



2Pos. MCON 1.2 SEAL PLUG AND RECEPTACLE SPECIFICATION

2Pos. MCON 1.2 SEAL PLUG AND RECEPTACLE 产品规范

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CONTENT

1. SCOPE 适用范围.....	3
1.1 CONTENT 内容.....	3
1.2 QUALIFICATION	3
2. APPLICABLE DOCUMENTS 适用文件.....	3
2.1 USABLE DOCUMENT 使用文件.....	3
2.2 TE SPECIFICATIONS 泰科电子规范	3
2.3 OTHER SPECIFICATIONS 其他规范	3
3. REQUIREMENT 要求.....	4
3.1 DESIGN AND CONSTRUCTION 设计和结构	4
3.2 MATERIAL 材料	4
3.3 TEST PARAMETERS AND TOLERANCES 测试参数与公差	4
3.4 RATINGS 等级	4
3.5 GENERAL PERFORMANCE AND TEST DESCRIPTION 通用性能和试验描述	4
3.6 TESTS REQUIREMENT AND METHOD SUMMARY 测试要求及方法.....	5
3.7 TEST SEQUENCE 试验顺序	8
4. QUALITY 质量	8
4.1 QUALIFICATION TEST 鉴定	8
4.2 REQUALIFICATION TEST 重新鉴定.....	8
4.3 ACCEPTANCE 验收.....	9
4.4 QUALITY CONFORMANCE INSPECTION 质量合格检验.....	9

1. SCOPE 适用范围

1.1 Content 内容

This specification covers the performance, test and quality requirements for HVIL 2Pos. MCON 1.2 seal plug and receptacle connector (hereinafter referred to as HVIL 2P connector).

This specification applies to the product as below, but not limited to it .

2Pos. Seal plug: 2324808-X, which is composed of 2324813-1(housing), 2324815-X(TPA), 1010-064- 0206 (O-ring)
(X=1, 2, 3 for various coding) .

2Pos. Seal receptacle: 2327042-X, which is composed of 2324825-1(housing), 2324819-X(TPA), (X=1, 2, 3 for various coding).

本规范适用于 HVIL 2Pos. MCON 1.2 防水 plug and receptacle 连接器(以下简称 HVIL 2P 连接器) 的性能, 测试和质量要求。

本规范适用但不仅限于以下零件号:

2Pos. 防水 plug: 2324808-X, 由 2324813-1(housing), 2324815-X(TPA), 1010-064-0206 (密封圈) 组成 (X=1, 2, 3 代表不同的编码) .

2Pos. 防水 receptacle: 2327042-X, 由 2324825-1(housing)组成 2324819-X(TPA), (X=1, 2, 3 代表不同的编码).

1.2 Qualification

Successful qualification testing on the subject product line was completed in 2019. The Qualification Test Report number for this testing is 501-32296.

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.

产品测试于 2019 年完成, 测试报告编号为 501-32296.

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.

In the event of conflict between the requirement of this specification and the referenced documents, this specification 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 Test Specifications / 测试通用规范

2.3 Other specifications 其他规范

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。

Component List	Raw material	Surface Treatment
Housing	PBT 30% GF	NA
TPA	PBT 30% GF	NA
O-ring	SILICONE RUBBER	NA

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. Storage Temperature / 储存温度: -40~130°C

C. Rated voltage / 额定工作电压: 12V

D. Application / 产品应用: Components subject to severe vibration

可直接安装于发动机及周边区域(但不适用长时间浸泡于油液中工作)

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.3.6. 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 3.6 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 Tests requirement and method summary 测试要求及方法

Para.	Test Item	Requirements	Method
Mechanical Requirement			
3.6.1	Visual inspection	The connector assembly must not show, with the aid of 10X magnification, any evidences of deterioration, cracks, deformities, etc...Connector locking mechanisms must function without breakage.	Visually, Dimensionally and Functionally inspected per applicable inspection plan. USCAR-2 5.1.8
3.6.2	Connector and/or terminal cycling	10 Times	USCAR-2 5.1.7
Mechanical Test			
3.6.3	Terminal – Connector inserting force	Insertion: 1. Inserting force: 30N max. 2.The forward stop push-through force $F \geq 50N$	USCAR-2 5.4.1 Terminal –Connector inserting/ retention force
3.6.4	Terminal – Connector retention force	Retention: 1. Primary lock retention Initial force=40N min 2. Primary + Second lock after Moisture Condition Initial force=70N min 3. Primary + Second lock after Temp/Humidity and THE Final force= 50N min	USCAR-2 5.4.1 Terminal –Connector inserting/ retention force Terminal: MCON 1.2
3.6.5	Connector to connector Mating /Unmating force	1.The force to engage the connector to its pre-lock position $F \leq 75N$ (Refer to USCAR25) 2.Un-mating force $\geq 110N$ with the primary connector lock fully engaged 3. Un-mating force $\leq 75N$ with the primary connector lock completely disengaged/disabled	USCAR-2 5.4.3 Connector to connector Mating/Unmating force

