SLOVENSKI STANDARD
oSIST prEN IEC 81346-1:2021

01-januar-2021

Industrijski sistemi, inštalacije in oprema ter industrijski izdelki - Načela strukturiranja in referenčne oznake - 1. del: Osnovna pravila

Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules

Industrielle Systeme, Anlagen und Ausrüstungen und Industrieprodukte - Strukturierungsprinzipien und Referenzkennzeichnung - Teil 1: Allgemeine Regeln

Systèmes industriels, installations et appareils, et produits industriels - Principes de structuration et désignations de référence - Partie 1: Règles de base

Ta slovenski standard je istoveten z: **prEN IEC 81346-1:2020**

ICS:

01.110	Tehnična dokumentacija za izdelke	Technical product documentation
29.020	Elektrotehnika na splošno	Electrical engineering in general

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3/1463/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 81346-1 ED2**	
DATE OF CIRCULATION: **2020-11-27**	CLOSING DATE FOR VOTING: **2021-02-19**
SUPERSEDES DOCUMENTS: **3/1439/CD, 3/1448B/CC**	

IEC TC 3 : DOCUMENTATION, GRAPHICAL SYMBOLS AND REPRESENTATIONS OF TECHNICAL INFORMATION

SECRETARIAT: Sweden	SECRETARY: Mr Thomas Borglin
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☒ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INDUSTRIAL SYSTEMS, INSTALLATIONS AND EQUIPMENT AND INDUSTRIAL PRODUCTS – STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS –

Part 1: Basic rules

FOREWORD

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IEC 81346-1 has been prepared by IEC technical committee 3: Documentation, graphical symbols, and representations of technical information in close co-operation with ISO technical committee 10: Technical product documentation.

It is published as a double logo standard and has the status of a horizontal publication in accordance with IEC Guide 108.

This second edition cancels and replaces the first edition of IEC 81346-1, published in 2009. This edition constitutes a technical revision.

This edition includes the following substantial changes with respect to the first edition of IEC 81346-1:

– the scope includes a reference to Guide 108 for being a horizontal publication
– synchronization with IEC 81346-2:2019 and ISO 81346-12:2018
– the introduction of the type aspect
– introduction of an information model of the reference designation system

220 – introduction of an information model for the framework of reference designation system to
221 comply with IEC/ISO 81346 series
222 – introduction of recommendation for metadata for design structure management
223 – introduction of rules and method for designation of relations between objects
224 – Introduction of requirements for development of sector specific parts of the IEC/ISO 81346
225 series
226 – introduction of requirements for incorporation of sub-object in object structures
227 – introduction of recommendations for documentation of the application of the IEC/ISO 81346
228 series
229 – introduced definition of new terms used
230 – new rules added and existing rules modified

231 The text of this standard is based on the following documents:

FDIS	Report on voting
3/xxx/FDIS	3/xxx/RVD

232
233 Full information on the voting for the approval of this standard can be found in the report on
234 voting indicated in the above table. In ISO, the standard has been approved by xx members out
235 of xx having cast a vote.

236 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

237 A list of all parts of the International Standard 81346 series, under the general title *Industrial*
238 *systems, installations and equipment and industrial products – structuring principles and*
239 *reference designations*, can be found on the IEC website.

240 The committee has decided that the contents of this publication will remain unchanged until the
241 maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data
242 related to the specific publication. At this date, the publication will be

243 • reconfirmed,
244 • withdrawn,
245 • replaced by a revised edition, or
246 • amended.

247

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

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INTRODUCTION

0.1 General

This standard establishes a further development of earlier and withdrawn standards on item designation. It provides basics for establishing models of plants, machines, buildings etc.

The standard specifies:

- principles for structuring of objects including associated information;
- rules on forming of reference designations based on the resulting structure.

By applying the structuring principles, even very large sets of information in a complex system can be handled efficiently.

