SLOVENSKI STANDARD
oSIST prEN IEC 62683-2-2:2024

01-oktober-2024

Sestavi nizkonapetostnih stikalnih in krmilnih naprav - Podatki o izdelku in njegovih lastnostih za izmenjavo informacij - Tehnični podatki - 2-2. del: Sestavni deli stikalne in krmilne opreme za informacijsko modeliranje stavb

Low-voltage switchgear and controlgear - Product data and properties for information exchange - Engineering data - Part 2-2: Switchgear and controlgear assembly objects for building information modelling

Appareillage à basse tension - Données et propriétés de produits pour l'échange d'informations - Données d'ingénierie - Partie 2-2: Objets d'ensembles d'appareillage pour la modélisation des informations de la construction

Ta slovenski standard je istoveten z: **prEN IEC 62683-2-2:2024**

ICS:

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear

oSIST prEN IEC 62683-2-2:2024 **en**

121/169/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62683-2-2 ED1**	
DATE OF CIRCULATION: **2024-08-09**	CLOSING DATE FOR VOTING: **2024-11-01**
SUPERSEDES DOCUMENTS: **121/152/CD, 121/159A/CC**	

IEC TC 121 : SWITCHGEAR AND CONTROLGEAR AND THEIR ASSEMBLIES FOR LOW VOLTAGE

SECRETARIAT: France	SECRETARY: Mr Michaël LAHEURTE
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 3, SC 3D, SC 22G, SC 22H, SC 23E, SC 121A, SC 121B	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Low-voltage switchgear and controlgear – Product data and properties for information exchange – Engineering data – Part 2-2: Switchgear and controlgear assembly objects for building information modelling

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

TC121 Officers support circulation of CDV for project IEC 62683-2-2 ED1

NC experts are kindly requested to refer their comments to line number

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INTRODUCTION

Building Information Modelling (BIM) is as an optimizing design process for construction and operation of the building. The information in the model remains coordinated and consistent throughout the lifecycle of the project in order to better optimise its construction schedule and operation. BIM is a digital process enabled by a set of software, dictionaries, objects and data which aims to increase efficiency around the building lifecycle, though design, operation, maintenance and destruction phase. The use of BIM was initially mainly at design stage to avoid collisions between the different elements of the construction. However, BIM offers many other possible use cases to be investigated such as extracting electrical load demands, simulating photovoltaic production capacity, simulating thermal and energy behaviour of the building etc …

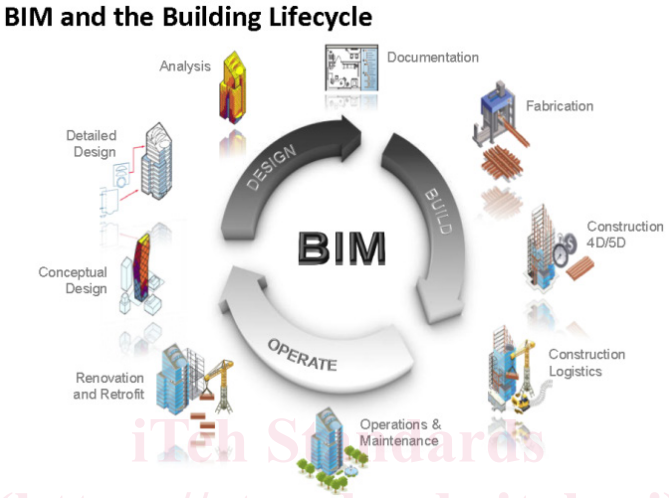

Figure 1 – BIM and the building lifecycle

The main intended benefits of BIM are:

– Increasing design dependability and process transparency;
– Improving project communication and project marketing;
– Shortening construction periods;
– Minimizing risks in execution and reducing construction costs;
– Increasing the degree of prefabrication;
– Use information for building operation purposes.

Governments, worldwide, are recommending or requiring the use of digitalised information for public construction projects, recognizing its value for helping to deliver projects successfully.

BIM is a standardised process by ISO TC 59/SC 13 and includes a 3D representation and an optimised set of data, which can be enhanced by adding further information, such as technical features.

BuildingSMART is a global community committed to creating and developing open digital ways of working for built asset environment. BuildingSMART promotes international consensus among stakeholders on specific standards to accelerate implementation and uptake and propose standard to ISO TC59.

ISO 19650 standard defines the information management process.

Other standards are more specifically addressing the exchange format such as ISO 16739 and dictionaries such as ISO 12006. An overview is shown in Figure 2.

