# DEUTSCH* DTF Series Connector System

## 1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) DTF Series Connector System.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 2 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Successful qualification testing on the subject product line was completed in 2001. The Qualification Test Report number for this testing is 501-151070. These documents are on file at and available from Product Engineering, Industrial Commercial Transportation (ICT).

## 2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Connectivity (TE) Documents

- 109-1 General Requirements for Testing
- 408-151007 Instruction Guide DEUTSCH Extraction Tools
- 501-151070 DTF Qualification Test Report
- Product Drawings

  X refers to A, B, C, D keys. XXXX refers to product modification.

| | |
|---|---|
| DTF13-2PA-XXXX | 2pin Header Receptacle, 90° |
| DTF13-3PA-XXXX | 3pin Header Receptacle, 90° |
| DTF13-4PA-XXXX | 4pin Header Receptacle, 90° |
| DT06-2S-XXXX | 2pin Plug |
| DT06-3S-XXXX | 3pin Plug |
| DT06-4S-XXXX | 4pin Plug |

2.2. Industry Documents

- DIN 72551-6: Road Vehicles—Low-Tension Cables—Part 6: Single-Core, Unscreened with Thin Insulation Wall; Dimensions, Materials, Marking
- ISO 6722: Road Vehicles—60 V and 600 V Single-Core Cables—Dimensions, Test Methods, and Requirements
- SAE J1128: Low Voltage Primary Cable
- SAE J2030: Heavy-Duty Electrical Connector Performance Standard

## 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. Ratings

- Voltage: 250 VAC/VDC
- Current (Amp): See Figure 1

| Contact Size | Wire Size AWG [mm²] | All Circuits Energized (A) |
|---|---|---|
| 16 | 12 [2.5] | 13 |
| | 14 [2.0] | |
| | 16 [1.5-1.0] | |
| | 18 [0.8-0.75] | 10 |
| | 20 [0.5] | 7.5 |

Figure 1

- Temperature: -55°C to +125°C
- Ingress Protection (IP): Not tested
- Flammability (E28476): V-0

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

| Test Description | Requirement | Procedure |
|---|---|---|
| Examination of Product | Free of defects that could affect the electrical or mechanical performance of the part or degrade the long term performance of the part. | SAE J2030<br>Conduct a visual examination for identification of product, torn seals, cracked plastic, etc. |
| **ELECTRICAL** | | |
| Insulation Resistance | ≥ 20 MΩ | SAE J2030<br>Check each contact to all other contacts and the shell, if shell is conductive. Test to be performed using a 1000 VDC ±10% Megohmmeter. |
| **ENVIRONMENTAL** | | |
| Temperature Life | There shall be no evidence of cracking, distortion, or detrimental damage. | SAE J2030<br>The wired and mated connectors shall be subject to 1000 h at 125 ± 3 °C without current flowing. |
| Thermal Cycle | There shall be no evidence of cracking, distortion or detrimental damage to the connector following the test. | Cycle mated connectors from –55±3°C to +125±3°C at a rate of 3°C ± 1°C per minute. Connectors to remain at each temperature extreme for 1 hour minimum. Mated connectors are to be cycled a total of 20 complete cycles. |
| Water Immersion | Insulation Resistance ≥ 20 MΩ | SAE J2030<br>The wired mated connectors shall be placed in an oven at 125 °C ± 3 °C for 1 hour then immediately be placed in water with a 5% salt in weight content and 0.1 g/L wetting agent, to a depth of 1 meter for 4 hours. Water temperature is to be 23 °C ± 3 °C. The ends of the cable are to be sealed during this test. |

Figure 2

***NOTE***

a) *All cavities wired with the minimum approved wire gauge per SAE J1128 suitable for the terminal size and with enough length to accommodate testing. Wire insulation shall be minimum diameter per SAE J1128 and shall be verified to be within the connector wire sealing range. Crimp characteristics (i.e. height, width, etc.) shall be checked prior to testing.*

*All unsealed cavities shall be secured with sealing plugs. To prevent capillary action on the sealed connector, all free wire ends and test points (i.e. millivolt test connection) shall be sealed with alcohol-based RTV silicone or equivalent and covered with heat shrink tubing.*

b) *Specimens shall be prepared in accordance with applicable production drawings and shall be selected at random from current production.*

3.4. Product Qualification and Requalification Test Sequence

| TEST OR EXAMINATION | TEST GROUP (a) | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| | TEST SEQUENCE (b) | | |
| Examination of Product | 1,10 | 1,10 | 1,10 |
| Insulation Resistance | 3,6,9 | 3,6,9 | 3,6,9 |
| Temperature Life | 7 | 7 | 7 |
| Thermal Cycle | 4 | 4 | 4 |
| Water Immersion | 2,5,8 | 2,5,8 | 2,5,8 |

***NOTE***

*(a) Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random form current production.*

- *Groups 1, Specimens shall consist of 2 position connectors with DEUTSCH Solid Terminal System size 16 nickel sockets with 16 AWG wire.*
- *Groups 2, Specimens shall consist of 3 position connectors with DEUTSCH Solid Terminal System size 16 nickel sockets with 16 AWG wire.*
- *Groups 3, Specimens shall consist of 4 position connectors with DEUTSCH Solid Terminal System size 16 nickel sockets with 16 AWG wire.*

*(b) Numbers indicate sequence in which tests are performed.*

3.5 Revision History

| Rev Ltr | Brief Description of Change | Date | Dwn | Apvd |
|---|---|---|---|---|
| A | Initial Release | 14-Oct-2019 | David Meyer | David Meyer |
| B | Page 2, Sec 3.2, Flammability. Added V-0 and UL file number | 17-Feb-2023 | David Meyer | Ilina Grantcharova |