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Aircraft and space — Industrial data — Product identification and traceability

Aéronautique et espace — Données industrielles — Identification des produits et traçabilité

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

This second edition cancels and replaces the first edition (ISO 21849:2006), which has been technically revised.

The main changes are as follows:

— In 5.2, A.8, B.8 and B.15, included an option for use of the enterprise identifier MFR as equal to CAG with 5-character enterprise identifier assigned by the issuing agencies with issuing agency codes (IAC) VFS and KRU.

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Introduction

The accuracy of data collected and exchanged by trading partners can be improved by using automatic identification technologies in lieu of manual key entry. Automatic identification technologies include matrix symbologies, linear bar code and radio frequency identification (RFID) tags (Annex I).

Employment of automatic identification technology provides an accurate, timely and efficient method of data entry and facilitates data transfer and storage for computerized information management systems.

This document defines and establishes a repeatable process and data structure for product identification and traceability that supports life cycle management of a product regardless of ownership and configuration changes (Annex C). Use of the product identification and traceability guidelines described in this document enables repeatable processes for error free data entry, part tracking, dispatch, inventory, maintenance, import/export, detection of unapproved parts and repairs. Most importantly, a repeatable process and data structure allows industry partners to share data efficiently (Annex H). The macro-processes of product data management, asset management, configuration management, reliability and maintenance management, and product performance management are the direct beneficiaries of the product identification and traceability schema defined in this document.

Establishment of a common set of data and well-defined definitions and formats for product identification and traceability provides the base on which to build specific requirements for the exchange of product life cycle information. The specific requirements that the product identification and traceability schema defined in this document fulfils are as follows:

— to provide a unique, permanent identification for the life of the product;

— to provide a schema which meets engineering, operational, and logistics identification and traceability needs;

— to use machine-readable media to obtain accurate and timely data;

— to provide a schema which is independent of marking, symbology and recording media technology; and

— to provide a structure which allows data to be exchanged without the use of data mappers (cross-reference/translation tables), throughout an enterprise and with trading partners, while taking advantage of the World Wide Web.

The focus of this document is industrial products within the aircraft and space sectors. Industrial products have a life cycle measured in years, normally are repairable, and often are upgraded to a new configuration; change of ownership over their life cycle is commonplace. Normally industrial products are not sold in the retail marketplace.

The decision to use automated identification processes should be a cooperative effort by trading partners within an industry and between industries to achieve more timely data input, data accuracy and increased productivity with decreased costs.

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Aircraft and space — Industrial data — Product identification and traceability

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1 Scope

This document specifies the requirements for a product identification and traceability schema for life cycle management of aircraft and space products/parts. It specifies the minimum essential identification information needed for traceability of a product for its life cycle. It also provides the data structures for use with automatic identification technologies that support product/part life cycle data management activities.

This document defines a structure and rules for establishing a unique identifier for product/part identification and traceability. The rules and structure provide sufficient options to support various business practices. They provide the minimum amount of standardization required to support interoperability, improved business processes and efficiency across multiple users and applications of machine-readable media technologies.

This document also defines and establishes repeatable processes to allow efficient exchange of product data for life cycle product/part traceability, configuration, reliability, maintenance, and product performance management purposes.

It specifies the data carriers appropriate for representing the product data in a machine-readable form and associated dimensional and quality parameters.

Specific implementation guidelines can be developed by industries or trading partners to employ the principles defined in this document.

Although primarily intended for aircraft and space products/parts, this document can be used for other products/parts where desired.

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.

ISO/IEC 646, *Information technology — ISO 7-bit coded character set for information interchange*

ISO 8601-1:2019, *Date and time — Representations for information interchange — Part 1: Basic rules*

ISO/IEC 15415, *Information technology — Automatic identification and data capture techniques — Bar code symbol print quality test specification — Two-dimensional symbols*

ISO/IEC 15416, *Automatic identification and data capture techniques — Bar code print quality test specification — Linear symbols*

ISO/IEC 15417, *Information technology — Automatic identification and data capture techniques — Code 128 bar code symbology specification*

ISO/IEC 15418, *Information technology — Automatic identification and data capture techniques — GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance*

ISO/IEC 15434, *Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media*

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ISO/IEC 15459-2, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 2: Registration procedures*

ISO/IEC 15459-3, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 3: Common rules*

ISO/IEC 15459-4, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 4: Individual products and product packages*

ISO/IEC 15459-6, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 6: Groupings*

ISO/IEC 16022, *Information technology — Automatic identification and data capture techniques — Data Matrix bar code symbology specification*

ISO/IEC 16388, *Information technology — Automatic identification and data capture techniques — Code 39 bar code symbology specification*

ISO/IEC 18004, *Information technology — Automatic identification and data capture techniques — QR Code bar code symbology specification*

ISO/IEC 19762, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

Common Support Data Dictionary (CSDD), Air Transport Association

Extensible Markup Language (XML) 1.0, W3C

GS1 General Specifications, GS1

SAE AS9132*(EN9132) (SJAC9132), Data Matrix Quality Requirements for Parts Marking*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762 and the following 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/

3.1
alphanumeric
character set that contains both letters and digits and may contain special characters

3.2
conformance class
category of data representation specified in terms of the variability allowed for the data content

3.3
data delimiter
character or set of characters which separates data elements in a string of data elements

3.4
enterprise identifier
code uniquely assigned to an enterprise by an issuing agency

Note 1 to entry: The issuing agencies shall be assigned by the registration authority of ISO/IEC 15459-2.

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