

INTERNATIONAL STANDARD

NORME INTERNATIONALE

HORIZONTAL STANDARD
NORME HORIZONTALE

**Standard data element types with associated classification scheme for electric components –
Part 2: EXPRESS dictionary schema**

**Types normalisés d'éléments de données avec plan de classification pour
composants électriques –
Partie 2: Schéma d'un dictionnaire EXPRESS**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2012 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

HORIZONTAL STANDARD
NORME HORIZONTALE

**Standard data element types with associated classification scheme for electric components –
Part 2: EXPRESS dictionary schema**

**Types normalisés d'éléments de données avec plan de classification pour
composants électriques –
Partie 2: Schéma d'un dictionnaire EXPRESS**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.020

ISBN 978-2-83220-321-7

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references.....	9
3 Terms and definitions.....	10
4 Overview of the common dictionary schema and compatibility with ISO13584_IEC61360_dictionary_schema.....	19
4.1 General.....	19
4.2 Use of the common dictionary schema to exchange IEC 61360-1 compliant data.....	19
4.3 Compatibility with ISO 13584-42.....	20
4.4 Naming correspondence between IEC 61360-1 and IEC 61360-2.....	20
4.5 Main structure of the common dictionary schema.....	21
5 ISO13584_IEC61360_dictionary_schema.....	22
5.1 General.....	22
5.2 Dictionary schema.....	22
5.3 References to other schemata.....	22
5.4 Constant definitions.....	23
5.5 Identification of a dictionary.....	23
5.6 Basic Semantic Units: defining and using the dictionary.....	24
5.6.1 Requirements for exchange.....	24
5.6.2 Three levels architecture of the dictionary data.....	25
5.6.3 Overview of basic semantic units and dictionary elements.....	29
5.6.4 Identification of dictionary elements: three levels structure.....	30
5.6.5 Extension possibilities for other types of data.....	30
5.7 Supplier data.....	32
5.7.1 General.....	32
5.7.2 Supplier_BSU.....	32
5.7.3 Supplier_element.....	33
5.8 Class data.....	33
5.8.1 General.....	33
5.8.2 Structural detail.....	35
5.8.3 Item_class.....	41
5.8.4 Categorization_class.....	42
5.9 Data element type / properties data.....	44
5.9.1 General.....	44
5.9.2 Property_BSU.....	44
5.9.3 Property_DET.....	45
5.9.4 Condition, dependent and non-dependent Data Element Types.....	47
5.9.5 Structural detail.....	48
5.9.6 Class_value_assignment.....	49
5.10 Domain data: the type system.....	50
5.10.1 General.....	50
5.10.2 Structural detail.....	50
5.10.3 The type system.....	52
5.10.4 Values.....	69

5.10.5	Structural detail	69
5.10.6	Extension to ISO 10303-41 unit definitions	74
5.11	Basic type and entity definitions	75
5.11.1	Basic type definitions.....	75
5.11.2	Structural detail	75
5.11.3	Basic entity definitions.....	85
5.12	Function definitions	89
5.12.1	General	89
5.12.2	Acyclic_superclass_relationship function	89
5.12.3	Check_syn_length function.....	90
5.12.4	Codes_are_unique function	90
5.12.5	Definition_available_implies function	91
5.12.6	Is_subclass function	91
5.12.7	String_for_derived_unit function	92
5.12.8	String_for_named_unit function	94
5.12.9	String_for_SI_unit function	94
5.12.10	String_for_unit function	96
5.12.11	All_class_descriptions_reachable function.....	96
5.12.12	Compute_known_visible_properties function	97
5.12.13	Compute_known_visible_data_types function	97
5.12.14	Compute_known_applicable_properties function	98
5.12.15	Compute_known_applicable_data_types function	99
5.12.16	List_to_set function	100
5.12.17	Check_properties_applicability function	100
5.12.18	Check_datatypes_applicability function	101
5.12.19	One_language_per_translation function	102
5.12.20	Allowed_values_integer_types function	102
5.12.21	Is_class_valued_property function.....	103
5.12.22	Class_value_assigned function.....	103
6	ISO13584_IEC61360_language_resource_schema	104
6.1	Overview	104
6.2	ISO13584_IEC61360_language_resource_schema type and entity definitions.....	105
6.2.1	general.....	105
6.2.2	Language_code	105
6.2.3	Global_language_assignment.....	106
6.2.4	Present_translations	106
6.2.5	Translatable_label	107
6.2.6	Translated_label.....	107
6.2.7	Translatable_text.....	107
6.2.8	Translated_text.....	108
6.3	ISO13584_IEC61360_language_resource_schema function definitions	108
6.3.1	General	108
6.3.2	Check_label_length function.....	108
6.4	ISO13584_IEC61360_language_resource_schema rule definition	109
7	ISO13584_IEC61360_class_constraint_schema	109
7.1	General.....	109
7.2	Introduction to the ISO13584_IEC61360_class_constraint_schema.....	110
7.3	ISO13584_IEC61360_class_constraint_schema entity definitions.....	111
7.3.1	General	111