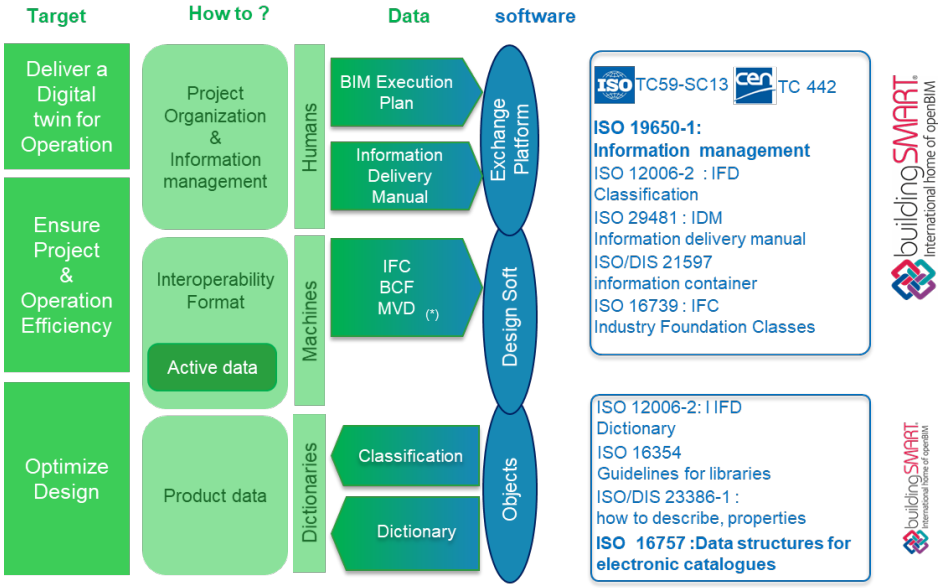

Figure 2 – BIM data standard overview

The main elements of the BIM process and are:

– Industry foundation class (IFC - ISO 16739-1:2018)
IFC is a standardized, digital description of the built asset industry. It is an open, international standard (ISO 16739-1:2018) and promotes vendor-neutral, or agnostic, and usable capabilities across a wide range of hardware devices, software platforms, and interfaces for many different use cases

– Information Delivery Specifications (IDS)
An Information Delivery Specification (IDS) is a computer interpretable document that defines the Exchange Requirements of model-based exchange. It defines how objects, classifications, materials, properties, and even values need to be delivered and exchanged. This is often done based on Industry Foundation Classes (IFC) and additional classifications, materials and properties (national agreements or company specific ones; either stored in bSDD or somewhere else). This is the standard to use to define your Level of Information Needs (CEN term), your Exchange Information Requirements (ISO 19650 term) or even to exchange Product Data Templates with some more details.

– Building smart data dictionary (bSDD ISO 12006-3, ISO 23386)
The buildingSMART Data Dictionary (bSDD) is a library of classes, properties, relations and units. It is an online service that hosts classifications and their properties, allowed values, units and translations. The bSDD allows linking between all the content inside the database. It provides a standardized workflow to guarantee data quality and information consistency.

– BIM Collaboration Format (BCF)
The BIM Collaboration Format (BCF) allows different BIM applications to communicate model-based issues with each other by leveraging IFC data that have been previously shared among project collaborators. BCF was created for facilitating open communications and improving IFC-based processes to more readily identify and exchange model-based issues between BIM software tools, bypassing proprietary formats and workflows.

– Information Delivery Manual (IDM, ISO 29481-1)
The built asset industry (including buildings and civil infrastructure) is characterized by bringing many different companies and authorities together in a project specific organisation. In order to work efficiently, it is necessary for all participants in the organisation to know which and when different kind of information has to communicated. The issue is even more important when digital tools are applied, since most industry tools have a very low threshold of tolerance when it comes to the ability to interpret digital data. The “Building information modelling – Information delivery manual” standard

has been developed by buildingSMART in order to have a methodology to capture and specify processes and information flow during the lifecycle of a facility.

Up to now, electrical engineering has not been adequately represented in BIM (IFC, IDS, BSDD) although electrical engineering is an essential trade within every property.

Particularly in electrical systems engineering, the expectation is to cover from planning, execution, operation, to demolition and improve ease of exchange and interoperability between, different phases, electrical personas and electrical CAD and CAE software's.

BIM is the right approach as a working method in the electrotechnical trade of a building (low voltage + medium voltage). But objects of electrical assemblies need to be further detailed and standardised.

BIM design software need to be supplied with objects. The properties of these objects, for example, the functional description of an electrical distribution panel, will be easier to be handled by a building designer if this description is based on a common ontology defined by recognised electrical standards.

This part of IEC 62683-2 series is intended to be used in combination with the following part:

– IEC 62683-1, *Catalogue data*

The described data models including in this part is intended to be hosted within IEC CDD in the class tree dedicated to engineering data of low-voltage switchgear, controlgear and their assemblies. This branch of the 62683 DB dictionary is intended to be used by catalogue consortia, other database standards and engineering software editors as reference to low-voltage switchgear and controlgear standards.

IEC CDD ontology data model is following IEC 61360-2/ISO 13584-42. It includes the unique identification of each dictionary and dictionary element according to ISO 29002-5 called "international registration data identifier" (IRDI). This identifier includes the IEC International Code Designator (ICD) "0112" registered according to the registration authority identification concept as defined in ISO/IEC 6523-1.

