

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**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**

<https://standards.iech.org/standards/sst/75267a0-3f60-4207-b65a-e1e8a3d3fb75/iec-62683-2013>



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

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International Standard IEC 62683 has been prepared by the subcommittee 17B: Low-voltage switchgear and controlgear, of the IEC technical committee 17: Switchgear and controlgear.

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

FDIS	Report on voting
17B/1802/FDIS	17B/1816/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 web site 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. 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 costs, 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, certificates, 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. 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. A device class is therefore created using reference links to these dictionaries.

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

## 1 Scope

This International Standard 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 to produce a reference dictionary which allows a general description of low-voltage switchgear and controlgear classes based on the defined properties. 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.

<https://standards.iec.ch/catalogue/standards/sst/75267a0-3f60-4207-b65a-e1e8a3d3fb75/iec-62683-1-2013>  
IEC 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*

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

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

EXAMPLE Diagnostic functions, control circuit.

### 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 (code, version number, revision number), preferred name, definition, source document, data type, unit of measure, value format, value list.

## 6 Block of properties

A 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**

Identifier	Preferred name	Definition	Source doc.
17B-ACE011	Identification	information necessary for unambiguous identification of the device	
17B-ACE012	General technical data	general technical aspects of the device	
17B-ACE013	Diagnostic functions	ability to analyse a situation corresponding to a predefined set of parameters	
17B-ACE014	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
17B-ACE015	Input / output circuit	circuit used to receive or to send signals or data	
17B-ACE016	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	
17B-ACE018	Data communication	communication function for the transfer of information between the device and the system	
17B-ACE019	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
17B-ACE020	Installation, mounting and dimensions	physical information of the device for installation	IEC 60050-151: 2001, 151-12-04
17B-ACE021	Connection facilities	terminals, screws or other parts, used for the electrical connection of conductors of external circuits	IEC 60050-426: 2008, 426-04-25
17B-ACE022	Product certificates and standards	conformity of a device with specified requirements and compliance with recognised product standards	

## 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 Library of low-voltage switchgear and controlgear classes

Table 2 to Table 7 give the lists of device classes which compose the library of low-voltage switchgear and controlgear.

**Table 2 – Library of device classes for contactors, starters and similar equipment**

Identifier	Preferred name	Definition	Synonymous name	Source doc.
17B-ACC401	Motor protection circuit-breaker	circuit-breaker providing overload protection to the motor and the circuit  NOTE See IEC 60947-4-1.		
17B-ACC402	Motor management device	electronic overload relay for motor, including extended functions with communication ability  NOTE See IEC 60947-4-1.		
17B-ACC403	Motor management device, extension module	module providing at least one extended function to a motor management device		
17B-ACC404	Motor management device, operator panel	human machine interface dedicated to a motor management device		
17B-ACC405	Motor starter combination	equipment consisting of a starter, a manually-operated switching device and a short-circuit protective device, which may or may not incorporate an isolating function  NOTE See IEC 60947-4-1 and IEC 60947-6-2.	Protected starter, Combination starter	
17B-ACC406	a.c. semiconductor motor controller	semiconductor switching device that provides the starting function for an a.c. motor and an OFF-state	Soft-starter	3.3.2 of IEC 60947-4-2:2011
17B-ACC407	Power contactor, a.c. switching	mechanical switching device having only one position of rest, operated otherwise than by hand, capable of making, carrying and breaking a.c. currents under normal circuit conditions including operating overload conditions  NOTE See IEC 60947-4-1.		
17B-ACC408	Capacitor contactor	contactor used to switch capacitor load  NOTE See IEC 60947-4-1.		
17B-ACC409	Combination of contactors	arrangement of several contactors for star-delta, reversing or two-step motor switching  NOTE See IEC 60947-4-1.	Star-delta contactors, Reversing contactors	
17B-ACC410	Power contactor, d.c. switching	mechanical switching device having only one position of rest, operated otherwise than by hand, capable of making, carrying and breaking d.c. currents under normal circuit conditions including operating overload conditions  NOTE See IEC 60947-4-1.		

Identifier	Preferred name	Definition	Synonymous name	Source doc.
17B-ACC411	Thermal overload relay	inverse time-delay overload relay depending for its operation (including its time-delay) on the thermal action of the current flowing in the relay  NOTE See IEC 60947-4-1.		
17B-ACC412	Electronic overload relay	inverse time-delay overload relay depending for its operation (including its time-delay) on the electronic thermal model of the current flowing in the relay  NOTE See IEC 60947-4-1.		
17B-ACC413	Relay for thermistor protection (PTC)	device which converts into a switching function the variation of the characteristic of a thermal detector made by a PTC thermistor  NOTE See IEC 60947-8.	Control unit for built in thermal protection (PTC) for rotating electrical machines	
17B-ACC414	Electromechanical contactor for household and similar purposes	electromechanical air break contactor for household and similar purposes provided with main contacts intended to be connected to circuits the rated voltage of which does not exceed 440 V a.c. (between phases) with rated operational currents less than or equal to 63 A for utilization category AC-7a and 32 A for utilization categories AC-7b and AC-7c, and rated conditional short-circuit current less than or equal to 6 kA.  NOTE See IEC 61095.		

**Table 3 – Library of device classes for control switches**

Identifier	Preferred name	Definition	Synonymous name	Source doc.
17B-ACC501	Inductive proximity switch	proximity switch producing an electromagnetic field within a sensing zone and having a semiconductor switching element		2.1.1.1 of IEC 60947-5-2:2007
17B-ACC502	Capacitive proximity switch	proximity switch producing an electric field within a sensing zone and having a semiconductor switching element		2.1.1.2 of IEC 60947-5-2:2007
17B-ACC503	non-mechanical magnetic proximity switch	proximity switch which senses the presence of a magnetic field and has a semiconductor switching element and no moving parts in the sensing element		2.1.1.5 of IEC 60947-5-2:2007
17B-ACC504	Ultrasonic proximity switch	proximity switch transmitting and receiving ultrasound waves within a sensing zone and having a semiconductor switching element		2.1.1.3 of IEC 60947-5-2:2007
17B-ACC505	Through beam photoelectric proximity switch	photoelectric proximity switch which is indirectly operated through lateral approach of its reference axis between emitter and receiver by a defined object  NOTE See IEC 60947-5-2.	Photoelectric proximity switch type I	
17B-ACC506	Retroreflective photoelectric proximity switch	photoelectric proximity switch which is indirectly operated through lateral approach to its reference axis between emitter-receiver and reflector by a defined object  NOTE See IEC 60947-5-2.	Photoelectric proximity switch type R	
17B-ACC507	Diffuse reflective photoelectric proximity switch	photoelectric proximity switch which is directly operated through lateral or axial approach to its reference axis by a defined object  NOTE See IEC 60947-5-2.	Photoelectric proximity switch type D	
17B-ACC508	Diffuse reflective photoelectric proximity switch with background suppression	photoelectric proximity switch with adjustment of usable operating distance, which is directly operated through lateral or axial approach to its reference axis by a defined object  NOTE See IEC 60947-5-2.	Photoelectric proximity switch type D with background suppression	
17B-ACC509	Auxiliary contact block	contact(s) unit included in an auxiliary circuit and mechanically operated by the switching device  NOTE See IEC 60947-1 and IEC 60947-5-1.		
17B-ACC510	Contact relay	contactor used as a control switch	Auxiliary contactor	IEC 60050-441:1984, 441-14-35