7.3.2	Constraint.....	111
7.3.3	Property_constraint	112
7.3.4	Class_constraint.....	112
7.3.5	Configuration_control_constraint	112
7.3.6	Filter.....	113
7.3.7	Integrity_constraint.....	114
7.3.8	Context_restriction_constraint	115
7.3.9	Domain_constraint.....	115
7.3.10	Subclass_constraint	116
7.3.11	Entity_subtype_constraint.....	116
7.3.12	Enumeration_constraint.....	116
7.3.13	Range_constraint	118
7.3.14	String_size_constraint	119
7.3.15	String_pattern_constraint	119
7.3.16	Cardinality_constraint.....	120
7.4	ISO13584_IEC61360_class_constraint_schema type definitions	121
7.4.1	General	121
7.4.2	Constraint_or_constraint_id.....	121
7.5	ISO13584_IEC61360_class_constraint_schema function definition	121
7.5.1	General	121
7.5.2	Integer_values_in_range function	121
7.5.3	Correct_precondition function.....	122
7.5.4	Correct_constraint_type function	122
7.5.5	Compatible_data_type_and_value function.....	125
7.6	ISO13584_IEC61360_class_constraint_schema rule definition	129
7.6.1	General	129
7.6.2	Unique_constraint_id.....	129
8	ISO13584_IEC61360_item_class_case_of_schema	129
8.1	Overview	129
8.2	Introduction to the ISO13584_IEC61360_item_class_case_of_schema	130
8.3	ISO13584_IEC61360_item_class_case_of_schema entity definitions	130
8.3.1	A priori semantic relationship.....	130
8.3.2	Item_class_case_of.....	133
8.4	ISO13584_IEC61360_item_class_case_of_schema function definitions	135
8.4.1	General	135
8.4.2	Compute_known_property_constraints function	135
8.4.3	Compute_known_referenced_property_constraints function	136
8.4.4	Superclass_of_item_is_item function.....	137
8.4.5	Check_is_case_of_referenced_classes_definition function	138
8.5	ISO13584_IEC61360_item_class_case_of_schema rule definitions.....	138
8.5.1	General	138
8.5.2	Imported_properties_are_visible_or_applicable_rule rule	138
8.5.3	Imported_data_types_are_visible_or_applicable_rule rule	139
8.5.4	Allowed_named_type_usage_rule rule.....	139
Annex A	(informative) Example physical file.....	141
Annex B	(informative) EXPRESS-G Diagram	146
Annex C	(informative) Partial dictionaries	157
Annex D	(normative) Value format specification	158

