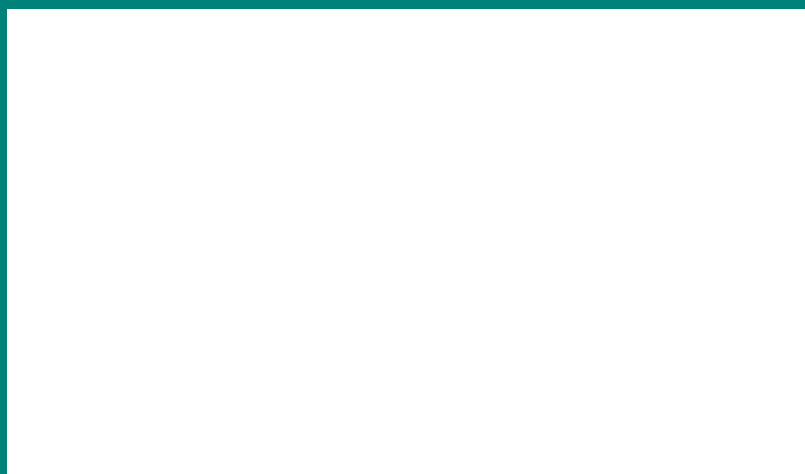


SVENSK STANDARD

SS-EN 4645-001:2010

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Aerospace series – Connectors, optical, circular, single and multipin, coupled by threaded ring, self-locking 1,25 mm diameter ferrule with removable alignment sleeve holder – Part 001: Technical specification



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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4645-001

January 2010

ICS 49.090

English Version

Aerospace series - Connectors, optical, circular, single and multipin, coupled by threaded ring, self-locking 1,25 mm diameter ferrule with removable alignment sleeve holder - Part 001: Technical specification

Série aérospatiale - Connecteurs optiques circulaires à accouplement par bague fileté, auto-freinante ferrule 1,25 équipés d'un porte sleeve démontable - Partie 001 : Spécificaton technique

Luft- und Raumfahrt - Optische Rundsteckverbinder mit Schraubkupplung, selbstsichernd, Einzel- und Multipin, Ferrulendurchmesser 1,25 mm, demontierbarer Zentrierhülsenhafter - Teil 001: Technische Lieferbedingungen

This European Standard was approved by CEN on 10 October 2009.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 4645-001:2010) 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 Standard 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 European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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

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Introduction

This family of fibre optic connectors is derived from MIL-DTL-38999 series III and EN 3645-001. It is suitable for use on aerospace onboard applications. It provides easy access for optical contact end face cleaning.

Standards for optical contacts are defined in EN 4639-002.

The connectors with shell size 11 and 13 are 100 % scoop proof. The optical contacts are capable of accepting single cable sizes up to a maximum of 2 mm outside diameter.

1 Scope

This standard 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 fibre optic self-locking connectors, fire-resistant or non fire-resistant, intended for use in a temperature range from – 65 °C to 150 °C continuous.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 68-1:1998, *ISO general purpose screw threads — Basic profile — Part 1: Metric screw threads*

ISO 261:1998, *ISO general purpose metric screw threads — General plan*

ISO 262:1998, *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts*

ISO 965-1:1998, *ISO general-purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

EN 2591-100*, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 100: General.*

EN 3197, *Aerospace series — Installation of aircraft electrical and optical interconnection systems*¹⁾

EN 3645-001, *Aerospace series — Connectors, electrical, circular, scoop-proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous — Part 001: Technical specification*

EN 4531-002, *Aerospace series — Connectors, optical, circular, single and multipin, coupled by threaded ring — Flush contacts — Part 002: Specification of performance and contact arrangements*

EN 4639-002, *Aerospace series — Connectors, optical, rectangular, modular, multicontact, 1,25 diameter ferrule, with removable alignment sleeve holder — Part 002: List of product standards*

EN 4639-101, *Aerospace series — Connectors, optical, rectangular, modular, multicontact, 1,25 diameter ferrule, with removable alignment sleeve holder — Part 101: Optical contact for cable EN 4641-100 — Operating temperatures between – 65 °C and 125 °C — Product standard*

EN 4639-102, *Aerospace series — Connectors, optical, rectangular, modular, multicontact, 1,25 diameter ferrule, with removable alignment sleeve holder — Part 102: Optical contact for cable EN 4641-102 — Operating temperatures between – 55 °C and 100 °C — Product standard*

EN 4645-003, *Aerospace series — Connectors, optical, circular, single and multipin, coupled by threaded ring, self-locking 1,25 mm diameter ferrule with removable alignment sleeve holder — Part 003: Square flange receptacle — Product standard*

* And all parts quoted in this standard.

