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Responsible committee: ACE/6 Aerospace avionic electrical and fibre optic technology

Interested committees:

Title: Draft BS EN 2591-100 Aerospace series - Elements of electrical and optical connection - Test methods. Part 100: General.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Aerospace series - Elements of electrical and optical connection - Test methods - Part 100: General

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 100 : Généralités

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 100: Allgemeines

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

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.

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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.

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

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European foreword

This document (prEN 2591-100:2022) 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 is currently submitted to the CEN Enquiry.

1 Scope

This document specifies the general requirements for the methods of testing elements of electrical, optical and data transmission system connections used in aerospace applications.

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 2083, *Aerospace series — Copper or copper alloys conductors for electrical cables — Product standard*

EN 2084, *Aerospace series — Cables, electrical, general purpose, with conductors in copper or copper alloy — Technical specification*

EN 2234, *Aerospace series — Cables, electrical, fire-resistant — Technical specification*

EN 2346,¹ *Aerospace series — Fire resistant electrical cables — Dimensions, conductor resistance and mass*

EN 3745-201, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 201: Visual examination*

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 4641-301,² *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 60512-1, *Connectors for electronic equipment — Tests and measurements — Part 1: General (IEC 60512-1:2001)*

EN 60793-43, *Optical fibres — Part 1-43: Measurement methods and test procedures — Numerical aperture measurement (IEC 60793-43)*

EN/IEC 60793-45, *Optical fibres — Part 1-45: Measurement methods and test procedures — Mode field diameter (IEC 60793-45)*

IEC 60050-581,³ *International Electrotechnical Vocabulary — Chapter 581: Electromechanical components for electronic equipment*

IEC 61300-3-35,⁴ *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-35: Examinations and measurements — Visual inspection of fibre optic connectors and fibre-stub transceivers*

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

³ Published by: IEC International Electrotechnical Commission <https://www.iec.ch/>.

⁴ Published by: IEC International Electrotechnical Commission <https://www.iec.ch/>.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-581, EN 60512-1 and the following apply.

ISO and IEC maintain terminological 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/>

3.1

element of electrical or optical connection ⁵⁾

component such as connector, module, etc., the purpose of which is to ensure the connection of circuits

3.2

flight cover (or protective cover)

accessory designed to ensure, in flight, mechanical protection and sealing of front face of a non-coupled connector

3.3

connector with built-in protection of contacts

connector with characteristics such that male or female contacts, mounted in a plug or receptacle, cannot come into contact with the front of the connector to which it is coupled (scoop-proof) and in which, in the event of accidental coupling of two parts or the connector equipped with male contacts, no electrical contact can take place

3.4

contact pressure point

point at which a square ended gauge pin of the same basic diameter as the mating contact first engages the female contact spring member

3.5

initial measurement

examination or measurement of characteristics carried out to determine the magnitude of the variations produced by the stress or stresses applied

This examination or measurement is carried out at the end of pre-conditioning and under normal atmospheric conditions for measuring

3.6

final measurement

examination or measurement of characteristics carried out at the end of the recovery to assess the condition of the specimen after testing and to determine the magnitude of the variations in characteristics in relation to the values recorded at initial measuring

3.7

flammability

a product is considered to be "non-flammable" when combustion due to exposure for a given duration to a standard external flame remains localized and stops spontaneously after withdrawal of the flame

⁵⁾ In test standards the term "element of connection" shall be used.

3.8

fire resistance

a product is considered to be “fire-resistant” when, subjected to a standard flame:

- it retains its electrical role for six minutes;
- the flame does not propagate to the other side of the support in the first twenty minutes

3.9

values of alternating voltage and current

unless otherwise indicated, alternating voltage and current are indicated in root mean square values

3.10

line data bus

pair of twisted wires, shielded, having a specified impedance, a matched impedance at its two ends and used for data transport

3.11

branch line

section of twisted wires, shielded, with a specified impedance, which connects equipment to a bus line

3.12

line coupler

element of electrical or optical connection the purpose of which is to shunt the transmission signals from a bus line to equipment

3.13

line coupler, single

coupler consisting of one line and one branch

3.14

line coupler, double

coupler consisting of one line and two branches

3.15

in-line splice

permanent element of electrical or optical connection for two-wire cables

3.16

line termination

end line component the purpose of which is to match the bus line to its characteristic impedance

3.17

branch termination

end branch termination the purpose of which is to eventually replace equipment

3.18

recovery

treatment of a specimen, after conditioning, so that the properties of the specimen may be stabilized before measuring

3.19

optical fibre cable

certain number of optical fibres or bundles, coated separately and joined inside a common sheath

3.20**beam splitter**

device for dividing an optical beam into two separate beams

3.21**insertion loss (of an optical element)**

extra optical attenuation caused by the insertion of an extra optical element into an optical system

3.22**launch angle**

angle between the wave propagation vector of the incoming light and the normal vector of an optic fibre end face

3.23**mode conditioner**

device for adapting the light output from a source to produce a defined launch condition for testing an optical system

3.24**multimode fibre**

optical fibre having a large core diameter dimension in relation to the wavelength of the light, and in which a large number of modes can propagate

3.25**optical port**

port which radiates or accepts optical power at the interface

3.26**fibre optic branching device**

device possessing three or more optical ports which shares optical power among its ports in a predetermined fashion

3.27**patch cord**

assembly where the cable or fibre is terminated at each end with either a plug or socket connector

3.28**pigtail**

short length of fibre between a component and a transmission fibre, often permanently secured to the component (LED, coupler, connection elements, ...)

3.29**power meter**

device for measuring the optical power in a fibre optic system. Power measurements are usually made in Watts or dBm. Relative power measurements are made in dB

3.30**single mode fibre**

optical fibre in which only one mode can propagate

3.31**passive coupler**

passive branching device in which power from one or more incoming optical ports is distributed to one or more outgoing optical ports