PRODUCT DATA AND PROPERTIES FOR INFORMATION EXCHANGE –

Part 2-2: Engineering data – Switchgear and controlgear assembly objects for building information modelling

1 Scope

This part of IEC 62683-2 series specifies the building information modelling (BIM) with the physical characteristics and technical services of low-voltage switchgear and controlgear assemblies to be used mainly for the construction phase of the building and also for delivering data for operation.

This document intends to cover all types of assemblies covered by IEC 61439 series which can be installed in a building.

Busbar trunking systems defined by IEC 61439-6 are under consideration for a next edition.

These BIM object models, registered in IEC CDD, are intended to supply the process defined by ISO 16739 series.

This document does not cover:

– the build-in components included within the assembly such as switchgear and controlgear,
– safety related control system of machinery,
– the detailed electrical and mechanical configuration of the assembly
– logistic information.

2 Normative references

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

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

ISO 16739 series, *Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries*

3 Terms and definitions

For the purposes of this document, the terms and definitions of Clause 3 of IEC 62683-1:2017. In addition, the following 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
BIM
building information modelling
construction of a model that contains the information about a building for all phases of the building life cycle

Note 1 to entry It includes both the 3D model and the building processes.

[SOURCE: ISO 16757-1:2015, 2.4]

3.2
BIM object
digital representation of a physical object used to facilitate design, build and operation processes to form a reliable basis for decisions

[SOURCE: derived from ISO 29481-1:2016, 3.2]

Note 1 to entry As a result, a building is composed by assembling “BIM objects” of any component of the building: Wall, doors, tubes, pipes, etc. and electrical switchboard assemblies. A BIM object is also a digital file, composed of a geometry and a set of data. Along the process, the level of geometry (LOG) and level of detail (LOD) are evolving to be more precise and comprehensive along the workflow.

3.3
assembly building information model
digital representation of the physical characteristics and technical services of switchgear and controlgear assembly

NOTE 1 to entry This assembly building information model is a BIM object which is used to form the BIM model creation.

3.4
building information model
BIM model
digital representation of the whole building including architectural and mechanical electrical and plumbing (MEP) objects

4 Object models

4.1 Electrical assemblies and their building related aspects

The models of this document are intended to describe the interfaces of the objects to the building, especially the zones, accessibility to the equipment, mechanical interfaces, electrical interconnection positions, functions (supply, control, protection, etc.), etc.

4.2 Object attributes

The attributes of an item class shall be used according to IEC 61360-1.

The following attributes of an item class are considered in this document: 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.

4.3 Decomposition of the building information models

Table 1 gives the decomposition of the classes and blocks of properties. The class name column is structured in three levels of class hierarchy using vertical indent alignments.

NOTE The class hierarchy is shown on the left end side of the graphical user interface of IEC CDD.

Table 1 – Building information models

Class name	Synonymous	Definition	Source	Class ID
Building information models	BIM	digital representation of physical and functional characteristics of a built object, including buildings, bridges, roads, process plant Note 1 to entry: Adapted from ISO 29481 -1:2010, definition 2.2. Note 2 to entry: Building information model is frequently used as a synonym for BIM. Note 3 to entry: It may form the common basis for decisions and may form the contractual point of reference, across one or more stages in the life cycle.	ISO TS 12911:2012	ACC004
Assembly building information model		digital representation of the physical characteristics and technical services of switchgear and controlgear assembly	IEC 62683-2-2:2023	ACC006
Identification of the assembly		information necessary for unambiguous identification of the assembly		ACG019
original manufacturer contact information		information to enable a contact with the original manufacturer of the assembly to be located or communicated with		0112/2///61360_7#AAS002
assembly manufacturer contact information		information to enable a contact with the assembly manufacturer to be located or communicated with		0112/2///61360_7#AAS002
installer contact information		information to enable a contact with the installer of the assembly to be located or communicated with		0112/2///61360_7#AAS002
object reference designation		concept for the identification of a specific object formed with respect to the system of which the object is a constituent, based on one or more aspects of that system	IEC 81346-1:2009	0112/2///61360_4#AAA759
Construction of the assembly		technical information on the construction features of the assembly		ACG089
Ratings of the assembly		set of rated values and operating conditions of the assembly	IEC 61439-1:2020, 3.8.4	ACG031
Current ratings of the assembly		current values, declared by in assembly documentation, that can be withstood under specified conditions		ACG098
Voltage ratings of the assembly		voltage values, declared in the assembly documentation, that can be withstood under specified conditions		ACG056
Service functions of the assembly		functions performed by the assembly in addition to its essential functions and capabilities Note 1 to entry Typical essential functions and capability are switching loads, over-current protections and short-circuit withstand.		ACG020
Communication interface of the assembly		communication functions for the transfer of information between the assembly and the system		ACG035