IEC 61360-6

Edition 1.0 2016-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Standard data element types with associated classification scheme for electric components –
Part 6: IEC Common Data Dictionary (IEC CDD) quality guidelines

Types normalisés d'éléments de données avec plan de classification pour composants électriques –
Partie 6: Dictionnaire de données communes de l'IEC (IEC CDD) – Lignes directrices pour la qualité

IEC 61360-6:2016-10(en-fr)

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FOREWORD

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International Standard IEC 61360-6 has been prepared by subcommittee 3D: Product properties and classes and their identification, of IEC technical committee 3: Information structures and elements, identification and marking principles, documentation and graphical symbols.

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

FDIS	Report on voting
3D/279/FDIS	3D/283/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 in the IEC 61360 series, published under the general title *Standard data element types with associated classification scheme for electric components*, can be found 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 website 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- withdrawn,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.

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INTRODUCTION

The use of product data is an essential part of electronic business. Product selection, business transactions, maintenance procedures, etc., rely on the availability of data about products and services. To ensure a common understanding and a general treatment of product data, classification and dictionary systems are used to define their essential technical parameters or to categorize products.

The standards of the series IEC 61360 specify rules for structure and content of collections of product properties and its classification structures. In most cases the classes and properties contained in such collections are intuitively understandable. But, unfortunately, creating the information objects and their textual content, such as definitions, has proved to be a demanding task with potential pitfalls and problems. For avoiding such difficulties explanatory material and sections of other standards are collected in this part of IEC 61360 providing the necessary knowledge for successfully creating classes and properties. Thus, IEC 61360-6 provides guidance for specifying the information content of IEC 61360 classes and properties.

This part of IEC 61360 is intended for domain specialists who are technical experts in their specific technical domain. The domain specialists do not necessarily have an in-depth knowledge of IEC 61360-1 or IEC 61360-2.

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

Part 6: IEC Common Data Dictionary (IEC CDD) quality guidelines

1 Scope

This part of IEC 61360 provides guidance for the definition of concepts that are used to describe classes and properties submitted for update of the content of IEC Common Data Dictionary (IEC CDD). This includes

– a basic understanding of key concepts and procedures used within IEC CDD;
– a binding reference for quality control of IEC 61360 compliant dictionary content;
– guidance on documents where necessary in-depth knowledge can be acquired (see Clause 2 and Annex D).

This part of IEC 61360 includes the following subjects:

– basic overview about fundamental concepts of IEC 61360;
– formulating definitions and other textual elements;
– overview of IEC maintenance procedure for IEC CDD;
– checklist for providing input to the IEC CDD content.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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, *Standard data element types with associated classification scheme for electric components – Part 1: Definitions – Principles and methods*

IEC 61360-2:2012, *Standard data element types with associated classification scheme for electric components – Part 2: EXPRESS dictionary schema*

IEC 62656-1, *Standardized product ontology register and transfer by spreadsheets – Part 1: Logical structure for data parcels*

IEC TS 62656-2:2013, *Standardized product ontology register and transfer by spreadsheets – Part 2: Application guide for use with the IEC common data dictionary (CDD)*

ISO 704:2009, *Terminology work – Principles and methods*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
attribute
data element for the computer-sensible description of a property, a relation or a class

EXAMPLE Creation date of a product characterization class object in a computer system.

[SOURCE: ISO/IEC Guide 77-2:2008, 2.2, modified – The note has been deleted and the example replaced.]

3.1.2
characteristic
distinguishing feature

Note 1 to entry: A characteristic can be inherent or assigned.

Note 2 to entry: A characteristic can be qualitative or quantitative.

[SOURCE: ISO 22274:2013, 3.3, modified – The notes 3 and 4 and the example have been deleted.]

3.1.3
class
abstraction of a set of similar products

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 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.

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.

[SOURCE: IEC 61360-2:2012, 3.6]

3.1.4
concept
unit of knowledge created by a unique combination of characteristics

[SOURCE: ISO 22274:2013, 3.7]

3.1.5
definition
representation of a concept by a descriptive statement which serves to differentiate it from other concepts

3.1.6
designation
representation of a concept by a sign which denotes it

3.1.7
extension
totality of objects to which a concept corresponds

[SOURCE: ISO 1087-1:2000, 3.2.8]

3.1.8
intension
set of characteristics which makes up the concept

[SOURCE: ISO 1087-1:2000, 3.2.9]

3.1.9
object
anything perceivable or conceivable

Note 1 to entry: Objects may be material (e.g., an engine, a sheet of paper, a diamond), immaterial (e.g., conversion ratio, a project plan) or imagined (e.g., a unicorn).

[SOURCE: ISO 1087-1:2000, 3.1.1]

3.1.10
property
defined characteristic suitable for the description and differentiation of the objects in a product characterization class

EXAMPLE Ambient temperature can be a property of a product characterization class comprising geographical locations.

[SOURCE: ISO 22274:2013, 3.25]

3.2 Abbreviated terms

IEC CDD IEC Common Data Dictionary

4 Data structure fundamentals

4.1 General

For the convenience of the reader, Clause 4 describes key concepts used in the IEC 61360 series and in related standards in a generic form for creating a basic understanding of the information objects that make up IEC 61360 compliant dictionaries. For the detailed, normative information, please refer to Part 1 and Part 2 of IEC 61360. Additional information can be found in [7][1] and [8].

An IEC 61360 compliant dictionary provides an ordered collection of concepts and characteristics that can be used for describing products or services in data sheets, engineering tools, or electronic business applications, etc. These items may be any material or non-material products, services, functions, locations, documentations, etc. All concepts and characteristics shall be valid within a well defined domain and shall always have a definition.

For this the understanding of the following fundamental concepts is essential:

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1 Numbers in square brackets refer to the Bibliography.

– class;
– property;
– attribute.

4.2 Class

A class is an abstraction of a set of products.

NOTE 1 IEC 61360-2 differentiates between various kinds of classes. For the purpose of this part "class" is understood as "categorization class" (see 3.1.3, NOTE 5).

These products all serve the same purpose or fulfil the same function and share a number of common peculiarities.

Thus, classes serve multiple purposes

– establishing a classification system that allows easy sorting of an item into this system of concepts and thus specifying the nature of the item in question;

  EXAMPLE The taxonomy of species, introduced by Carl von Linné at 1735, is an early representative of a classification system. His groupings for animals remain to this day even though the groupings themselves have been significantly changed since their conception.

– providing scoping information for the assigned characteristics and thus providing information about their intended domains of uses;
– grouping of characteristics into easily manageable sets.

A class may be seen as a placeholder for all products of the same kind, such as the class of amplifiers. A product is any material or non-material object being defined for some purpose. Material products include concepts such as articles, goods, material commodities, etc., whereas non-material products include concepts such as services or consulting activities.

The creation of a consistent classification system that properly reflects a business domain can be quite difficult. Such classification systems should be consistent, comprehensive, and concise.

NOTE 2 An object that complies with the abstraction defined by a class is called a class member.

EXAMPLE Figure 1 shows a classification tree for amplifiers.

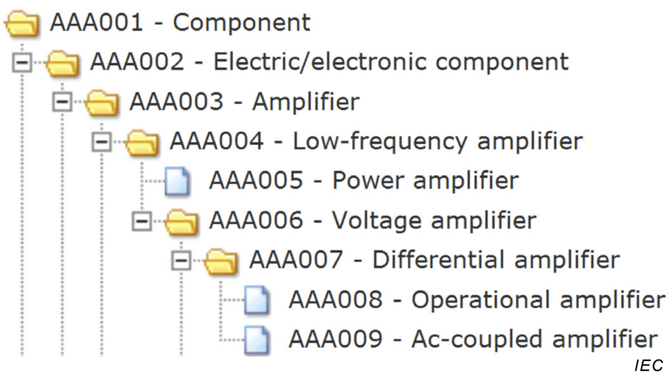

Figure 1 – Characterization tree for amplifiers

The class "Differential amplifiers" groups all characteristics that are specific for amplifiers whose output signal is proportional to the algebraic difference between the voltages applied to their two inputs. Such a class can be split further down into subclasses like operational amplifiers and ac-coupled amplifiers as shown in Figure 1.

4.3 Property

Properties specify the characteristics of the members of classes. Each property specifies one characteristic and the set of associated properties fully specifies all characteristics of the members of that class. All members of a class share the same set of properties.

In many cases properties have a unit of measure, and in some cases they have an assigned value list or are constrained by conditions.

NOTE Properties express characteristics such as length, diameter, or rated voltage.

Additionally, each property shall be defined in a class. This class specifies the domain of application of the property and the property shall be meaningful for the domain specified by this class and its subclasses.

EXAMPLE Figure 2 shows properties assigned to a class.

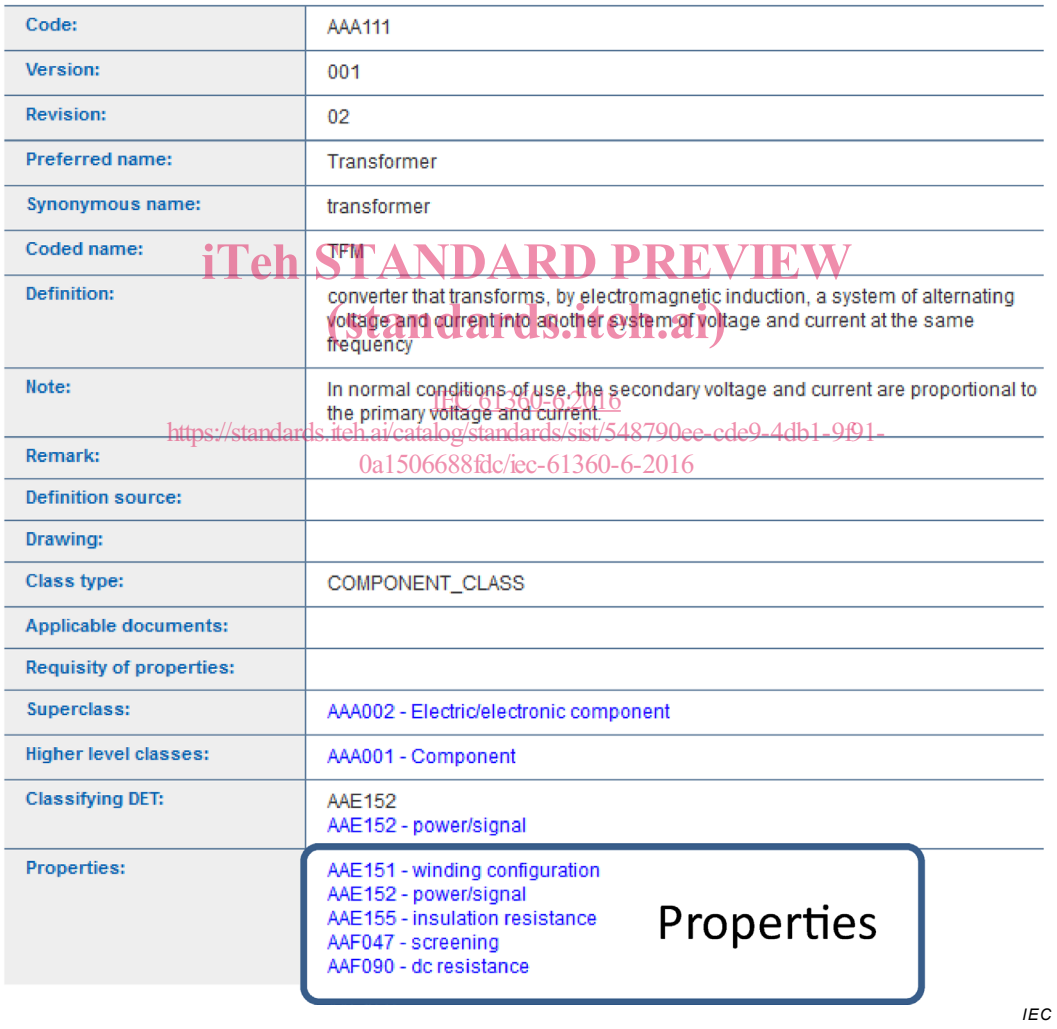

Figure 2 – Properties of a class

4.4 Attribute

In the context of IEC 61360-1 compliant dictionaries an attribute specifies a single detail of the dictionary item it belongs to.

