ICS 01.110, 35.240.30, 49.020 SLOVENSKÁ TECHNICKÁ NORMA Január 2019

STN	**Letectvo a kozmonautika LOTAR Dlhodobá archivácia a získavanie digitálnej technickej dokumentácie výrobku ako 3D, CAD a PDM údaje Časť 110: Explicitná 3D geometria CAD**	**STN EN 9300-110** 31 1060

Aerospace series - LOTAR -LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data - Part 110: CAD mechanical 3D Explicit geometry information

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/18

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EUROPEAN STANDARD
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EN 9300-110

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ICS 01.110; 35.240.30; 49.020

English Version

Aerospace series - LOTAR -LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data - Part 110: CAD mechanical 3D Explicit geometry information

Série aérospatiale - LOTAR - Archivage long terme et récupération des données techniques produits numériques telles que 3D, CAO et PDM - Partie 110 : Données de géométrie 3D explicite en CAO mécanique

Luft- und Raumfahrt - LOTAR - Langzeit-Archivierung und -Bereitstellung digitaler technischer Produktdokumentationen, wie zum Beispiel von 3D-, CAD- und PDM-Daten - Teil 110: Eindeutige 3D-Geometrieinformationen für mechanische CAD-Teile

This European Standard was approved by CEN on 25 September 2017.

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

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European foreword

This document (EN 9300-110:2018) 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of an identical text or by endorsement, at the latest by December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Foreword

This standard was prepared jointly by AIA, ASD-STAN, PDES Inc and the PROSTEP iViP Association.

The PROSTEP iViP Association is an international non-profit association in Europe. For establishing leadership in IT-based engineering it offers a moderated platform to its nearly 200 members from leading industries, system vendors and research institutions. Its product and process data standardization activities at European and worldwide levels are well known and accepted. The PROSTEP iViP Association sees this standard and the related parts as a milestone of product data technology.

PDES Inc is an international non-profit association in USA. The mission of PDES Inc is to accelerate the development and implementation of ISO 10303, enabling enterprise integration and PLM interoperability for member companies. PDES Inc gathers members from leading manufacturers, national government agencies, PLM vendors and research organizations. PDES Inc. supports this standard as an industry resource to sustain the interoperability of digital product information, ensuring and maintaining authentic longevity throughout their product lifecycle.

Readers of this standard should note that all standards undergo periodic revisions and that any reference made herein to any other standard implies its latest edition, unless otherwise stated.

The Standards will be published under two different standards organizations using different prefixes. ASD-STAN will publish the standard under the number EN 9300–xxx. AIA will publish the standard under the number NAS 9300–xxx. The content in the EN 9300 and NAS 9300 documents will be the same. The differences will be noted in the reference documentation (i.e. for EN 9300 geometric dimensioning & tolerancing will be referenced in ISO 1101 and ISO 16792, and for NAS 9300 the same information will be referenced in ASME Y14.5M and Y 14.41). The document formatting etc., will follow that of the respective editorial rules of ASD-STAN and AIA.

1 Scope

1.1 Introduction

This document defines the requirements on a digital archive to preserve for the long term the 3D explicit geometry of single CAD parts. The goal is to preserve the 3D information without loss with respect to the geometry produced by the original CAD system, following the principles laid down in EN 9300-003 “Fundamentals and Concepts”, including the use of an open data format.

1.2 In scope

The following is in scope of this part of EN 9300:

— business specification for long term archiving and retrieval of CAD 3D explicit geometry (see Clause 5);

— essential information of CAD 3D explicit geometry (solids, curves, surfaces, and points) to be preserved (see Clause 6);

— data structures detailing the main fundamentals and concepts of CAD 3D explicit geometry (see Clause 7);

— verification rules to check CAD 3D explicit geometry for consistency and data quality (see Clause 8);

— validation rules to be stored with the CAD 3D explicit geometry in the archive to check essential characteristics after retrieval (see Clause 9).

NOTE This includes the geometrical external shape resulting from CAD disciplines 3D entities (e.g., 3D Structural components, 3D Tubing, 3D electrical harness, 3D composite, etc.).

1.3 Out of scope

The following is outside the scope of this part of EN 9300:

— the formal definition of validation and verification rules to check 3D explicit geometry for consistency and data quality using a machine-readable syntax;

— implicit or parametric geometry;

— Geometric Dimensioning & Tolerancing (GD&T), Product & Manufacturing Information (PMI);

— assembly structures;

— presentation of explicit geometry.

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 9300 (all parts), *Aerospace series — LOTAR — LOng Term Archiving and Retrieval of digital technical product documentation such as 3D, CAD and PDM data*

ISO 1101:2012, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications (First Edition)*

ISO 2768-2:1989, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications (First Edition)*

ISO 10303-42:2003, *Industrial automation systems and integration — Product data representation and exchange — Part 42: Integrated generic resource: Geometric and topological representation*

ISO 10303-59:2014, *Industrial automation systems and integration — Product data representation and exchange — Part 59: Integrated generic resource — Quality of product shape data*

ISO 10303-203:2011, *Industrial automation systems and integration — Product data representation and exchange — Part 203: Application protocol: Configuration controlled 3D design of mechanical parts and assemblies*

ISO 10303-214:2010, *Industrial automation systems and integration — Product data representation and exchange — Part 214: Application protocol: Core data for automotive mechanical design processes*

ISO 10303-242:2014, *Industrial automation systems and integration — Product data representation and exchange — Part 242: Application protocol: Managed model-based 3D engineering*

ISO 10303-514:1999, *Industrial automation systems and integration — Product data representation and exchange — Part 514: Application interpreted construct: Advanced boundary representation*

ISO 16792:2006, *Technical product documentation — Digital product definition data practices*

ASME Y14.5:2009, *Dimensioning and Tolerancing*

ASME Y14-41:2012, *Digital Product Definition Data Practices*

FAA Part 21, *Certification for Products, Parts & PMA*