Bibliography.....	173
Figure 1 – Overview of the dictionary schema.....	21
Figure 2 – Pieces of data with relationships.....	25
Figure 3 – Implementation of "inter-piece" relationships using basic semantic units.....	26
Figure 4 – Relationship between basic semantic unit and dictionary element.....	29
Figure 5 – Current BSUs and dictionary elements.....	30
Figure 6 – Overview of supplier data and relationships.....	32
Figure 7 – Overview of class data and relationships.....	34
Figure 8 – Example of a supplier ontology.....	43
Figure 9 – Overview of property data element type data and relationships.....	47
Figure 10 – Kinds of data element types.....	47
Figure 11 – Entity hierarchy for the type system.....	50
Figure 12 – Overview of non-quantitative data element types.....	69
Figure 13 – ISO13584_IEC61360_language_resource_schema and support_resource_schema.....	105
Figure B.1 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 1 of 7.....	147
Figure B.2 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 2 of 7.....	148
Figure B.3 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 3 of 7.....	149
Figure B.4 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 4 of 7.....	150
Figure B.5 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 5 of 7.....	151
Figure B.6 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 6 of 7.....	152
Figure B.7 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram 7 of 7.....	153
Figure B.8 – ISO13584_IEC61360_language_resource_schema – EXPRESS-G diagram 1 of 1.....	154
Figure B.9 – ISO13584_IEC61360_constraint_schema – EXPRESS-G diagram 1 of 1.....	155
Figure B.10 – ISO13584_IEC61360_item_class_case_of_schema – EXPRESS-G diagram 1 of 1.....	156
Table 1 – Cross refernce table.....	20
Table D.1 – ISO/IEC 14977 EBNF syntactic metalanguage.....	159
Table D.2 – Transposing European style digits into Arabic digits.....	166
Table D.3 – Number value examples.....	167
Table D.4 – Characters from other rows of the Basic Multilingual Plane of ISO/IEC 10646-1.....	168

INTERNATIONAL ELECTROTECHNICAL COMMISSION

STANDARD DATA ELEMENT TYPES WITH ASSOCIATED CLASSIFICATION SCHEME FOR ELECTRIC COMPONENTS –

Part 2: EXPRESS dictionary schema

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61360-2 has been prepared by subcommittee 3D: Product properties and classes and their identification, of IEC technical committee 3: Information structures, documentation and graphical symbols.

It has the status of a horizontal standard in accordance with IEC Guide 108.

This third edition cancels and replaces the second edition published in 2002, and its Amendment 1 (2003). It is a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- separation of concepts between characterization class and categorization class;
- introduction of value constraints on classes and properties;
- addition of various new subtypes for data types, including `rational_type`;
- improvement on the representation of unit of measurement.

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

FDIS	Report on voting
3D/196/FDIS	3D/204/RVD

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

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

A list of all parts of the IEC 61360 series can be found, under the general title *Standard data elements types with associated classification scheme for electric components*, on the IEC website.

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

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 61360-2:2012](https://standards.iteh.ai/catalog/standards/sist/8a464dd4-2bfe-41ea-8f15-1712c1551239/iec-61360-2-2012)

<https://standards.iteh.ai/catalog/standards/sist/8a464dd4-2bfe-41ea-8f15-1712c1551239/iec-61360-2-2012>

INTRODUCTION

The common ISO/IEC dictionary schema presented here is based on the intersection of the scopes of the following standards:

- IEC 61360-1;
- ISO 13584-42.

Relevant parts of the scope clauses of these standards include the following:

IEC 61360-1:2009

“This part of IEC 61360 provides a firm basis for the clear and unambiguous definition of characteristic properties (data element types) of all elements of electrotechnical systems from basic components to subassemblies and full systems. Although originally conceived in the context of providing a basis for the exchange of information on electric/electronic components, the principles and methods of this standard may be used in areas outside the original conception such as assemblies of components and electrotechnical systems and subsystems.”

ISO 13584-42:2010

“This part of ISO 13584 specifies the principles to be used for defining characterization classes of parts and properties of parts which provide for characterizing a part independently of any particular supplier-defined identification.

The rules and guidelines provided in this part of ISO 13584 are mandatory for the standardization committees responsible for creating standardized characterization hierarchies.

The use of these rules by suppliers and users is recommended as a methodology for building their own hierarchies.”

