SLOVENSKI STANDARD
oSIST prEN 3197:2023

01-julij-2023

Aeronavtika - Načrtovanje in vgradnja letalskih električnih in optičnih sistemov za medsebojno povezovanje

Aerospace series - Design and installation of aircraft electrical and optical interconnection systems

Luft- und Raumfahrt - Konstruktion und Installation elektrischer und optischer Verkabelung in Luftfahrzeugen

Série aérospatiale - Conception et installation de systèmes d'interconnexion électrique et optique d'aéronefs

Ta slovenski standard je istoveten z: **prEN 3197**

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
49.090	Oprema in instrumenti v zračnih in vesoljskih plovilih	On-board equipment and instruments

oSIST prEN 3197:2023 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 3197

April 2023

ICS 49.060; 49.090

Will supersede EN 3197:2010

English Version

Aerospace series - Design and installation of aircraft electrical and optical interconnection systems

Série aérospatiale - Conception et installation de systèmes d'interconnexion électrique et optique d'aéronefs

Luft- und Raumfahrt - Konstruktion und Installation elektrischer und optischer Verkabelung in Luftfahrzeugen

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

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

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European foreword

This document (prEN 3197:2023) 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, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 3197:2016.

The main changes with respect to the previous edition are listed in Table 1.

Table 1 — Main changes to previous edition

prEN/EN Number	Edition	Publication Date	Modification	Reason and validation
prEN 3179	P1	August 1993	First Issue	
prEN 3179	P2	April 2010	Re write	Addresses Jar 25 requirements
EN 3179	E1	December 2010		
prEN 3179	P3	September 2016	Additional clauses	Update to include lessons learnt replaces EN 3197:2010
prEN 3179	P4		Additional clauses	Additional requirements to address new higher EWIS voltages

1 Scope

This document provides instructions on the methods to be used when designing, selecting, manufacturing, installing, repairing or modifying the aerospace vehicles electrical and optical interconnection networks, now called Electrical Wiring Interconnection System (EWIS), and Optical Fibre Interconnection Systems (OFIS), subject to the limitations defined in Clause 4 of this document. Aerospace Vehicles include manned and unmanned aeroplanes, helicopters, lighter-than- air vehicles, missiles and external pods.

The general content of this document is described in page 2.

A detailed content of this document is given in Annex A.

This document lists all the relevant European standards related to EWIS and OFIS in Annex B.

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,[1] *Aerospace series — Copper or copper alloy conductors for electrical cables — Product standard*

EN 2242,[2] *Aerospace series — Crimping of electric cables with conductors defined by EN 2083, EN 4434 and EN 2346*

EN 2283, *Aerospace series — Testing of aircraft wiring*

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

EN 2812, *Aerospace series — Stripping of electric cables*

EN 2853, *Aerospace series — Current ratings for electrical cables with conductor EN 2083*

EN 3371, *Aerospace series — Electrical bonding — Technical specification*

EN 3373,* *Aerospace series — Terminal lugs and in-line splices for crimping on electric conductors*

EN 3475,* *Aerospace series — Cables, electrical, aircraft use — Test methods*

EN 3719, *Aerospace series — Aluminium or aluminium alloy conductors for electrical cables — Product standard*

EN 3745,* *Aerospace series — Fibres and cables, optical, aircraft use — Test methods*

EN 4434, *Aerospace series — Copper or copper alloy lightweight conductors for electrical cables — Product standard (Normal and tight tolerances)*

EN 4651, *Aerospace series — Copper-clad aluminium alloy conductors for electrical cables — Product standard*

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

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1) Related to EWIS and OFIS, all todays existing ASD Normative references per family of products may be found in Annex B.

2) 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/.

* All parts quoted in this document.

ASD S1000D, *(revision 4.1)* International Specification for Technical Publications

ISO 2685,[4] *Aircraft — Environmental test procedure for airborne equipment — Resistance to fire in designated fire zones*

MIL-STD-202G,[5] *Test method standard electronic and electrical component parts*

A-A-52080-84,[5] *Specification tape, lacing and tying*

SAE AS81824/1,[6] *Splice, electric, permanent, crimp style copper, insulated, environment resistant, class 1*

SAE AS83519/2,[6] *Shield termination, solder style, insulated, heat-shrinkable, environment resistant with pre-installed leads for cables having tin or silver plated shields (class I)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in TR 4684 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
design authority
in this document, this term covers the Companies in charge of the original design or who give the design agreement for which Certification will be required from the Regulatory Authorities

3.2
regulatory authority
in this document, this term covers the organisations in charge who write rules to satisfy, survey the design and grant Navigability Certificate, e.g., European Aviation Safety Agency (EASA) and Federal Aviation Administration (FAA)

3.3
ESN
Electrical Structure Network
use of the aircraft metallic skin or structure as part of the electrical network for bonding purposes and current return

3.4
MBN
Metallic Bonding Network
use of a separate arrangement of metallic parts to act as the electrical network for bonding purposes

4 Limitations

It is recognized that the installation practices contained in this document do not necessarily represent the full requirements for a safe and satisfactory electrical and fibre optic interconnection system.

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3) 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/.
4) Published by: ISO International Organization for Standardization http://www.iso.ch/.
5) Published by: DoD National (US) Mil. Department of Defense https://www.defense.gov/.
6) Published by: SAE International (US) Society of Automotive Engineers https://www.sae.org/.

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. However, nothing written in this document shall override the specific requirements of a design authority, the airworthiness requirements, applicable laws or any regulation from the regulatory authorities, unless a specific exemption has been obtained.

5 General requirements

5.1 Applicable rulemaking

5.1.1 General

From the EASA European Aviation Safety Agency (IR 21) and the FAR Federal Aviation Regulation (14 CFR, Part 21) — Certification of aircraft and related products, parts and appliances, and of design and production organisations.

5.1.2 Large aeroplanes

The main rulemakings to satisfy for the definitions of the various possible electrical installations on large aeroplanes are derived from:

— Design technical requirements

From the EASA European Aviation Safety Agency Certifications Specification 25 (CS 25) and the FAR Federal Aviation Regulation 14 CFR, Part 25.

5.1.3 Small and medium aeroplanes including unmanned air vehicles

From the EASA European Aviation Safety Agency Certifications Specification 23 (CS 23) and the FAR Federal Aviation Regulation 14 CFR, Part 23.

5.1.4 Rotary craft

The main rulemakings for the definitions of the various possible electrical installations on rotary wing aeroplanes (rotorcraft) are derived from:

— Design technical requirements (Small Rotorcraft)

From the EASA European Aviation Safety Agency Certifications Specification 27 (CS 27) and the FAR Federal Aviation Regulation 14 CFR, Part 27.

— Design technical requirements (Large Rotorcraft)

From the EASA European Aviation Safety Agency Certifications Specification 29 (CS 29) and the FAR Federal Aviation Regulation 14 CFR, Part 29.

5.1.5 Aircraft engines

From the EASA European Aviation Safety Agency Certifications Specification 33 (CS 33) and the FAR Federal Aviation Regulation 14 CFR, Part 33.

5.2 EWIS definition

"*CS 25.1701 Electrical Wiring Interconnection System Definition*

a) Electrical wiring interconnection system (EWIS) means any wire, wiring device, or combination of these, including termination devices, installed in any area of the aeroplane for the purpose of transmitting electrical energy between two or more intended termination points. Except as provided for in Subclause (c) of this Subclause, this includes: