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Responsible committee: PEL/23/1 Circuit breakers and similar equipment for household use

Interested committees:

Title: BS EN IEC 63508 CDD Database - Circuit-breakers and similar equipment for household use

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



23E/1327/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

IEC 63508 ED1

DATE OF CIRCULATION:

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CLOSING DATE FOR COMMENTS:

2023-10-20

SUPERSEDES DOCUMENTS:

23E/1315/NP, 23E/1321/RVN

IEC SC 23E : CIRCUIT-BREAKERS AND SIMILAR EQUIPMENT FOR HOUSEHOLD USE

SECRETARIAT:

Italy

SECRETARY:

Mr Giovanni Cassinelli

OF INTEREST TO THE FOLLOWING COMMITTEES:

SC 3D, TC 23, SC 23A, SC 23B, SC 23H, SC 23K, SC 121A

PROPOSED HORIZONTAL STANDARD:

☐

Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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TITLE:

CDD Database - Circuit-breakers and similar equipment for household use

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CDD 63508- Data Base –
Circuit-breakers and similar equipment for household use

IEC Common Data Dictionary (IEC CDD):
Miniature Circuit-Breakers

INTRODUCTION

The growing use of protection devices (e.g. miniature circuit-breakers as defined in IEC 60898-1), and the need to go toward more digital tools and processes requires the description of such devices to be made available in the most adequate digital format.

To serve as a reference in this effort of standardisation, the IEC provides a support for gathering all contributions for devices descriptions under the IEC Common Data Dictionary (IEC CDD).

Such a work at IEC level aims to provide for the protection devices an unambiguous semantic, consistent with its product standard, made available for use on the market by the various stakeholders.

The intended benefits of this document are to:

- reduce the costs and efforts in 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 environmental declaration;
- contribute to the fast growth of 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, and between businesses themselves.
- enable new e-business models

The output of this document is a reference dictionary for protection devices considered in sub-committee 23E for use in e-commerce, in software and in any application for product selection.

This work is done in close collaboration between SC 23E and SC 3D which in charge of the maintenance of the application IEC CDD.

1. Scope

The purpose of this document is to draft product classes and properties, representing the MCB (Miniature Circuit-Breaker), to become a part of the [IEC XXXXX](#) DB. It includes data needed for product selection as well as data needed for engineering.

In a further step, a complementary work will be done to complete the IEC XXXXX DB with data representing other types of products managed by the SC 23E.

This IEC XXXXX DB intends, as a contribution to the IEC Common Data Dictionary, to be used by catalogue consortia, other database standards and software as a data reference for Circuit-breakers and similar equipment for household use.

As a first step, this document introduces the product description of MCB.

2. Normative references

IEC 60529:1989, Degrees of protection provided by enclosures (IP Code)
IEC 60529: 2013 AC1

IEC 60715:2017, Dimensions of low-voltage switchgear and controlgear – Standardized mounting on rails for mechanical support of switchgear, controlgear and accessories

IEC 60898-1:2015, Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation
IEC 60898-1:2019 Amd1
IEC 60898-1:2020 AC1

IEC 60947-2:2016, Low-voltage switchgear and controlgear – Part 2: Circuit-breakers
IEC 60947-2:2019 Amd1
IEC 60947-2:2019 AC1

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

IEC 61360-4 DB - IEC CDD (Common Date Dictionary)

IEC 62683-1: 2017, Low-voltage switchgear and controlgear – Product data and properties for information exchange – Part 1: Catalogue data

CLC TR 50473: 2007, Recommendations for dimensional co-ordination between enclosures and built-in devices for rail fixing for household and similar installations

3. Terms and definitions

3.1. attribute

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

Example The name of a property, the code of a class, the measure unit in which values of a property are provided.
Note 1 to entry: An attribute describes only one single detail of a property, of a class or of a relation. SOURCE: IEC 61360-1

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 13584-42.
Example: Diagnostic functions, control circuit.
SOURCE: IEC 62683-1

3.3.

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.

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

SOURCE: IEC 61360-1

3.4.

enumeration

list of named constants called enumerators, each enumerator name in the enumeration being unambiguous

SOURCE: IEC 61360-1

3.5.

property

data element type

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

Note 1 to entry: A property can have attributes such as code, version, and revision.

Note 2 to entry: The specification of a property can include predefined choices of values.

SOURCE: IEC 62683-1

3.6.

IEC Common Data Dictionary

IEC CDD

IEC CDD is an International Standard (IEC 61360-4 DB) and serves as a common product data dictionary for all industrial/technical domains (electrotechnical and non-electrotechnical; e.g. industry, building, energy, healthcare, ...) based on the methodology and the information model of IEC 61360 series, and provides

- unambiguous identification of classes and properties, and their relations;
- commonly accepted terminology and definitions based on accepted sources such as IEC International Standards, other International Standards, industry standards, or public authorities;
- hierarchies of concepts enabling users to appropriately characterize their products and services;
- relevant conditions and constraints if necessary on possible values of characteristics;
- technical representation of concepts including units and data types and their identification.

4. Data formats description

4.1.

data_type

The content of **data_type** is divided into categories:

- simple type;
- enumeration type;
- aggregate type;
- class instance type;
- class reference type;
- large object data;
- placement type;
- level type.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.2.

