



NTS LOCKING SEALING PLUG PRODUCT SPECIFICATION

NTS系列卡扣密封塞产品规范

				PR: Jarvis Gu DATE: 2020-09-27	 TE Connectivity Shanghai, China		
				CHK: Evan Jiang DATE: 2020-09-27			
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CONTENT

1.	Scope 适用范围	3
1.1	Content 内容.....	3
1.2	Qualification 鉴定	4
2.	APPLICABLE Documents 适用文件	4
2.1	Usable document 使用文件	4
2.2	TE specifications 泰科电子规范	4
2.3	Other specifications 其他规范	4
3.	Requirement 要求	4
3.1	Design and Construction 设计和结构	4
3.2	Material 材料.....	5
3.3	Test parameters and tolerances 测试参数与公差.....	5
3.4	Ratings 等级	5
3.5	General Performance and Test description 通用性能和试验描述	5
3.6	TESTS REQUIREMENT AND METHOD SUMMARY 测试要求及方法	6
3.7	Test sequence 试验顺序	6
4.	QUALITY 质量	7
4.1	Qualification test 鉴定	7
4.2	Requalification test 重新鉴定.....	7
4.3	Acceptance 验收	7
4.4	Quality conformance inspection 质量合格检验.....	7

1. SCOPE 适用范围

1.1. Content 内容

This specification covers performance, tests and quality requirements for the TE Connectivity (TE) NTS Series Connector System. The product described in this document has not been fully tested to ensure conformance to the requirements outlined herein. TE Connectivity makes no representation or warranty, express or implied that the product will comply with these requirements. Further, TE Connectivity reserves the right these requirements based on the results of additional testing and evaluation. Contact TE Connectivity Engineering for further information. If necessary, This document will become the Product Specification at successful completion of testing. 本规范适用于NTS 系列产品(以下简称NTS series) 的性能, 测试和质量要求。

a. 本规范适用但不仅限于以下零件号: X =1, 2, 3, 4 refers to A,B,C,D keys.

2373921-X	NTS sealing plug
2350890-X 1-2350890-X	NTS 20Pos.plugin housing assembly
2350891-X	NTS 20Pos. tab housing assembly, Inline version
1-2350891-X 2-2350891-X	NTS 20Pos. tab housing assembly, flange version
2366494-X 1-2366494-X	NTS 48Pos. plug housing assembly
2366509-X	NTS 48Pos. tab housing assembly, Inline
1-2366509-X 2-2366509-X	NTS 48Pos. tab housing assembly, Flange
2366517-X	NTS 48Pos. fix ring
2428520-1	12# Sealing Plug
2405007-X	NTS 26Pos. plug housing assembly
2405028-X	NTS 26Pos. tab housing assembly, Inline
1-2405028-X	NTS 26Pos. tab housing assembly, Flange

b. Backshells sold separately.

1.2. Qualification 鉴定

When tests are performed, the following specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

本测试规范依照下面的规范及标准执行。所有的检验应依照合适的检验计划及产品图纸执行。

2. APPLICABLE DOCUMENTS 适用文件

2.1. Usable document 使用文件

In the event of conflict between the requirements of this specification and the drawing, the drawing shall take precedent.

在本规范的要求与图纸发生冲突时，以产品图纸为准。在本规范的要求与参考文件发生冲突时，以本规范为准。

2.2. TE specifications 泰科电子规范

- 109-1: General Requirements for Testing
- 0425-021-0000: HDP20 Series Performance and Application Characteristics
- 114-151001: Application Specification for DEUTSCH Size 16 S&F Pin & Socket
- 114-151003: Application Specification for DEUTSCH Size 20 S&F Pin & Socket
- 408-151008: Instruction Guide DEUTSCH Removal Tool DT-RT1
- 114-151006: Application Specification for DEUTSCH Size 12 S&F Pin and Socket contacts

2.3. Other specifications 其他规范

- SAE J2030: Heavy-Duty Electrical Connector Performance Standard
- SAE J1455: Recommended Environmental Practices for Electronic Equipment Design in Heavy-Duty Vehicle Applications
- DIN 40050-9: Road Vehicles Degrees of protection (IP Code)
- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC-60529: Degrees of Protection Provided by Enclosures (IP Code)
- SAE J1128: Low Voltage Primary Cable
- USCAR-2 REVISION 6

3. REQUIREMENT 要求

3.1. Design and Construction 设计和结构

Products must meet the design, construction and physical dimensions specified in the applicable product drawings.

产品必须满足产品图纸上的设计，结构和尺寸要求。

3.2. **Material 材料**

Description of the material sees the related product drawings.

