SLOVENSKI STANDARD
SIST EN 4701-001:2014

01-februar-2014

Aeronavtika - Konektorji, optični, pravokotni, modularni, za delovno temperaturo 125 °C, za kontakte po EN 4531-101 - 001. del: Tehnična specifikacija

Aerospace series - Connectors, optical, rectangular, modular, operating temperature 125 °C, for EN 4531-101 contacts - Part 001: Technical specification

Luft- und Raumfahrt - Optischer Rechtecksteckverbinder in modularer Bauweise, Betriebstemperatur 125 °C, für EN 4531-101 Kontakte - Teil 001: Technische Lieferbedingungen

Série aérospatiale - Connecteurs optiques rectangulaires, modulaires, température d'utilisation 125 °C, pour contacts EN 4531-101 - Partie 001: Spécification technique

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Foreword

This document (EN 4701-001:2013) 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of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

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Introduction

This family of fibre optic connectors is derived from EN 4165-001 with EN 4531-101 optical contacts. It is suitable for use on aerospace on board applications. It provides easy access for optical contact end face cleaning.

1 Scope

This European Standard specifies the general characteristics, the conditions for qualification, acceptance and quality assurance, as well as the test programs and groups for EN 4165 rectangular connectors with removable optical modules using EN 4531-101 contacts.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2591 (all parts), *Aerospace series — Elements of electrical and optical connection — Test methods*

EN 3909, *Aerospace series — Test fluids for electric components and sub-assemblies*

EN 4531 (all parts), *Aerospace series — Connectors, optical, circular, single and multipin, coupled by threaded ring — Flush contacts*

EN 4165 (all parts), *Aerospace series — Connectors, electrical, rectangular, modular — Operating temperature 175 °C continuous*

EN 4701-002, *Aerospace series — Connectors, optical, rectangular, modular, operating temperatures 125 °C, for EN 4531-101 contacts — Part 002: Material* [1)]

EN 4701-003, *Aerospace series — Connectors, optical, rectangular, modular, operating temperatures 125 °C, for EN 4531-101 contacts — Part 003: Module series 2 — Product standard* [1)]

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

MIL-I-81969/14-04, *Installing and removal tools, connector electrical contact, type III, class 2, composition B* [2)]

TR 4684, *Aerospace series — Electrical and optical technology and component definitions* [3)]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in TR 4684 apply.

1) Published as ASD-STAN Prestandard at the date of publication of this standard (www.asd-stan.org).

2) Published by; DoD National (US) Mil. Department of Defense http://www.defenselink.mil/.

3) Published as ASD-STAN Technical Report at the date of publication of this standard (www.asd-stan.org).

4 Description

4.1 General

This document describes an optical connector module to be installed in plug and receptacle housings.

Plug and receptacle housings conform to EN 4165-001.

The connectors use rear removable optical contacts with a ferrule diameter of 2,5 mm in accordance with EN 4531-101.

The precise alignment of the optical contacts is accomplished by a central alignment pin/socket and alignment sleeves.

The receptacles and plugs contain either male or female module. The male module is characterised by alignment pin.

The inserts can be installed and removed from the shell by mean of a tool as specified EN 4165-022.

Keying system conform to EN 4165-001.

Connector type designation as specified in EN 4165-001.

Not compatible with back shells and cable clamp defined in EN 4165-002.

4.2 Receptacle

Receptacle description as specified in EN 4165-001.

4.3 Plug

Plug description as specified in EN 4165-001.

4.4 Module

Mechanical interface and polarisation between housings and modules conform to EN 4165-001.

The module assembly shall be single-bloc type design complete with a keyed contact retention system and appropriate seals.

The male and female modules use hermaphroditic contacts as specified in EN 4531-101.

4.5 Materials and surface treatment

4.5.1 General

See EN 4165-001.

4.5.2 Housings

The connector housing description is specified in EN 4165-001.

4.5.3 Optical contacts and alignment sleeves

The contacts shall be of suitable materials as specified in the product standard EN 4531.

The optical alignment sleeves shall be of suitable materials as specified in the product standard EN 4701-002.

The optical contacts are spring-loaded. The spring force is defined in the product standard EN 4531.

4.5.4 Metallic or non-metallic materials

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

5 Design

5.1 Housing

The connector housing design is specified in EN 4165-001.

5.2 Modules

The modules carrying the optical contacts shall be in hard material and have a cross section and radii such that no cracks, flaking or breaks can occur in normal operation.

The module is mechanically held in the connector housing by retention clips, and removable with the use of an extraction tool.

The mechanical contacts retention system shall be integrated in the hard module.

The front face of the module shall be such that sealing is ensured when the connectors are coupled. The interfacial seal shall be permanently fastened on the male module.

Sealing of the rear face of the module is provided by the contact boot.

The design shall permit individual installation of the contacts without removal of the module.

Insertion and removal of the contacts shall be from the rear. For ease of operation, tools as per MIL-I-81969/14-04 standard (P/N for size 12) may be used.

Contact identification shall be permanent and contrasted on the rear face of the insert.