EXAMPLE 1 Name of a property, identifier of a class, or version number are examples of attributes. Figure 3 shows typical attributes of a class record.

NOTE All information elements such as classes or properties receive their information content from their attributes.

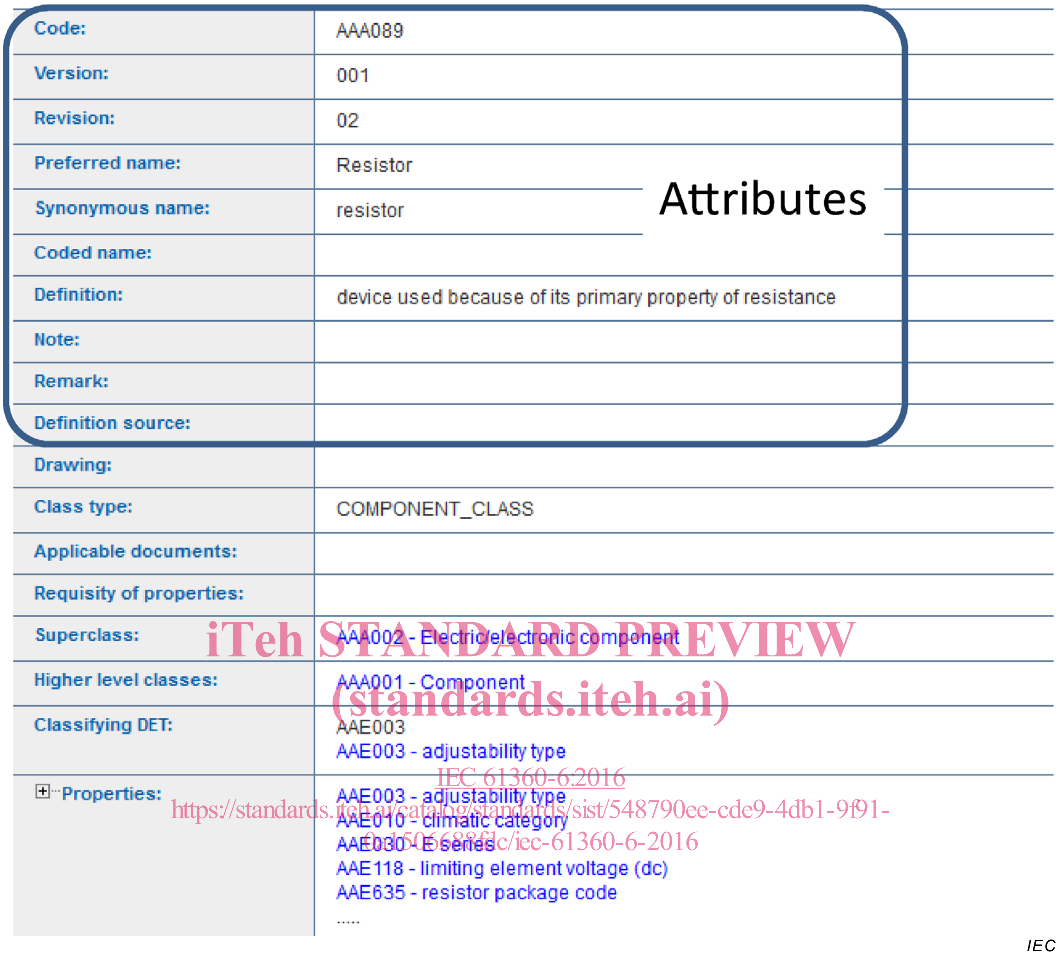

Figure 3 – Attributes of a class

EXAMPLE 2 Figure 4 shows typical attributes of a property record.