The structuring principles and the rules for reference designations:

- are applicable to objects of both physical and non-physical character.
- provide a system that is easy to navigate within and easy to maintain. This system provides an excellent overview on a technical system since composite structures are simple to establish and understand.
- support alternative design and engineering processes in the life cycle of an object since they are based on the successively established results of this process and not on how the engineering process itself is carried out.
- allow, by accepting more than one aspect, that more than one coding principle can be applied. This technique also allows 'old structures' to be handled together with 'new structures' by using multiple unambiguous identifiers.
- support individual management for the establishment of reference designations and enable subsequent integration of modules into larger constructs. They also support the establishment of reusable modules, either as functional specifications or as physical deliverables.

  NOTE The concept of reusable modules encompasses for example, for manufacturers: the establishment of contract independent modules, and, for operators of complex assemblies: the description of requirements in terms of supplier independent modules.

- support concurrent work and allow different partners within a project to add and / or remove data to the structured project result as it proceeds.
- recognize time factor within the life cycle as important for the application of different structures based on different views on the considered technical system.

The rules for structuring of information and for the construction of reference designations forms the basis for creating a reference designation system (RDS) complying with the IEC/ISO 81346 series. Such systems are used for structuring and designating objects based on the needs of the organization using them.

Annex A provides an information model of the framework described in this publication and IEC 81346-2. Annex A includes also elements related to other publications where the application of the reference designation in accordance with IEC/ISO 81346 series are considered.

0.2 Basic requirements for this standard

The basic requirements were developed during the preparation of IEC 61346-1 Ed. 1 and accepted by vote by the national committees.

NOTE These basic requirements concern the development of the structuring principles in this standard and not its application. They are therefore not normative vis-à-vis the application of this standard.

- This standard should be applicable to all technical areas and enable a common application.
- This standard shall be applicable to all kind of objects and their constituents, such as plants, systems, assemblies, software programs, spaces, etc.
- This standard should be capable of being consistently applied in all phases (i.e. conceptual development, planning, specification, design, engineering, construction, erection, commissioning, operation, maintenance, decommissioning, disposal, etc.) of the life time of an object of interest, i.e. an object to be identified.
- This standard shall provide the ability to identify unambiguously any single object being a constituent of another object.
- This standard shall support the incorporation of sub-object structures from multiple organizations into objects from other organizations without change to the original object structures and neither to the sub-object structures nor any of their documentation.
- This standard shall support a representation of an object independently of the complexity of the object
- This standard should be easy to apply and the designations should be easy for the user to understand.
- This standard should support the use of, and should be able to be implemented by, computer-aided tools for conceptual development, planning, specification, design, engineering, construction, erection, commissioning, operation, maintenance, decommissioning, disposal, etc.

0.3 Required properties of the standard

The required properties were developed during the preparation of IEC 61346-1 Ed. 1 and accepted by vote by the national committees.

NOTE 1 These required properties concern the development of the letter code classification system in this standard and not its application. They are therefore not normative vis-à-vis the application of this standard.

- This standard shall not contain rules and restrictions that prohibit its use within a technical area.
- This standard shall cover all its foreseeable applications within all technical areas.
- This standard shall support addressing of information to objects at all phases in their lifetime.
- This standard shall allow construction of designations at any time from the currently available information.
- This standard shall support the identification of objects based on a constituency principle.
- This standard shall contain rules that enable the formulation of unambiguous designations.
- This standard shall be open and allow a designation to be extended.
- This standard shall support modularity and reusability of objects.
- This standard shall support the description of different users' views on the object
- This standard shall provide rules for the interpretation of designations where needed.

Figure 1 provides an overview on international standards providing a consistent system for designation, documentation, and presentation of information. 0 provides more information on the relations between the IEC/ISO 81346 series and other publications applying reference designations.

