Aerospace series. Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous

Part 001: Technical specification
National foreword

This British Standard is the UK implementation of EN 3645-001:2022. It supersedes BS EN 3645-001:2019, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ACE/6, Aerospace avionic electrical and fibre optic technology.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022
Published by BSI Standards Limited 2022

ISBN 978 0 539 17781 7

ICS 49.060

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2022.

Amendments/corrigenda issued since publication

<table>
<thead>
<tr>
<th>Date</th>
<th>Text affected</th>
</tr>
</thead>
</table>

This is a preview of "BS EN 3645-001:2022". Click here to purchase the full version from the ANSI store.
Aerospace series - Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous - Part 001: Technical specification
Contents

European foreword ...................................................................................................................................................... 4
Introduction .................................................................................................................................................................. 5
1 Scope .................................................................................................................................................................... 6
2 Normative references .......................................................................................................................................... 6
3 Terms and definitions .......................................................................................................................................... 7
4 Description ......................................................................................................................................................... 7
  4.1 General ....................................................................................................................................................... 7
  4.2 Receptacle .................................................................................................................................................. 8
  4.3 Plug ............................................................................................................................................................ 8
  4.4 Materials and surface treatment ............................................................................................................... 8
    4.4.1 General ................................................................................................................................................ 8
    4.4.2 Housing ............................................................................................................................................. 8
    4.4.3 Contacts ............................................................................................................................................ 8
    4.4.4 Non-metallic materials ....................................................................................................................... 9
    4.4.5 Surfaces treatments ............................................................................................................................ 9
5 Design .............................................................................................................................................................. 9
  5.1 Housings ..................................................................................................................................................... 9
  5.2 Inserts ........................................................................................................................................................ 10
6 Definition drawings and masses ...................................................................................................................... 10
  6.1 General ..................................................................................................................................................... 10
  6.2 Receptacle mating dimensions ................................................................................................................ 10
  6.3 Plug mating dimensions .......................................................................................................................... 13
  6.4 Receptacle and plug polarization .......................................................................................................... 16
  6.5 Dimensions of the rear part of the connectors ..................................................................................... 17
    6.5.1 Accessory interface dimensions ...................................................................................................... 17
    6.5.2 Size 8 cavity - rear dimensions ................................................................................................…… 19
  6.6 Contact arrangements .............................................................................................................................. 20
  6.7 Contact dimensions ........................................................................................................................................ 66
  6.7.1 Removable contacts ............................................................................................................................ 66
  6.7.2 Fixed contacts ......................................................................................................................................... 66
7 Tests ................................................................................................................................................................ 67
  7.1 Tests according to EN 2591-100 ................................................................................................................ 67
  7.2 Special tests ................................................................................................................................................ 81
    7.2.1 Lanyard release connectors ............................................................................................................... 81
    7.2.2 Resistance to fluids ............................................................................................................................ 81
  7.3 Gauges to test the holding force of the grounding spring system of the housing ................................ 83
  7.4 Gauges to test the stability of male contacts in insert ............................................................................. 84
8 Quality assurance .......................................................................................................................................... 85
  8.1 General ....................................................................................................................................................... 85
  8.2 Qualification ............................................................................................................................................... 85
    8.2.1 General ................................................................................................................................................ 85
    8.2.2 For MIL-DTL-38999 QPL manufacturer .......................................................................................... 86
    8.2.3 For non MIL-DTL-38999 QPL manufacturer ................................................................................... 86
European foreword

This document (EN 3645-001:2022) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2023, and conflicting national standards shall be withdrawn at the latest by March 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 3645-001 :2019.

The main changes with respect to the previous edition are listed in the following table.

<table>
<thead>
<tr>
<th>prEN/EN Number</th>
<th>Edition</th>
<th>Publication Date</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>prEN 3645-001</td>
<td>P5</td>
<td>2021-12-01</td>
<td>Introduction of Hexavalent Chromium free (in both manufacturing process and final product) plating classes and related compatibility testing with legacy Cadmium plated items</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Addition of optional marking for insulators according to MIL standard</td>
</tr>
</tbody>
</table>

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this document: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.
Introduction

This family of connectors is derived from MIL-DTL-38999 series III, with which it is intermateable and interchangeable. It is particularly suitable for use in zones of severe environmental conditions on board aircraft, applying EN 2282.

These connectors are distinguishable from MIL-DTL-38999 by:

— a compatibility with size 8 power and quadrax contacts;
— self-extinguishing materials;
— compatibility with reduced diameter cables;
— additional reinforced fuel resistant insert type;
— additional insert with grounded cavities.
1 Scope

This document specifies the general characteristics, the conditions for qualification, acceptance and quality assurance, as well as the test programs and groups for threaded ring coupling circular connectors, fire resistant, intended for use in a temperature range from -65 °C to 175 °C continuous or 200 °C continuous according to the classes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2267-002, Aerospace series — Cables, electrical, for general purpose — Operating temperatures between -55 °C and 260 °C — Part 002: General

EN 2346 (all parts), Aerospace series — Cable, electrical, fire resistant — Operating temperatures between -65 °C and 260 °C

EN 2591-*, Aerospace series — Elements of electrical and optical connection — Test methods

EN 3155-001:2016, Aerospace series — Electrical contacts used in elements of connection — Part 001: Technical specification

EN 3197, Aerospace series — Design and installation of aircraft electrical and optical interconnection systems 1)

EN 3645-002, Aerospace series — Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous — Part 002: Specification of performance and contact arrangements

EN 3909, Aerospace series — Test fluids and test methods for electrical and optical components and sub-assemblies

ISO 68-1, ISO general purpose screw threads — Basic profile — Part 1: Metric screw threads 2)

ISO 261, ISO general purpose metric screw threads — General plan 2)

ISO 262, ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts 2)

ISO 965-2, ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality 2)

ISO 27874, Metallic and other inorganic coatings — Electrodeposited gold and gold alloy coatings for electrical, electronic and engineering purposes — Specification and test methods 2)

* All parts quoted in this document.

1) Published as ASD-STAN Standard at the date of publication of this document by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), https://www.asd-stan.org/.

2) Published by: ISO International Organization for Standardization http://www.iso.ch/.