SVENSK STANDARD

SS-EN IEC 61406-1, utg 1:2023

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Identifieringslänk (IL) – Del 1: Allmänna fordringar

Identification Link –
Part 1: General requirements

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Nationellt förord

Europastandarden EN IEC 61406-1:2022

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61406-1, First edition, 2022 - Identification Link – Part 1: General requirements**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 35.240.15

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61406-1

December 2022

ICS 35.240.15

English Version

Identification Link - Part 1: General requirements (IEC 61406-1:2022)

Lien d'identification - Partie 1 : Exigences générales (IEC 61406-1:2022)

Identifizierungslink - Teil 1: Allgemeine Anforderungen (IEC 61406-1:2022)

This European Standard was approved by CENELEC on 2022-10-20. CENELEC 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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Ref. No. EN IEC 61406-1:2022 E

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SS-EN IEC 61406-1, utg 1:2023

European foreword

The text of document 65E/845/CDV, future edition 1 of IEC 61406-1, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61406-1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-07-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-10-20

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61406-1:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60079-14	NOTE	Harmonized as EN 60079-14
IEC 60529	NOTE	Harmonized as EN 60529
IEC 60721 (series)	NOTE	Harmonized as EN 60721 (series)
IEC 62507-1:2010	NOTE	Harmonized as EN 62507-1:2011 (not modified)
ISO 3166-1	NOTE	Harmonized as EN ISO 3166-1

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050-351	-	International Electrotechnical Vocabulary - Part 351: Control technology	-	-
ISO/IEC 8859-1	-	Information technology - 8-bit single-byte coded graphic character sets - Part-1: Latin alphabet No. 1	-	-
ISO/IEC 14443-1	-	Cards and security devices for personal identification - Contactless proximity objects - Part 1: Physical characteristics	-	-
ISO/IEC 14443-2	-	Identification cards - Contactless integrated circuit cards - Proximity cards - Part 2: Radio frequency power and signal interface	-	-
ISO/IEC 14443-3	-	Cards and security devices for personal identification - Contactless proximity objects - Part 3: Initialization and anticollision	-	-
ISO/IEC 14443-4	-	Cards and security devices for personal identification - Contactless proximity objects - Part 4: Transmission protocol	-	-
ISO/IEC 15415	-	Information technology - Automatic identification and data capture techniques - Bar code symbol print quality test specification - Two-dimensional symbols	-	-
ISO/IEC 15693-1	-	Cards and security devices for personal identification - Contactless vicinity objects - Part 1: Physical characteristics	-	-
ISO/IEC 15693-2	-	Cards and security devices for personal identification - Contactless vicinity objects - Part 2: Air interface and initialization	-	-
ISO/IEC 15693-3	-	Cards and security devices for personal identification - Contactless vicinity objects - Part 3: Anticollision and transmission protocol	-	-

Publication	Year	Title	EN/HD	Year
ISO/IEC 16022	-	Information technology - Automatic identification and data capture techniques - Data Matrix bar code symbology specification	-	-
ISO/IEC 19762	-	Information technology - Automatic identification and data capture (AIDC) techniques - Harmonized vocabulary	-	-
ISO/IEC 18004	-	Information technology - Automatic identification and data capture techniques - QR Code bar code symbology specification	-	-
ISO/IEC 29158	-	Information technology - Automatic identification and data capture techniques - Direct Part Mark (DPM) Quality Guideline	-	-
ISO/IEC 29160	-	Information technology - Radio frequency identification for item management - RFID Emblem	EN 16656	-
ISO 13849-1	-	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	EN ISO 13849-1	-
IETF RFC 3986	2005	Uniform Resource Identifier (URI): Generic Syntax	-	-

IEC 61406-1

Edition 1.0 2022-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Identification link –
Part 1 : General requirements

Lien d'identification –
Partie 1 : Exigences générales

INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IDENTIFICATION LINK

Part 1: General requirements

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 61406-1 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65E/845/CDV	65E/905/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available

at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61406 series, published under the general title *Identification link*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Every year, industry purchases hundreds of millions of items of technical equipment – referred to here as physical objects – for setting up new production facilities and maintaining existing ones. When applying this standard, these physical objects can be simply and unambiguously identified by using a standardized Identification Link (IL), attached for example on the nameplate. This means that all information relating to the physical object can be identified in various IT systems and then called up, edited and stored as necessary across all processes from storage and retrieval to assembly, maintenance, inspection, repair and disassembly. This is an invaluable advantage in all these processes. The manufacturer in turn can link all information such as drawings, operating instructions and spare part lists to this IL in its systems. Users, e.g. owners or operators, can do the same with their information in their systems. In communication between the manufacturer and user, this IL alone then suffices for both parties to find and exchange all the information they need about a physical object throughout its lifecycle. This IL is therefore a prerequisite for easy accessing and maintaining information in the physical object's digital twin.