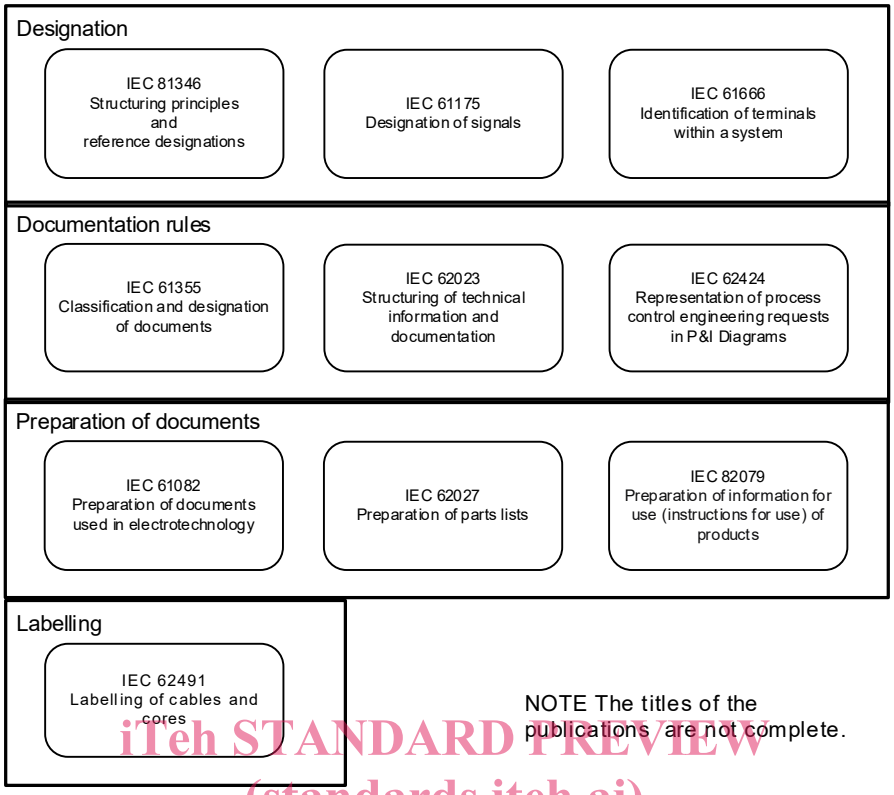

Figure 1 – International standards providing a consistent system for designation, documentation and presentation of information

0.4 Framework of the IEC/ISO 81346 series

IEC 81346-1 describes the fundamental rules and methods for structuring of information and for the definition of reference designation of objects within an industrial systems, installations and equipment and industrial products. These rules form a basis for the establishment of specific Reference Designation Systems (RDS) for use by industries, enterprises, projects or other organizational contexts.

IEC 81346-2 establishes classification schemes with defined object classes and their associated letter codes and is primarily intended for use in reference designations and for designation of generic types. Classes can also be used for other purposes, e.g. by manufacturers to show multiple potential use of a product. In this way, the classification can enhance searchability.

Used in combination, IEC 81346-1 and IEC 81346-2 define a fundamental framework for reference designations that is independent of the context in which reference designations are applied and are applicable for objects in all technical disciplines and all branches of industry, and is applicable through the whole life-cycle of objects.

The IEC/ISO 81346 series of standards additionally include parts that define sector-specific Reference Designation Frameworks that tailor the fundamental Reference Designation Framework of IEC 81346-1 and IEC 81346-2 to the needs of specific sectors. Requirements for developing sector-specific parts of the IEC/ISO 81346 series are given in Annex J.

INDUSTRIAL SYSTEMS, INSTALLATIONS AND EQUIPMENT AND INDUSTRIAL PRODUCTS – STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS –

Part 1: Basic rules

1 Scope

This part of IEC 81346, published jointly by IEC and ISO, establishes general principles for the structuring of systems including structuring of the information about systems.

Based on these principles, rules and guidance are given for the formulation of unambiguous reference designations for objects in any system.

The reference designation identifies objects for the purpose of creation and retrieval of information about an object, and where realized about its corresponding component.

A reference designation labelled at a component is the key to find information about that object among different kinds of documents.