IEC SC3D and ISO TC184/SC4 agreed NOT to change and/or modify the presented EXPRESS model independent of each other in order to guarantee the harmonization and the reusability of the work from both committees. Requests for amendments should therefore be sent to both committees. These requests should be adopted by both committees before modifying the EXPRESS information model

STANDARD DATA ELEMENT TYPES WITH ASSOCIATED CLASSIFICATION SCHEME FOR ELECTRIC COMPONENTS –

Part 2: EXPRESS dictionary schema

1 Scope

This part of IEC 61360 series provides a formal model for data according to the scope as given in IEC 61360-1 and ISO 13584-42, and thus provides a means for the computer-sensible representation and exchange of such data.

The intention is to provide a common information model for the work of IEC SC3D and ISO TC184/SC4, thus allowing for the implementation of dictionary systems dealing with data delivered according to either of the standards elaborated by both committees.

The scope of this part of IEC 61360 is the common ISO/IEC dictionary schema based on the intersection of the scopes of the two base standards IEC 61360-1 and ISO 13584-42.

The presented EXPRESS model represents a common formal model for the two standards and facilitates a harmonization of both.

The IEC 61360-2 forms the master document. ISO 13584-42 contains a copy of the IEC 61360-2 EXPRESS model in an informative annex

In a number of clauses, where the common EXPRESS model allows more freedom, IEC has defined more restrictions which are found in the methodology part of IEC 61360-1.

Two schemas are provided in this part of IEC 61360 defining the two options that may be selected for an implementation. Each of these options is referred to as a conformance class.

- The ISO13584_IEC61360_dictionary_schema2 provides for modelling and exchanging technical data element types with associated classification scheme used in the data element type definitions. It constitutes conformance class 1 of this part of IEC 61360.
- The ISO13584_IEC61360_language_resource_schema provides resources for permitting strings in various languages. It has been extracted from the dictionary schema, since it could be used in other schemata. It is largely based on the support_resource_schema from ISO 10303-41:2000, and can be seen as an extension to that. It allows for the usage of one specific language throughout an exchange context (physical file) without the overhead introduced when multiple languages are used.

When used together with ISO 10303-21, each schema defines one single exchange format. The exchange format defined by conformance class 1 is fully compatible with the ISO 13584 series.

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 61360-1:2009, *Standard data elements types with associated classification scheme for electric items – Part 1: Definitions – Principles and methods*

IEC 61360-DB, *Standard data element types with associated classification scheme for electric components – Part 4: IEC reference collection of standard data element types and component classes*

ISO/IEC 8859-1:1998, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

ISO/IEC 10646-1, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane*

ISO/IEC 14977, *Information technology – Syntactic metalanguage – Extended BNF*

ISO 639 (all parts), *Codes for the representation of names of languages*

ISO 843:1997, *Information and documentation – Conversion of Greek characters into Latin characters*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*

ISO 4217:2008, *Codes for the representation of currencies and funds*

ISO 8601:2004, *Data elements and interchange formats – Information interchange – Representation of dates and times*

ISO 10303-11:2004, *Industrial automation systems and integration – Product data representation and exchange – Part 11: Description methods: The EXPRESS language reference manual*

[https://standards.iteh.ai/catalog/standards/sist/8a464dd4-2bfe-41ea-8f15-](https://standards.iteh.ai/catalog/standards/sist/8a464dd4-2bfe-41ea-8f15-1712c1551239/iec-61360-2-2012)

ISO 10303-21:2002, *Industrial automation systems and integration – Product data representation and exchange – Part 21: Implementation methods: Clear text encoding of the exchange structure*

ISO 10303-41:2000, *Industrial automation systems and integration – Product data representation and exchange – Part 41: Integrated generic resources: Fundamentals of product description and support¹*

ISO 13584-26:2000, *Industrial automation systems and integration – Parts library – Part 26: Logical resource: Information supplier identification*

ISO 13584-42:2010, *Industrial automation systems and integration – Parts library – Part 42: Description methodology: Methodology for structuring parts families*

3 Terms and definitions

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

3.1

abstract class

class of which all members are also members of one of its subclasses

¹ A new edition of ISO 10303-41 was published in 2005.

