

INTERNATIONAL STANDARD

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Low-voltage switchgear and controlgear – Product data and properties for information exchange

Appareillage à basse tension – Données et propriétés de produits pour l'échange d'informations

[IEC 62683:2015](https://standards.iteh.ai/standards/iec/62683:2015)

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**LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –
PRODUCT DATA AND PROPERTIES FOR INFORMATION EXCHANGE**

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International Standard IEC 62683 has been prepared by subcommittee 121A: Low-voltage switchgear and controlgear, of the IEC technical committee 121: Switchgear and controlgear and their assemblies for low voltage.

This second edition cancels and replaces the first edition published in 2013. This edition constitutes a technical revision.

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

- a) new descriptions of 41 classes for the families of circuit-breakers and their associated devices (ACC2xx), switches and disconnectors (ACC3xx), control switches (ACC5xx) and terminal blocks (ACC7xx) in addition to 14 classes for motor-starters of the first edition;
- b) new associated properties and value lists necessary for the new classes;
- c) three new blocks of properties: ACC017 Head of the control circuit device, ACC018 Light block of the control circuit device and ACC041 Over-current release;

- d) use of LEVEL_TYPE for replacing minimum and maximum properties into a single property with two values.

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

FDIS	Report on voting
121A/47/FDIS	121A/53/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.

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

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INTRODUCTION

Mainly large customers and wholesalers are requesting standardized product descriptions and product properties from product manufacturers. However, all stakeholders will benefit from this standardised presentation and data exchange.

Multiple associations or groups of actors launched different initiatives to try to respond to this demand but, due to the lack of standardisation of classes and properties, the situation is not satisfactory neither for customers nor for manufacturers.

In order to keep the lead of product description, IEC proposes a new consistent solution within its product standards.

The purpose of this International Standard is to:

- define device classes and properties for low-voltage switchgear and controlgear in a dedicated standard,
- provide a basis for introduction of the low-voltage switchgear and controlgear classes and properties into the [IEC 61360 database](http://std.iec.ch/iec61360) maintained by IEC/SC3D (see <http://std.iec.ch/iec61360>).

This standard is not intended to establish a hierarchy of product classes called classification.

The intended benefits of this standard are to:

- reduce the time and efforts of mapping data for each customer request;
- optimize the workflow of B2B exchanges;
- minimize duplication of articles in customer inventories and in databases;
- minimize losses and misinterpretation of data during exchanges;
- facilitate the selection of a product, especially regarding reliability and safety;
- give access to product data everywhere regardless of country, language and culture;
- provide product data related to environmental aspects such as material declaration;
- contribute to the fast growth of the e-business by simplifying the development of:
 - e-Catalogue allowing the differentiation of products performances, certifications and approvals, etc;
 - e-commerce: use of electronic networks to exchange information, products, services and payments for commercial and communication purposes between individuals (consumers) and businesses, between businesses themselves.

The output of this standard consists of:

- reference dictionary of low-voltage switchgear and controlgear using existing terms from IEC standards. However, terminology used in e-business may be relevant for the purpose of naming classes in this standard to get a high level of acceptance;
- properties for e-commerce purposes, conformity of properties with product standards being the main goal of this standard.

NOTE The classes "under consideration" are for information only and are intended to be completed during the next maintenance cycle.

For this project, the introduction of low-voltage switchgear and controlgear within the IEC 61360 database needs to address the following technical aspect:

- IEC 61360 requires mandatory attributes. The complete set of mandatory attributes with additional relevant attributes for low-voltage switchgear and controlgear will be available within the IEC 61360 database. At the development stage, the [CDD 62683](#) database is

available at the following address:

<http://std.iec.ch/cdd/iec62683/cdddev.nsf/Welcome?OpenPage> . Within the present document, only the most useful attributes will be presented;

- The switchgear and controlgear data model is implemented in an appropriate domain of the IEC Component Data Dictionary (CDD), IEC 61360, by creating dictionaries of blocks, classes and properties.

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LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR – PRODUCT DATA AND PROPERTIES FOR INFORMATION EXCHANGE

1 Scope

This International Standard establishes the reference dictionary of the general description of low-voltage switchgear and controlgear classes based on defined properties.

This dictionary is used to facilitate the exchange in electronic format of data describing low-voltage switchgear and controlgear.

This standard provides clear and unambiguous definitions of a limited number of properties and classes which are mainly used for presentation, selection and identification of products particularly in electronic catalogues.

Each property has an unambiguously defined meaning and naming, and where relevant, a defined value list, a defined format and a defined unit.

The intention is not to cover manufacturer specific features.

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 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60947-1:2007/AMD1:2010

IEC 60947-1:2007/AMD2:2014

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

3 Terms and definitions

For the purposes of this document, the terms and definitions of IEC 60947-1, as well as the following terms and definitions apply.

3.1

attribute

data element for description of a property, a relation or a device class

EXAMPLE The name of a property, the code of a class, the measure unit of a property.

3.2

block (of properties)

collection of properties describing one common aspect of the device class

EXAMPLE Diagnostic functions, control circuit.

Note 1 to entry: A block is a feature class in the sense of IEC 61360-1 and ISO 13584-2.