1) Published as ASD Prestandard at the date of publication of this standard.

EN 4645-004, *Aerospace series — Connectors, optical, circular, single and multipin, coupled by threaded ring, self-locking 1,25 mm diameter ferrule with removable alignment sleeve holder — Part 004: Jam nut receptacle — Product standard*

EN 4645-005, *Aerospace series — Connectors, optical, circular, single and multipin, coupled by threaded ring, self-locking 1,25 mm diameter ferrule with removable alignment sleeve holder — Part 005: Plug — Product standard*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

MIL-DTL-38999, *Connector, electrical circular, miniature, high density quick disconnect (bayonet, threaded and breech coupling), environment resistant, removable crimp and hermetic solder contacts, general specification for²⁾*

MIL-STD-1373, *Screw thread, modified, 60°, stub, double²⁾*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 2591-100 apply.

4 Description

4.1 General

This document describe optical connector arrangements for plug and receptacle housings.

Plug and receptacle housings conform to EN 3645-001 standard.

The connectors use rear removable optical contacts with a ferrule diameter of 1,25 mm.

The receptacles connector with male arrangement as specified EN 4645-003 and EN 4645-004.

The plug connector with female arrangement as specified EN 4645-005.

The female arrangement is equipped of a removable alignment sleeve holder as specified EN 4645-005.

The sleeve holder is delivered with the female arrangement. It is considered as a part of the female arrangement (specific design per manufacturer).

The sleeve holder can be supplied separately only for repair purpose.

The connectors are polarized by means of keyways and keys; polarization is obtained before the male contacts enter the insert of the female contacts and before the coupling ring is engaged. The position of the keying arrangement is given in EN 3645-001.

The visual check of coupling is obtained by masking of a red coloured band on the receptacle.

4.2 Receptacle

The receptacle may be attached by:

2) Published by: Department of Defense (DoD), the Pentagon, Washington, DC 20301, USA.

- square flange;
- jam nut.

The receptacle contains five keyways in which the keys of the plug engage. The main keyway is fixed and is wider than the others. Polarization is ensured by the different positions which the secondary keyways may take. The position of the insert is fixed relative to the main keyway.

4.3 Plug

The plug contains five keys which engage in the keyways of the receptacle. The main key is wider than the others. Polarization is ensured by the different positions which the secondary keys may take. The position of the insert is fixed relative to the main key.

The coupling ring permanently fitted on the plug enables the connectors to be coupled and uncoupled. The mating torque shall be lower than the unmating torque. The internal thread of the coupling ring may be treated with a suitable lubricant compatible with the performance required in this standard.

4.4 Materials and surface treatment

4.4.1 General

When dissimilar metals are in close contact, adequate protection against corrosion shall be used for the electromotive force of the cell not to exceed 0,25 V (see EN 3197).

4.4.2 Housings

The material of the connector housings and fittings shall be of suitable material protected against corrosion by passivation, nickel or cadmium plating (see EN 3197) as specified in the product standard.

4.4.3 Optical contacts and alignment sleeves

The material of the optical contacts and alignment sleeves shall be of suitable materials as specified in the product standard.

The optical contacts in both plug and receptacle are sprung-loaded. The spring force is defined in the product standard.

4.4.4 Metallic or non-metallic materials

The materials used for insert, seals and grommets shall have hardness and mechanical characteristics consistent with the required use.

The material used for guiding pins shall have hardness and mechanical characteristics consistent with the required use.

5 Design

5.1 Housings

The connector housings shall be in one unit. They contain teeth at the rear over the entire periphery and shall accommodate the cable outlets and other fittings. The receptacle shall be fitted with a seal for sealing the coupled housings.