DEUTSCH* DTMH Series Connector System

1. INTRODUCTION

1.1. Purpose

This report summarizes the results of testing performed on DEUTSCH DTMH series connector system to determine conformance to the requirements of product specification 108-151010.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the DEUTSCH DTMH series connector system. Testing was performed at the DEUTSCH Industrial Products Division Laboratory in 2008. The test file numbers for this testing are listed in Figure 1. This documentation is on file at and available from Product Engineering, Industrial Commercial Transportation (ICT) Laboratory.

Test Group	Test Report
1	IPD080124-01
2	
3	
4	IPD080227-01

Figure 1

1.3. Conclusion

The DEUTSCH DTMH series connector system products listed in Paragraph 1.4 conform to the electrical, mechanical, and environmental performance requirements given in product specification 108-151010.

1.4. Test Specimens

Test specimens were representative of normal production lots. Specimens identified with the part numbers given in Figure 2 were used for testing.

1.5. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15° to 35°C

Relative humidity: 25 to 75%

DEUTSCH PART NUMBER	DESCRIPTION	TEST GROUP
DTMH04-2PA	2-Pin Receptacle, Inline	1-3
DTMH06-2SA	2-Pin Plug, Inline	
1060-20-0177	Size 20 S&F Pin, Tin	
1062-20-0177	Size 20 S&F Socket, Tin	
DTMH04-2PA	2-Pin Receptacle, Inline	4
DTMH06-2SA	2-Pin Plug, Inline	
1060-20-0122	Size 20 S&F Pin, Nickel	
1062-20-0122	Size 20 S&F Socket, Nickel	

Figure 2

1.6. Qualification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)			
	1	2	3	4
	TEST SEQUENCE (b)			
Examination of Product	1,4	1,5	1,5	1,4
Insulation Resistance		3	2,4	3
Withstanding Voltage		4		
Contact Insertion Force	2			
Contact Retention	3			
Influence of Water and Salt			3	
Temperature/Humidity Cycling		2		
Water Immersion				2

(a) Specimens were prepared in accordance production drawings and were selected at random from current production.

- Group 1 through 3 specimens consisted of 2-position connectors with DEUTSCH S&F terminal system size 20 tin pin and socket contacts with size 16 AWG (MIL-W-16878/4-16)
- Group 4 specimens consisted of 2-position connectors with DEUTSCH S&F terminal system size 20 nickel pin and socket contacts with size 20 AWG TXL.

(b) Numbers indicate sequence that tests were performed.

Figure 3

2. TEST METHODS AND RESULTS

2.1. Examination of Product—All Test Groups

Product was visually inspected for correct use of materials, proper construction, correct part number and insert markings, and over-all quality of workmanship. Poor molding fabrication, loose materials, damaged or improperly manufactured contacts, galling of metal parts, nicks and burrs of metal parts, and torn seals or cracked plastic were considered adequate basis for rejection.

Results: Specimens were visually inspected and no evidence of physical damage detrimental to product performance was observed.

2.2. Insulation Resistance—Test Groups 2,3,4

Each contact was checked to all other contacts and the shell, if the shell is conductive. Test was performed using a 1000 VDC ±10% megohmmeter.

Results: All insulation resistance measurements were greater than 1000 MΩ.

2.3. Withstanding Voltage—Test Group 2

Applied AC voltage was 1000 V (rms) or DC voltage of 1600 V for 1 minute across all terminals connected and a metal film surrounding the housing. In addition, the voltage was applied with a different test sample to every two adjacent contacts.

Results: All withstanding voltage measurements had current leakage less than 2.0 mA.

2.4. Contact Insertion Force—Test Group 1

The insertion force of the contact into the cavity was tested by using the minimum and maximum size cable, placing it in the insertion direction via a test fixture and positioning it as close to the cable attachment. The contact was locked in place. The performance was measured at constant 25 mm/min.

Results: All contact insertion force measurements were equal to or less than 30 N for 16AWG.

2.5. Contact Retention—Test Group 1

A constant force was applied to the front and/or back of the terminal in an axial direction and held for 10 to 12 seconds.

Results: All contact retention force measurements withstood 60 N for 10 to 12 seconds.

2.6. Influence of Water and Salt—Test Group 3

Samples were placed in an oven at +140°C for 1 hour, then immediately placed in water with 5% salt in weight content and 0.1 g/L wetting agent to a depth of 1 meter for 4 hours.

Results: All test sample insulation resistance measurements were greater than 100 MΩ.

2.7. Temperature/Humidity Cycling—Test Group 2

The sample was subjected to 10 cycles of 24 hours as follows:

1. Held at +23°C at 45% RH for 4 hours
2. Raised to +55°C at 95% RH for 0.5 hours
3. Held at +55°C at 95% RH for 10 hours
4. Lowered to -40°C within 2.5 hours
5. Held at -40°C for 2 hours
6. Raised to +140°C within 1.5 hours
7. Held at +140°C for 2 hours

Results: No evidence of physical damage was visible as a result of temperature/humidity cycle testing.

2.8. Water Immersion—Test Group 4

The wired mated connectors were placed in an oven at +140°C for a minimum of 2 hours, then immediately placed in water with a 5% salt by weight content and 0.1 g/L wetting solution to a depth of 914 mm (3 feet) for 4 hours' minimum. The free ends of the mated connectors remained out of the water to prevent wicking of the water through the open wires. Water temperature was +23°C.

Results: All test sample insulation resistance measurements were greater than 1000 MΩ.