Previous standards for machine-readable identification of physical objects essentially describe how the traditional identification features (manufacturer, product number, serial number) can be stored in a machine-readable way using standardized syntax (e.g. as per ISO/IEC 15434 [6]) and semantics (e.g. as per ISO/IEC 15418 [7]) so that the strings used for identification according to these standards can be analyzed (parsed) and processed across all manufacturers using suitable software. These regulations allow a great variety of identifiers and technologies to be used, some of which can be highly complex, depending on the chosen solution. This means that in the relationship between the manufacturer and the user, which parts of these regulations and which of the identification methods specified in them are to be used needs to be determined. A universally usable identification by the manufacturer is not possible without consulting the respective user. The identification options listed in these regulations also always require analysis of the character string and the information encoded in it using suitable software, which involves much greater requirements for further processing. Furthermore, for industrial applications such as in the process manufacturing industry, there are special requirements for the long-term legibility and reliability of markings in the harsh conditions of industrial environments.

Production systems, e.g. in the process manufacturing industry, usually consist of several thousand individual physical objects. Each of these physical objects must be uniquely identified during all steps and processes in its lifecycle by both the manufacturer and the user. On the part of the manufacturer, this identification starts during the production of the physical object, and continues during its packaging and shipping. On the part of user, this process continues with the receipt, storage and retrieval of the physical object, carries on through installation, commissioning, operation, inspection, maintenance, repair and disassembly, and finally ends when it is scrapped.

The manufacturer usually provides each physical object with an identifier that allows it to be uniquely identified. This identification of the physical object usually takes place using a nameplate.

The product type of the physical object can generally be clearly identified using the information on the nameplate. If it is a serialized physical object, which means a serial number is present on the nameplate, then it can also be identified as a single, distinguishable instance of a model.

However, in practice this identification of physical objects on a nameplate often cannot be read and used automatically. This is a serious drawback to optimizing and in particular automating identification in all work processes. The reason for this is that the characteristics of a nameplate such as the content, designation, layout and fonts vary greatly according to the physical object and the manufacturer. The same applies to the physical properties of the nameplate, such as the material and the process for producing the graphic content (e.g. printing, etching, engraving, laser marking etc.).

This document does not try to standardize nameplates or physical properties of nameplates, due to the widely differing requirements of manufacturers and users and the vast variety of objects.

Optimizing and automating the identification of a physical object merely requires a unique machine-readable ID attached to the object.

Linking to information on the internet with a URL in a 2D symbol or NFC tag on the physical object is more and more used.

This Identification Link covers in a simple, monomorphic and single solution both major use cases for machine readable product marking, the unique identification and the link to data on the internet.

IDENTIFICATION LINK

1 Scope

This part of IEC 61406 specifies minimum requirements for a globally unique identification of physical objects which also constitutes a link to its related digital information. This identification is designated hereinafter as "Identification Link" (IL), with the encoded data designated as IL string. The IL string has the data-format of a link (URL). The IL is machine-readable and is attached to the physical object in a 2D symbol or NFC tag.

The requirements in this document apply to physical objects

- that are provided by the manufacturer as an individual unit,
- and that have already been given a unique identity by the manufacturer.

This document does not specify any requirements on the content and the layout of nameplates/typeplates (e.g. spatial arrangement, content of the plain texts, approval symbols etc.).

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.

IEC 60050-351, *International Electrotechnical Vocabulary (IEV) – Part 351: Control technology*

ISO/IEC 8859-1, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

ISO/IEC 14443-1, *Cards and security devices for personal identification – Contactless proximity objects – Part 1: Physical characteristics*

ISO/IEC 14443-2, *Cards and security devices for personal identification – Contactless proximity objects – Part 2: Radio frequency power and signal interface*

ISO/IEC 14443-3, *Cards and security devices for personal identification – Contactless proximity objects – Part 3: Initialization and anticollision*

ISO/IEC 14443-4, *Cards and security devices for personal identification – Contactless proximity objects – Part 4: Transmission protocol*

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

ISO/IEC 15693-1, *Cards and security devices for personal identification – Contactless vicinity objects – Part 1: Physical characteristics*

ISO/IEC 15693-2, *Cards and security devices for personal identification – Contactless vicinity objects – Part 2: Air interface and initialization*

ISO/IEC 15693-3, *Cards and security devices for personal identification – Contactless vicinity objects – Part 3: Anticollision and transmission protocol*

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

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

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

ISO/IEC 29158, *Information technology – Automatic identification and data capture techniques – Direct Part Mark (DPM) Quality Guideline*

ISO/IEC 29160, *Information technology – Radio frequency identification for item management – RFID Emblem*

ISO 13849-1, *Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design*

IETF RFC 3986:2005, *Uniform Resource Identifier (URI): Generic Syntax*