The principles are general and are applicable to all technical areas (for example mechanical engineering, electrical engineering, construction engineering, process engineering). They can be used for systems based on different technologies or for systems combining several technologies.

This document is also a horizontal publication intended for use by technical committees in preparation of publications related to reference designations in accordance with the principles laid down in IEC Guide 108.

2 Normative references

The following referenced documents are indispensable for the application 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 Guide 108, *Guidelines for ensuring the coherence of IEC publications – Horizontal functions, horizontal publications and their application*

IEC 81346-2:2019, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 2: Classification of objects and codes for classes*

ISO 81346-10:20XX, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 10: Power systems*[1]

ISO 81346-12:2018, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 12: Construction works and building services*

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

[1] To be published

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE Terms given in italics are defined elsewhere in this clause.

3.1
object
entity involved in a *process* of development, implementation, usage and disposal

Note 1 to entry: The object may refer to a physical or non-physical.

Note 2 to entry: The object has information associated to it.

3.2
system
set of interrelated *objects* considered in a defined context as a whole and separated from their environment

Note 1 to entry: A system is generally defined with the view of achieving a given objective, e.g. by performing a definite function.

Note 2 to entry: Elements of a system may be natural or man-made material objects, as well as modes of thinking and the results thereof (e.g. forms of organisation, mathematical methods, programming languages).

Note 3 to entry: The system is considered to be separated from the environment and from the other external systems by an imaginary boundary, through which the system is related to the external systems.

Note 4 to entry: The term “system” should be qualified when it is not clear from the context to what it refers, e.g. control system, colorimetric system, system of units, transmission system.

Note 5 to entry: When a system is part of another system, it may be considered as an object as defined in this standard.

[SOURCE: IEV 151-11-27, modified – the word “elements” replaced by “objects” in the definition, in note 3 the phrase “surface”, which cuts the links between them and the systems replaced by “boundary, through which the system is related to the external systems”, note 5 to entry added]

3.3
aspect
specified way of viewing an *object*

3.4
process
set of interacting operations by which material, energy or information is transformed, transported or stored

[SOURCE: IEV 351-42-33, modified – the words “complete” and “in a system” are deleted and the word “matter” replaced by “material”, the examples and notes to entry are deleted]

3.5
function
intended or accomplished purpose or task

3.6
product
intended or accomplished result of labour, or of a natural or artificial *process*

3.7
component
product used as a constituent in an assembled *product*, *system* or plant

3.8
location
intended or accomplished space

3.9
structure
organization of relations among *objects* of a *system*

Note 1 to entry: In the context of this standard the relations considered are partitive relations (see ISO 1087:2019, 3.2.14), i.e. consists-of / is-a-part-of relations

3.10
identifier
attribute associated with an *object* to unambiguously distinguish it from other *objects* within a specified domain

3.11
reference designation
identifier of a specific *object* formed with respect to the *system* of which the *object* is a constituent, based on one or more *aspects* of that *system*

3.12
single-level reference designation
reference designation assigned with respect to the *object* of which the specific *object* is a direct constituent in one *aspect*

Note 1 to entry: A single-level reference designation does not include any reference designations of upper level or lower level objects.

3.13
multi-level reference designation
reference designation consisting of concatenated *single-level reference designations*

3.14
reference designation set
collection of two or more *reference designations* associated with an *object* of which at least one unambiguously identifies this *object*

3.15
object occurrence
the existence of an *object* when viewed using an *aspect*

3.16
product individual
one specimen of a product *type* irrespective of where or if it is being used

3.17
class
set of *objects* having at least one *characteristic* in common

Note 1 to entry: The characteristics may be embodied by the use of properties, operations, methods, relations, semantics, etc.

[SOURCE: ISO 5127:2017, definition 3.8.5.03, modified – "elements" replaced by "objects", note 1 and 2 to entry removed and a new note 1 to entry added]

3.18
characteristic
distinguishing feature