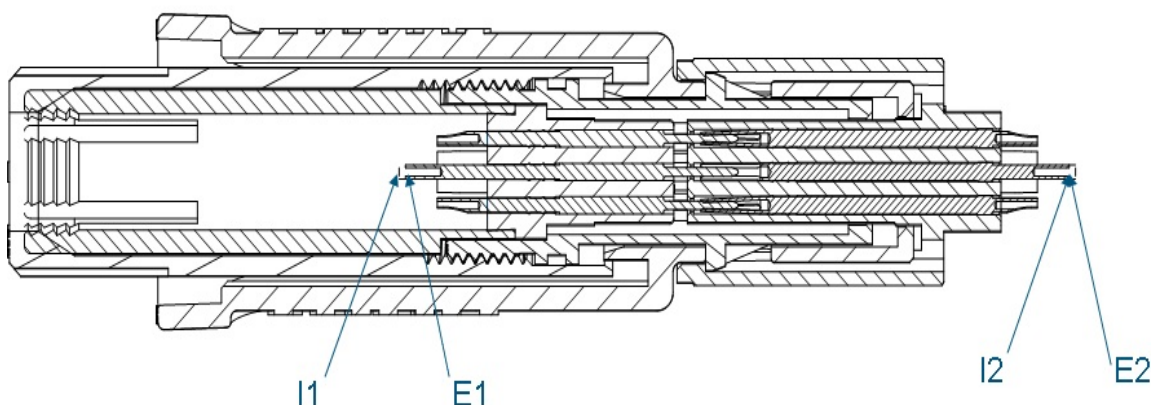


Figure 4
Low Level Contact Resistance Measurement Points