SLOVENSKI STANDARD
oSIST prEN 4869-101:2023

01-maj-2023

Aeronavtika - Razširjeni optični zaključki, nefizični stik optičnih vlaken v standardnih votlinah po standardu EN 3645 - 101. del: Večrodovni moški zaključki velikosti 16 - Tehnična specifikacija

Aerospace series - Expanded beam termini, fibre optic non-physical contact in EN 3645 standard cavities - Part 101: Male termini size 16 - Technical specification

iTeh STANDARD PREVIEW

Luft- und Raumfahrt - Strahlaufweitender Anschluss, berührungsloser Lichtwellenleiterkontakt in EN 3645-Standardkontaktkammer - Teil 101: Multimode-Stiftanschluss, Größe 16 - Technische Lieferbedingungen

oSIST prEN 4869-101:2023

Série aérospatiale - Contact à faisceau expansé, fibre optique sans contact physique, dans alvéoles standards EN 3645 - Partie 101 : Contact mâle multimode taille 16 - Spécification technique

Ta slovenski standard je istoveten z: **prEN 4869-101**

ICS:

49.090	Oprema in instrumenti v zračnih in vesoljskih plovilih	On-board equipment and instruments

oSIST prEN 4869-101:2023 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/3bb06e62-71cd-4b70-80b1-d22134127831/osist-pren-4869-101-2023

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 4869-101

March 2023

ICS 49.090

English Version

Aerospace series - Expanded beam termini, fibre optic non-physical contact in EN 3645 standard cavities - Part 101: Male termini size 16 - Technical specification

Série aérospatiale - Contact à faisceau expansé, fibre optique sans contact physique, dans alvéoles standards EN 3645 - Partie 101 : Contact mâle multimode taille 16 - Spécification technique

Luft- und Raumfahrt - Strahlaufweitender Anschluss, berührungsloser Lichtwellenleiterkontakt in EN 3645-Standardkontaktkammer - Teil 101: Multimode-Stiftanschluss, Größe 16 - Technische Lieferbedingungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

oSIST prEN 4869-101:2023

CEN members are the national standards bodies of 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 United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2023 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. prEN 4869-101:2023 E

oSIST prEN 4869-101:2023

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/3bb06e62-71cd-4b70-80b1-d22134127831/osist-pren-4869-101-2023

oSIST prEN 4869-101:2023

European foreword

This document (prEN 4869-101:2023) 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-STAN, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/3bb06e62-71cd-4b70-80b1-d22134127831/osist-pren-4869-101-2023

oSIST prEN 4869-101:2023

1 Scope

This document details the dimensions and performance requirements of a multimode male size 16, non-physical contact expanded beam terminus. This terminus is suitable for use with connectors which have standard size 16 pin crimp contact cavities: connectors with cavities for contact of type EN 3155-008M16...

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

EN 2591-304, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 304: Damp heat steady state*

EN 2591-312, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 312: Air leakage*

EN 2591-407, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 407: Durability of contact retention system and seals*

EN 2591-601, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 601: Optical elements — Insertion loss*

EN 2591-6301, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6301: Optical elements — Endurance at temperature*

EN 2591-6303, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6303: Optical elements — Cold/low pressure and damp heat*

EN 2591-6305, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6305: Optical elements — Rapid change of temperature*

EN 2591-6307, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6307: Optical elements — Salt mist*

EN 2591-6314, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6314: Optical elements — Immersion at low air pressure*

EN 2591-6405, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6405: Optical elements — Axial load*

EN 2591-6406, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 6406: Optical elements — Mechanical endurance*

EN 4641-100, *Aerospace series — Cables, optical 125 µm diameter cladding — Part 100: Tight structure 62,5/125 µm core GI fibre 1,8 mm outside diameter — Product standard*

EN 4641-102, *Aerospace series — Cables, optical, 125 µm outside diameter cladding — Part 102: Semi-loose 62,5/125 µm GI fibre nominal 1,8 mm outside diameter — Product standard*

iTeh STANDARD PREVIEW
(standards.iteh.ai)
https://standards.iteh.ai/catalog/standards/sist/3bb06e62-71cd-4b70-80b1-d22134127831/osist-pren-4869-101-2023

oSIST prEN 4869-101:2023

EN 4641-301, *Aerospace series — Cables, optical 125 µm diameter cladding — Part 301: Tight structure 50/125 µm GI, fibre nominal 1,8 mm, outside diameter — Product standard*

EN 4869-001, *Aerospace series — Expanded beam termini, fibre optic non-physical contact in EN 3645 standard cavities — Part 001: Technical specification*

MIL-I-81969/14,[1)] *Installing and removal tools, connector electrical contact, type III, class 2, composition B*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

4 Fibre optic contact designation and dimensions

4.1 Contact designation

See Table 1.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Table 1

Contact designation	Wavelength of AR coating [a]	Identity letter for the wavelength of AR coating
Size 16 expanded beam fibre optic pin contact for a wavelength of 850 nm	850 nm	A
Size 16 expanded beam fibre optic pin contact for a wavelength of 1 300 nm	1 300 nm	B
Size 16 expanded beam fibre optic pin contact for a dual wavelength of 850 nm and 1 300 nm	850 – 1 300 nm	C

[a] AR coating:
- coating on two active sides of the C-lens (flat and convex sides);
- transmittance: T > 99,5 % (or R < 0,25 % per face) at the selected wavelength;
- AR coating area should be free from stains.

oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/3bb[illegible]1cd-4870-80b1-[illegible]/osist-pren-4869-101-2023

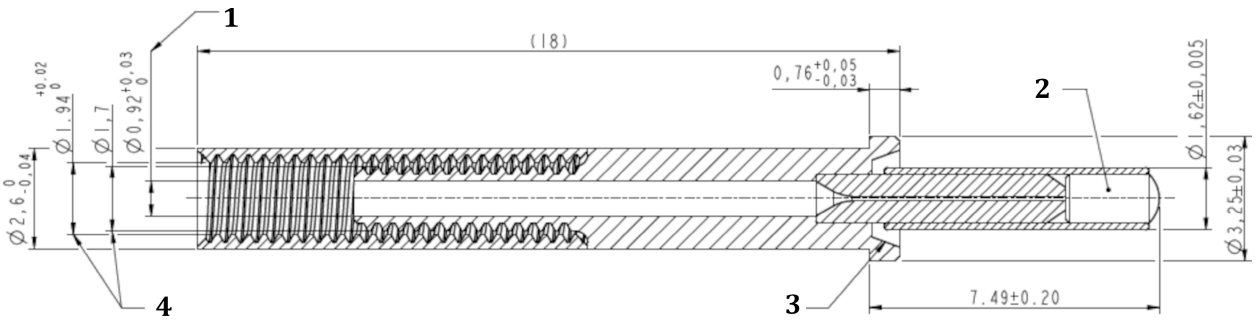
[1)] Published by: DoD National (US) Mil. Department of Defense https://www.defense.gov/.

oSIST prEN 4869-101:2023

4.2 Contact dimensions

See Figure 1: (with rear contact dimensions for selected cables for qualification tests).

Dimensions and tolerances are in millimetres



Key

1 For 900 µ buffer
2 C lens
3 Contact groove (epoxy glue injection area)
4 For jacket diameter of 1,8 mm

Figure 1

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/3bb06e62-71cd-4b70-80b1-d22134127831/osist-pren-4869-101-2023

oSIST prEN 4869-101:2023

4.3 Optical interface

Table 2 — Interface requirements for fibre with diameter 62,5 µm/125 µm

Parameter	Value	Units
Beam size diameter (at power level: $1/e^2$) Tolerance: ±20 µm		
At 850 nm and distance of:		
– 1 mm:	0,700	
– 2,12 mm:	0,700	
– 10 mm:	0,690	
– 20 mm:	0,850	
– 50 mm:	1,930	mm
– 100 mm:	3,740	
At 1 300 nm and distance of:		
– 1 mm:	0,700	
– 2,12 mm:	0,700	
– 10 mm:	0,710	
– 20 mm:	0,890	
– 50 mm:	1,910	
– 100 mm:	3,810	
Angle of beam divergence between:		
– 1 mm and 10 mm	0,00 ± 0,1	degrees
– 10 mm and 20 mm	0,50 ± 0,1	
Beam circularity	> 96	%
Air gap distance between the lenses of the 2 termini	2,12 ± 0,20	mm

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/3bb[illegible]-71cd-4b70-80b1-d22134127831/osist-pren-4869-101-2023

Measurement method: the beam analysis is based on a micro-positioning optical bench. An optical fibre is aligned in front of the contact lens. The fibre is moved backward following the optical axis at the measurement distance. Also, at this distance the fibre is moved in the plane. The origin of measurement distance is fixed from the extremity of the optical contact lens.

Launch conditions: overfilled launch conditions.

oSIST prEN 4869-101:2023

Table 3 — Interface requirements for fibre with diameter 50 µm/125 µm

Parameter	Value	Units
Beam size diameter (at power level: $1/e^2$) Tolerance: ±3 % At 850 nm and distance of:		
– 1 mm:	0,540	mm
– 2,12 mm:	0,540	
– 10 mm:	0,570	
– 20 mm:	0,730	
– 50 mm:	1,625	
– 100 mm:	3,030	
At 1 300 nm and distance of:		
– 1 mm:	0,540	
– 2,12 mm:	0,540	
– 10 mm:	0,530	
– 20 mm:	0,680	
– 50 mm:	1,590	
– 100 mm:	3,090	
Angle of beam divergence between:		
– 1 mm and 10 mm	0,00 ± 0,1	degrees
– 10 mm and 20 mm	0,50 ± 0,1	
Beam circularity	> 98	%
Air gap distance between the lenses of the 2 termini	2,12 ± 0,20	mm

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 4869-101:2023
https://standards.iteh.ai/catalog/standards/sist/...d22134127831/osist-pren-4869-101-2023

Measurement method: the beam analysis is based on a micro-positioning optical bench. An optical fibre is aligned in front of the contact lens. The fibre is moved backward following the optical axis at the measurement distance. Also, at this distance the fibre is moved in the plane. The origin of measurement distance is fixed from the extremity of the optical contact lens.

Launch conditions: overfilled launch conditions.

4.4 Cable designation

Selected cables for qualification test (jacket diameter = 1,8 mm/buffer = 900 µm): specified in EN 4641-100 (tight structure, 62,5 µm/125 µm), EN 4641-102 (loose structure, 62,5 µm/125 µm) and EN 4641-301 (tight structure, 50 µm/125 µm).