Note 1 to entry: Abstract classes are used when it is needed to group different kinds of objects in a class of a class inclusion hierarchy.

Note 2 to entry: In the common ISO13584/IEC61360 dictionary model, both abstract categorization classes and abstract characterization classes can be defined. The fact of being abstract is only a conceptual characteristic of a class. This characteristic is not explicitly represented in the model.

Note 3 to entry: Through inheritance, abstract characterization class allows to share, for example, some visible properties between different subclasses that correspond to different kinds of items.

3.2

applicable property of a class

applicable property necessarily possessed by each part that is member of a characterization class

Note 1 to entry: Each part that is member of a characterization class possesses an aspect corresponding to each applicable property of this characterization class.

Note 2 to entry: The above definition is conceptual, there is no requirement that all the applicable properties of a class should be used for describing each part of this class at the data model level.

Note 3 to entry: All the applicable properties of a superclass are also applicable properties for the subclasses of this superclass.

Note 4 to entry: Only properties defined or inherited as visible and imported properties of a class may be applicable properties.

Note 5 to entry: To facilitate integration of component libraries and electronic catalogues based on ISO 13584-24:2003 and ISO 13584-25, these parts of ISO 13584 request that only properties that are applicable to a class be used to characterize their instances in component libraries and electronic catalogues.

3.3

attribute

data element for the computer-sensible description of a property, a relation or a class

[IEC 61360-2:2012](http://standards.iteh.ai/catalog/standards/sist/8e464dd4-21f5-41cc-8f15-1712c1551239/iec-61360-2-2012)

Note 1 to entry: An attribute describes only one single detail of a property, of a class or of a relation.

EXAMPLE The name of a property, the code of a class, the measure unit in which values of a property are provided.

3.4

basic semantic unit

entity that provides an absolute and universally unique identification of a certain object of the application domain that is represented as a dictionary element

EXAMPLE 1 A dictionary compliant with this part of IEC 61360 provides for the identification of classes, properties, information sources and datatypes.

EXAMPLE 2 A dictionary compliant with ISO 13584-24:2003 provides for the identification of classes, properties, information sources, datatypes, tables, documents and program libraries.

EXAMPLE 3 In ISO 13584-511, the class of the hexagon head bolts is identified by a BSU, the property thread tolerance grade is also identified by a BSU.

Note 1 to entry: The content of a basic semantic unit may also be represented as an IRDI.

3.5

characteristic of a product

product characteristic

invariable property, characteristic of a product, whose value is fixed once the product is defined

Note 1 to entry: Changing the value of a characteristic of a product would mean changing the product.

EXAMPLE For a ball bearing, the inner diameter and the outer diameter are product characteristics.

Note 2 to entry: Adapted from ISO 13584-24:2003, definition 3.12.

3.6**class**

abstraction of a set of similar products

Note 1 to entry: A product that complies with the abstraction defined by a class is called a class member.

Note 2 to entry: A class is an intentional concept that can take different extensional meanings in different contexts.

EXAMPLE The set of products used by a particular enterprise and the set of all ISO-standardized products are two examples of contexts. In these two contexts (the particular enterprise and ISO), the set of products that are considered as members of the *single ball bearing* class can be different, in particular because employees of each enterprise ignore a number of existing single ball bearing products.

Note 3 to entry: Classes are structured by class inclusion relationships.

Note 4 to entry: A class of products is a general concept as defined in ISO 1087-1. Thus, it is advisable that the rules defined in ISO 704 be used for defining the designation and definition attributes of classes of products.

Note 5 to entry: In the context of the ISO 13584 series, a class is either a characterization class, associated with properties and usable for characterizing products, or a categorization class, not associated with properties and not usable for characterizing products.

3.7**class inclusion relationship**

relationship between classes that means inclusion of class members: if A is a superclass of A1 this means that, in any context, any member of A1 is also member of A

EXAMPLE 1 The set of products used by a particular enterprise and the set of all ISO-standardized products are two examples of contexts.