5.3 Connector mating sequence

5.3.1 Centre coupling mechanism

The mating sequence shall be:

— face to face positioning;

— keyways polarisation guide;

— plug – receptacle shell

— central thread coupling;

— alignment pin engagement;

— contact alignment;

— optical physical contact;

— sealed interface compression;

— metal/metal or composite shell to shell bottoming.

5.3.2 Push-pull latching mechanism

The connector mating sequence should be as follows:

— face to face positioning;

— plug receptacle shell;

— keyways polarisation guide;

— alignment pin engagement;

— contact alignment;

— optical physical contact;

— locking mechanism alignment;

— sealed interface compression maintaining;

— locking mechanism engagement.

5.4 Connector mating

Housing design shall prevent incorrect mating of the plug onto receptacle.

6 Definition drawings

6.1 General

The general dimensions and the masses of receptacles, plugs and protective covers are given in the product standards.

6.2 Receptacle

All housing dimensions are defined in EN 4165-001.

6.3 Plug

All housing dimensions are defined in EN 4165-001.

6.4 Modules

6.4.1 General

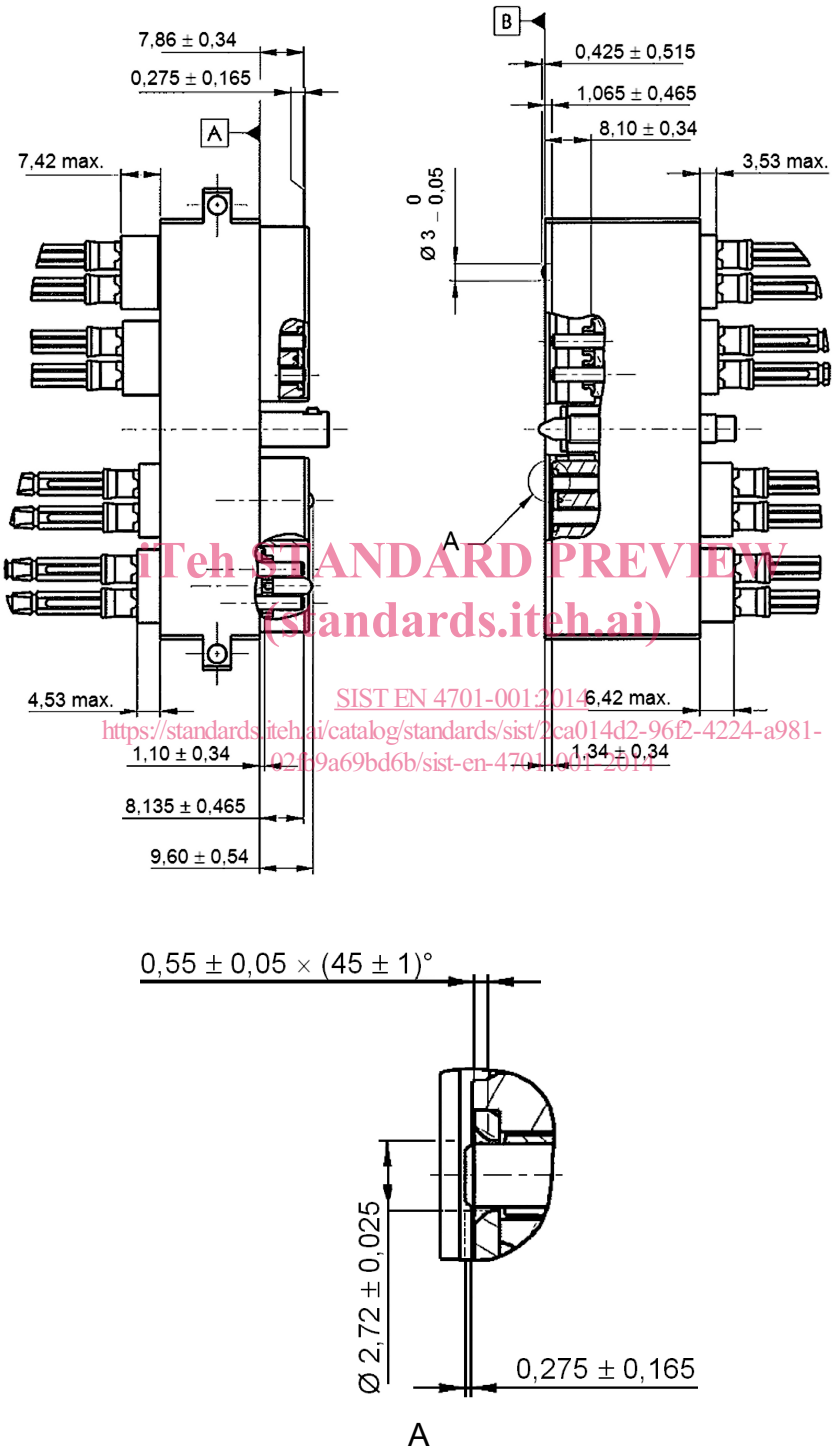
All dimensions are defined in EN 4701-003.

6.4.2 Plug and receptacle, series 2

Insert and contact position.

See Figure 1.

Dimensions and tolerances in millimetres



NOTE Others dimensions are in accordance with EN 4165 standards.

Figure 1