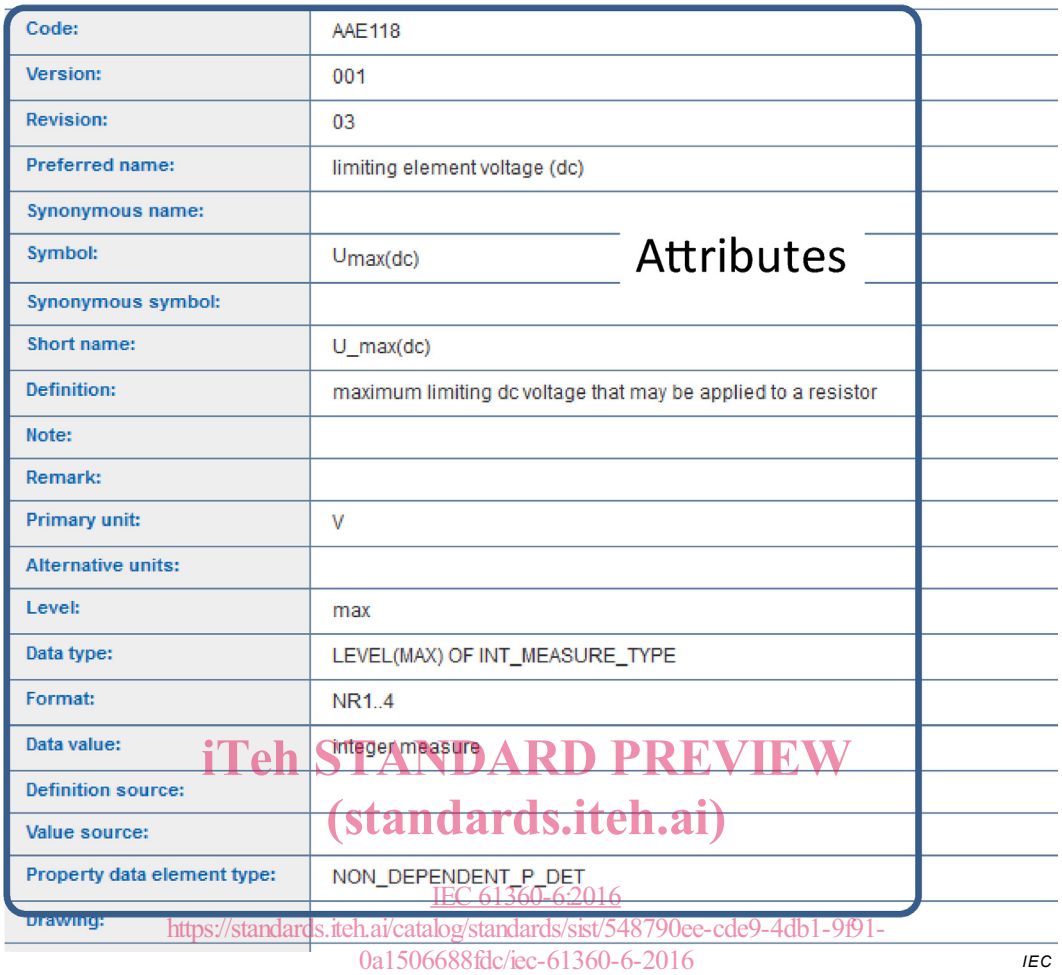

Figure 4 – Attributes of a property

4.5 Key attributes of IEC CDD entries

4.5.1 Overview

Key elements of IEC CDD entries are the attributes that assign meaning to properties and classes. The most important attributes are:

– definition;
– note;
– remark.

Textual information kept in the attributes of the objects such as preferred name, definition, or note, are the backbone of the information content of the dictionary. Thus, great care shall be applied to create syntactically and semantically error-free texts.

The quality of an IEC CDD entry mainly depends on the information given within these attributes. Thus, it is important to draft their content carefully.