EXAMPLE 2 In any context, the class *capacitor* includes the class *electrolytic capacitor*.

Note 1 to entry: Class inclusion defines a hierarchical structure between classes.

Note 2 to entry: Class inclusion is a conceptual relationship that does not prescribe anything at the data representation level. Consequently, it does not prescribe any particular database schema or data model.

Note 3 to entry: In the model defined in this part of IEC 61360, the “is-a” relationship ensures class inclusion. This part of IEC 61360 recommends that the “case-of” relationship also ensure class inclusion.

Note 4 to entry: The class inclusion relationship is also called subsumption.

3.8**class member**

product that complies with the abstraction defined by a class

3.9**class valued property**

property that has one single value for a whole characterization class of products

Note 1 to entry: The value of a class valued property is not defined individually for every single product of a characterization class, but globally for the class itself.

Note 2 to entry: When all products from a characterization class of products have the same value for a particular property, defining this property as a class valued property permits to avoid duplication of the value for each instance.

Note 3 to entry: Class valued properties can also be used to capture some commonality between different characterization classes when such a commonality is not captured by the hierarchy structure.

3.10**common ISO13584/IEC61360 dictionary model**

data model for product ontology, using the information modeling language EXPRESS, resulting from a joint effort between ISO/TC 184/SC 4/WG 2 and IEC SC3D

Note 1 to entry: Several levels of allowed implementations, known as conformance classes, are defined for the common ISO13584/IEC61360 dictionary model. Conformance class 1 consists of the various schemes documented

in this part of IEC 61360 (that duplicate information contained in this standard), more the ISO13584_IEC61360_dictionary_aggregate_extension_schema documented in ISO 13584-25 (duplicated in IEC 61360-5). Other conformance classes are documented in ISO 13584-25 (conformance classes 2, 3 and 4).

Note 2 to entry: In the ISO 13584 standard series, each particular product ontology addressing a particular product domain and based on the common ISO13584/IEC61360 dictionary model is called a reference dictionary for that domain.

3.11

context dependent characteristic of product

property of a *product* whose value depends on some *context parameters*

Note 1 to entry: For a given product, a context dependent characteristic is mathematically defined as a function whose domain is defined by some context parameters that define the product environment.

EXAMPLE For a *ball bearing*, the *life-time* is a context dependent characteristic that depends on the *radial load*, the *axial load* and the *rotational speed*.

Note 2 to entry: Adapted from ISO 13584-24:2003, definition 3.22.

3.12

context parameter

variable whose value characterizes the context in which a *product* is inserted

EXAMPLE 1 The *dynamic-load* applied to a *bearing* is a context parameter for this *bearing*.

EXAMPLE 2 The *ambient temperature* in which the *resistance* of a *resistor* is measured is a context parameter for this *resistor*.

Note 1 to entry: This definition supersedes the definition given in ISO 13584-24:2003, that was the following: "a variable of which the value characterizes the context in which it is intended to insert a *product*".

Note 2 to entry: In the ISO 13584 standard series, a property value is represented as a data element type.

3.13

data element type

unit of data for which the identification, description and value representation have been specified

Note 1 to entry: In the ISO 13584 standard series, a property value is represented as a data element type.

3.14

dictionary data

set of data that represents product ontologies possibly associated with product categorizations

Note 1 to entry: It is advisable that dictionary data be exchanged using some conformance class of the common ISO/IEC dictionary model.

Note 2 to entry: This definition of dictionary data supersedes the previous definition from the first edition of IEC 61360-2 that was the following: "the set of data that describes hierarchies of characterization classes of products and properties of these products".

3.15

dictionary element

set of attributes that constitutes the dictionary description of certain objects of the application domain

EXAMPLE 1 A dictionary compliant with this part of IEC 61360 provides for the description of classes, properties, information sources and datatypes.

EXAMPLE 2 A dictionary compliant with ISO 13584-24:2003 provides for the description of classes, properties, information sources, datatypes, tables, documents and program libraries.

3.16

family of products

set of products represented by the same characterization class