3.3 cardinality

pattern defining the number of times a concept reoccurs within a description

Note 1 to entry: Cardinality allows a block of properties contained in a list of properties to be used more than once for a particular transaction in order to describe, for example, a device with several different outputs or more than one process cases.

Note 2 to entry: Cardinality is defined by IEC 61987-10.

3.4 device

material element or assembly of such elements intended to perform a required function

Note 1 to entry: In this standard, a device corresponds to a low-voltage switchgear and controlgear.

[SOURCE: IEC 60050-151:2001, 151-11-20, modified – replacement of the note]

3.5 device class

set of properties which gives a description of a device

3.6 polymorphism

pattern that allows substitution of a single concept in the same context by a different more specific (specialized) concept

Note 1 to entry: A specialised polymorphic block of properties can replace a more generic one in the same context. A polymorphic operator (control property) can act in selecting between of various specialisations.

Note 2 to entry: Polymorphism is defined by IEC 61987-10.

3.7 property

defined parameter suitable for the description and differentiation of device class specific characteristic describing an aspect of device class

4 General

The attributes shall follow IEC 61360-1.

Based on IEC 61360-1 data model, the structured data called cardinality and polymorphism may be used.

5 Properties

5.1 Criteria for naming properties

In order to maintain consistency and clarity in the naming of properties, terms from product standards shall be used when there available.

Synonymous names may be associated with the property name when well established terms are used on the market.

5.2 Attributes of a property

The following attributes of a property are considered in this standard:

- identifier;
- preferred name;
- definition;
- source document;
- data type;
- unit of measure;
- value format;
- value list.

6 Block of properties

Each property within a block shall describe one common aspect covered by the definition of this block.

The list of blocks of properties is defined in Table 1.

Table 1 – Library of blocks used in the device classes of low-voltage switchgear

Block name	Definition	Source	Class ID
Identification	information necessary for unambiguous identification of the device		ACC011
General technical data	general technical aspects of the device		ACC012
Diagnostic functions	ability to analyse a situation corresponding to a predefined set of parameters		ACC013
Main circuit (of a switching device)	all the conductive parts of a switching device included in the circuit which it is designed to close or open	IEC 60050-441: 1984, 441-15-02	ACC014
Input / Output circuit	circuit used to receive or to send signals or data		ACC015
Control and auxiliary circuits	all the conductive parts of a switching device which are intended to be included in a circuit other than the main circuit of the device		ACC016
Head of the control circuit device	part of a device which contains and support the actuator or contains the lens of an indicator light, fixed on an enclosure or on the body of the device		ACC017
Light block of the control circuit device	part of a device which contains and support the lamp, fixed on an enclosure or on the body of the device		ACC018
Short-circuit	accidental or intentional conductive path between two or more conductive parts forcing the electric potential differences between these conductive parts to be equal to or close to zero	IEC 60050-151: 2001, 151-12-04	ACC040
Over-current release	release which causes a mechanical switching device to open when the current in the release exceeds a predetermined value	2.4.25 of IEC 60947-1: 2007 modified	ACC041
Data communication	communication function for the transfer of information between the device and the system		ACC050
Installation, mounting and dimensions	physical information of the device for installation		ACC066
Connection facilities	terminals, screws or other parts, used for the electrical connection of conductors of external circuits	IEC 60050-426: 2008, 426-04-25	ACC068
Product certificates and standards	conformity of a device with specified requirements and compliance with recognised product standards		ACC070

7 Device classes

7.1 Device class attributes

The attributes of the device class shall follow IEC 61360-1.

The following attributes of a device class are considered in this standard:

- identifier,
- preferred name,
- definition,
- synonymous name, and
- source document.

NOTE The synonymous names are limited to those necessary to avoid confusion when selecting a device class.

7.2 Classification of low-voltage switchgear and controlgear

Table 2 gives the classification of low-voltage switchgear and controlgear domain based on the corresponding product standards. The class name column is structured in four levels of hierarchy using indent alignments.

Table 2 – Low-voltage switchgear and controlgear classification

Class name	Synony-mous	Definition	Source	Class ID	Sub-clause
LV switchgear and controlgear domain		domain covering switching devices and their combination with associated control, measuring, protective and regulating equipment, also assemblies of such devices and equipment with associated interconnections, accessories, enclosures and supporting structures	2.1.1 of IEC 60947-1:2007 modified	ACC001	
LV switchgear and controlgear classes		set of switching devices and their combination with associated control, measuring, protective and regulating equipment, also assemblies of such devices and equipment with associated interconnections, accessories, enclosures and supporting structures	2.1.1 of IEC 60947-1:2007 modified	ACC100	
Circuit-breaker classes		set of circuit-breakers, their releases and accessories		ACC200	
Circuit-breaker	Moulded case circuit breaker, Air circuit breaker	mechanical switching device, capable of making, carrying and breaking currents under normal circuit conditions and also making, carrying for a specified time and breaking currents under specified abnormal circuit conditions such as those of short-circuit	IEC 60050-441:1984, 441-14-20	ACC201	7.3.2
Release for circuit-breaker	Trip unit	unit connected to a circuit-breaker which initiates action that causes the protected circuit to be switched off when a preset threshold is exceeded		ACC202	7.3.3