3.6.6	Polarization feature effectiveness	3x the maximum value of mating connector(with force being $\geq 60\text{N}$ and $\leq 150\text{N}$)	USCAR-2 5.4.4 Polarization feature effectiveness
3.6.7	Vibration/ Mechanical Shock	There shall be no loss of electrical continuity	USCAR-2 5.4.6 V3 for vibration and mechanical shock
3.6.8	Connector Drop Test	Meet Visual Inspection acceptance Criteria	USCAR-2 5.4.8 Connector Drop Test
3.6.9	Terminal/Cavity Polarization	Terminal inserted at a force 1.5 times the normal insertion force or 15N(whichever is greater) in reverse direction. Shall not fit or lock in to connector cavity.	USCAR-2 5.4.10 Terminals inserted at a force
ELECTRICAL Test			
3.6.10	Isolation Resistance	All measured isolation resistance shall be greater than 100 M Ω at 500VDC	USCAR-2 5.5.1 Isolation Resistance
3.6.11	Dry Circuit Resistance – Contact Resistance	Initial MCON 1.2 $\leq 10\text{m}\Omega$ After MCON 1.2 $\leq 20\text{m}\Omega$	USCAR-2 5.3.1 Dry Circuit Resistance – Contact Resistance
3.6.12	Voltage Drop	$\leq 50\text{mV}$	USCAR-2 5.3.2 Voltage Drop MCON 1.2 WIRE 1.5MM ²
Environment Test			
3.6.13	Thermal Shock	No defect, crack, could not affect their fit and function	USCAR-2 5.6.1 Thermal Shock Class 3(-40 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$), 99Cycle
3.6.14	Temperature humidity Cycling	No defect, crack, could not affect their fit and function	USCAR-2 5.6.2 Temperature humidity Cycling 40Cycle



3.6.15	High temperature exposure	No defect, crack, could not affect their fit and function	USCAR-2 5.6.3 high temperature exposure 125°C 1008Hours
3.6.16	Submersion	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.5 Submersion 125°C chamber 2H 0°C salt water 30 Minute
3.6.17	Pressure/Vacuum Leak	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.6 Pressure/Vacuum Leak air pressure: 48 kPa (7 psig) of vacuum 15 seconds
3.6.18	High pressure spray	No evidence of water or florescent dye shall be present in the interior of either mated connector(with backshell)	USCAR-2 5.6.7 High pressure spray Water pressure: 8000~10000KPa Water temperature: 85+/-5°C
3.6.19	IPX8	No evidence of water or florescent dye shall be present in the interior of either mated connector	Immerse samples in 2M depth,48Hours

3.7 Test sequence 试验顺序

Test or examination	1	2	3	4	5	6	7	8	9	10
	3.6.1 Visual Inspection	1,4	1,3	1,3	1,3	1,3	1,7	1,3	1,7	1,7
3.6.2 Connector and/or terminal cycling						2		2	2	2
3.6.3 Terminal –Connector inserting force	2									
3.6.4 Terminal –Connector retention force	3							14	14	14
3.6.5 Connector to connector Mating/Unmating force		2								
3.6.6 Polarization feature effectiveness			2							
3.6.7 Vibration/Mechanical Shock						4				
3.6.8 Connector Drop Test				2						
3.6.9 Terminal/Cavity Polarization					2					
3.6.10 Isolation Resistance								5,11	5,11	5,11
3.6.11 Dry Circuit Resistance – Contact Resistance						3,5		3,8	3,8	3,8
3.6.12 Voltage Drop						6		9	9	9
3.6.13 Thermal Shock								6		
3.6.14 Temperature humidity Cycling									6	
3.6.15 High temperature exposure										6
3.6.16 Submersion								12	12	12
3.6.17 Pressure/Vacuum Leak								4,10	4,10	4,10
3.6.18 High pressure spray								13	13	13
3.6.19 IPX8							2			
Sample Size	20	20	16	18	20	8	8	10	10	10

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部定义的测试顺序，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.

以符合第 3.6 节的要求验收。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。