Value format

IEC 61360-1 in its clause dedicated to the value_format, but also in its annex G, provides some explanation:

a) Non-quantitative **value_format** types:

- A = alphabetic, letters only;
- M = mixed, all characters allowed;
- N = numeric, digits only;
- X = alphanumeric;
- B = binary, 0 or 1.

b) Quantitative **value_format** types:

NR1 = integers;

NR2 = rational numbers with decimal-mark (real numbers);

c) Field length

The field length of a non-quantitative value shall be indicated by a number (e.g. 17). A variable field length shall start with two dots.

The following preferred formats have been defined:

A..3 N..3 X..3 M..3 B 1

A..8 N..8 X..8 M..8

4.3.

STRING_TYPE

The data type STRING_TYPE may be used for values containing any sequence of elements, typically characters, using some character encoding.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.4.

BOOLEAN_TYPE

The data type BOOLEAN_TYPE may be used for values representing truth values of logic or Boolean algebra or pattern of truth values.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.5.

BINARY_TYPE

The data type BINARY_TYPE may be used for values containing a sequence of bits, each bit being represented by "0" or "1".

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.6.

INT_TYPE, INTEGER

The data type INT_TYPE may be used for values containing numbers that can be written as positive or negative whole numbers or as zero.

Instead of the INT_TYPE one of the more specific data types may be used:

– INT_MEASURE_TYPE;

– INT_CURRENCY_TYPE.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.7.

ENUM_STRING TYPE

enumeration of possible choices based on 16 maximum characters

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.8.

ENUM_BOOLEAN_TYPE(enum_id)

ENUM_BOOLEAN_TYPE((enum_id(code1, code2, ...))

The data type ENUM_BOOLEAN_TYPE may be used for values referencing a set of Boolean values.

NOTE 14 "enum_id" is the global identifier of the enumeration list.

NOTE 15 "code1", "code2", ... are the codes of the enumerated values.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.9.

ENUM_CODE_TYPE(enum_id), ENUM_CODE_TYPE(enum_id(code1, code2, ...))

The data type ENUM_CODE_TYPE may be used for values referencing a set of strings or numerals, as values, each representing assigned meanings.

NOTE 1 enum_id is a global identifier for the enumeration list.

NOTE 2 code1, code2, ... are the value codes of enumerated values

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.10.

REAL_TYPE

The data type REAL_TYPE may be used for values containing numbers that can be written as a terminating or non-terminating decimal; a rational or irrational number.

Instead of the REAL_TYPE, data type REAL_MEASURE_TYPE may be used for values containing values that are measures of type REAL.

In addition, the data type REAL_MEASURE_TYPE specifies a unit or a unit identifier in which the values are expressed.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

4.11.**LEVEL(MIN, MAX) OF REAL_MEASURE_TYPE**

LEVEL_TYPE(MIN,NOM,TYP,MAX)

The data type LEVEL_TYPE may be used for values representing up to four variants of a numeric value which may be given as

- INT_TYPE;
- INT_MEASURE_TYPE;
- REAL_TYPE;
- REAL_MEASURE_TYPE.

Each variant of this value expresses the number value in a specific role:

- MIN minimum of the value;
- NOM value as designated;
- TYP value as typically present;
- MAX maximum of the value.

See examples in Table 1 and IEC 61360-1:2017 §10.4 for more details

Table 1 provides some examples to illustrate the above definitions:

Table 1 – Some format examples

	Value format examples		Value examples
STRING_TYPE	X..16	Alphanumeric, up to 16 digits	ACDC; A2RN1; B1; ca
	A..3	alphabetic, letters only, up to 3	Abc; de; G
	A 19	alphabetic, letters only, 19 digits, no more no less	My name is Reinhard, abcdefghijklmnopqrs
	M..10	mixed, all characters allowed	A23RN1; B1; ca. 256 µm;
	B 1	binary	0; 1
	B 3	binary, 0 or 1	011; 101
	B 1	boolean	YES; NO
	B 2	boolean	TRUE; FALSE; YES; NO
ENUM_String_Type (ACI010; ACI094)	X..32 applied to each element		AC, DC, ACDC
	M..7 applied to each element		class 1, class 2, class 5, class 6, class 9
INT_TYPE	NR1 3	integers without unit, 3 digits	123; 001; 000;
INT_MEASURE_TYPE	NR1..3	integers with unit, up to 3 digits	120 V; 87 A; 50 Hz
REAL_TYPE	NR2 3.3	rational numbers with decimal-mark without unit, 3 & 3 digits	123.300; 000.400; 000.420;
REAL_MEASURE_TYPE	NR2..3.3	rational numbers with decimal-mark with unit, up to 3 & 3 digits	321.233 mV; 1.234 A; 23.5 kg; 9.73 V; .72 m; 324. W
LEVEL(MAX) OF REAL_MEASURE_TYPE	NRX..Y.Z		240 V
Code_Type	M..4		IP20
ENUM_Code_Type (ACI001)	M..4 applied to each element		IP20, IP21, IP22, IP30, IP31, IP32, IP33, IP40,