材料描述见相关产品图纸。

3.3. **Test parameters and tolerances 测试参数与公差**

Table 1: Test parameters and tolerances

Requirement 要求	Tolerance 公差
Ambient temperature 环境温度	23°C ± 5°C
Relative humidity 相对湿度	45% to 75%
Atmospheric pressure 大气压力	96kPa ± 10kPa

3.4. **Ratings 等级**

A. Operating Temperature / 工作温度: -40~125°C

B. Application / 产品应用: Under hood 发动机舱

C. Ingress Protection (IP) Level: IPX8 and IPX9K (with rear protection, such as backshell)

3.5. **General Performance and Test description 通用性能和试验描述**

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Para.4. All testes must be performed at the test condition of the TE test specification 109-1 unless otherwise specified.

产品应能满足段落4中的电气，机械和环境等性能要求。所有试验均需按照TE规范109-1中的测试条件进行，除非另有说明。

3.6. **Test Requirements and Procedures Summary 测试要求及方法**

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

Table 2

Test Description	Requirement	Procedure
3.6.1 Examination of Product	Meets requirements of product drawing. The connectors shall be correctly constructed, marked, and show good quality and workmanship.	SAE J2030 6.1 Visual inspection of product before and after unmating connectors for conditions such as torn seals, cracked plastic, evidence of fluid or dust ingress in sealed connector systems, arcing, charring, melting, or anything that affects the performance or serviceability of the product as deemed by a qualified engineer.
3.6.2 Sealing plug–Connector insertion force	Inserting force: 30N max.	USCAR-2 5.4.1 Terminal –Connector insertion
3.6.3 Sealing plug pull out force	The terminal shall maintain its original position in the connector throughout the test. Pull out force 20N Min.	SAE J2030 6.18 with a deviation using The sealing plug shall be subjected to a direct pull. The minimum value shall be applied for 15s. The pull is to be exerted on the conductor by means of a tension-testing machine or equivalent to prevent sudden or jerking force during test.
3.6.4 Water Immersion	There shall be no evidence of water ingress into the connector housing.	SAE J2030 6.19 IPX8 The wired mated connectors shall be placed in an oven at 125 °C ± 3 °C for 1 h 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 m for 4 hours. Water temperature is to be 23 °C ± 3 °C. Test samples for insulation resistance per SAE J2030 6.3 and visually inspect for moisture inside the connector. The ends of the cable are to be sealed during this test.
3.6.5 Pressure Spray	There shall be no evidence of water ingress into the connector housing.	USCAR-2 5.6.7 IPX9K The test specifies a spray nozzle that is fed with 80°C water at 80 to 100 bar and a flow rate of 14 to 16 L/min. The nozzle is held 10 to 15 cm from the tested device at angles of 0°, 30°, 60° and 90° for 30 s each. The test device sits on a turntable that rotates.
3.6.6 Temperature Life	There shall be no evidence of cracking, distortion, or detrimental damage.	SAE J2030 6.7 The cabled-mated connectors shall be subject to 1000 h at 125 ± 3 °C without current flowing.
3.6.7 Visual Examination	No evidence of damage to the contacts, contact plating, connector housing, or seals which may be detrimental to reliable connector performance.	SAE J2030 6.27 Conduct a visual examination for identification of product such as torn seals, cracked plastic, evidence of fluid or dust ingress in sealed connector systems, arcing, charring, melting, or anything that could affect the performance and serviceability of the product.

3.7. Product Qualification and Requalification Test Sequence 试验顺序

Test samples were subjected to the following tests in the order given. Each test group had five mated pair test samples.

Test or Examination	Test Group (a)										
	1	2	3								
	Test Sequence (b)										
Examination of Product	1	1	1								
Water Immersion	2,4										
Pressure Spray		2, 4									
Temperature Life	3	3									
Sealing plug–Connector insertion force			2								
Sealing plug pull out force			3								
Visual Examination	5	5	4								

4. QUALITY 质量

4.1. Qualification test 鉴定

Samples must be in accordance with drawings and be taken in a random way in the production in progress.

样件必须与产品图纸一致，并且是生产过程中随机选取的。

4.2. Requalification test 重新鉴定

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by product engineering.

如果产品或者制造过程中有显著影响外观，装配和功能的设变，质保需要协调按照原先工程定义的测试顺序，重新验证全部或者部分测试项目。

4.3. Acceptance 验收

Acceptance is based on verification that the product meets the requirements of section 3.6. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

归咎于测试设备，样件安装或者操作员的失误的失效不应判定产品不合格。当产品失效发生时，需要有纠正措施以及重新提交样件进行验证。在重新验证前，需确认已有纠正措施。

4.4. Quality conformance inspection 质量合格检验

The applicable TE Connectivity 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

TE Connectivity 的质量检验计划将指定适用的质量标准。尺寸和功能要求，应按照适用的产品图纸和本规范。