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TECHNICAL REPORT

High voltage switchgear and controlgear -
Part 321: Product data and properties for information exchange - Catalogue data

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High-voltage switchgear and controlgear - Part 321: Product data and properties for information exchange - Catalogue data

FOREWORD

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IEC TR 62271-321 has been prepared by the technical committee 17: High-voltage switchgear and controlgear. It is a Technical Report.

This document is a first step and is intended to be built upon in the near future. The scope of this work is being specified by TC17/ahG12.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
17/1187/DTR	17/1191/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

A list of all parts in the IEC 62271 series, published under the general title *High-voltage switchgear and controlgear*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

It is mainly large customers and regulations which confirm the need for data availability over the life cycle of the high-voltage switchgear and controlgear. For that digital standardized high-voltage switchgear and controlgear product descriptions and product properties are increasingly required to minimize data transfer, migration and re-formatting. This applies to all domains such as generation, transmission, distribution, consumption, and all life cycle phases such as design, planning, procurement, operation, maintenance, dismantling, etc.

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

The works and associated documents aim to solve interoperability issues met during data migration as expected by IEC TC 17 standards and along a whole life cycle of a high-voltage switchgear and controlgear. They even influence the future lives of their used materials, by different stakeholders.

IEC TC 17, which deals with high-voltage switchgear and controlgear, decided to extend initial work to take into account consideration of required properties during enquiries, tenders and orders as shown in Figure 1.

Initial work by TC 17 highlighted inconsistencies between high-voltage switchgear and controlgear standards such as different names for the same property, different definitions for the same property, different units for the same property, and even several properties within summarized in one.

In subsequent work, the mapping was extended to the properties from all IEC TC 17 standards and any other useful standards dealing with high-voltage components implemented inside switching devices and assemblies. This mapping is no longer limited to the properties defined by the nameplates and considers properties for information exchanges during enquiries, tenders, and orders.

To harmonize product description, IEC TC 17 proposes a new consistent solution within this document.

The purpose of this document is to describe the process of the catalogue data from the mapping of IEC TC 17 standards to the data intended to be implemented in IEC Common Data Dictionary (IEC CDD) using ParcelMaker™ [1] tool, as follows:

– Create a spreadsheet database.
  - Review of properties of TC 17 standards and when possible associated standards.
    – Define source database (IEV, glossary, ISO OBP, etc).
    – Define device classes and properties for each high-voltage switchgear and controlgear standard.
    – Follow relevant attributes of properties for users as defined by IEC 61360.
– Create potential other digital representation supporting database verification and bringing awareness of available digital material awaiting the final stage IEC CDD for its maintenance.

[1] ParcelMaker is the trademark of a product supplied by Toshiba Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

– Feed ParcelMaker™ spreadsheet tool with the support of the IEC SC 3D to provide a basis for introduction of the high-voltage switchgear and controlgear classes and properties into the IEC 61360 database maintained by IEC/SC 3D (see http://std.iec.ch/iec61360).
– Raise awareness on value created by such catalogue data assuming to feed many digital twins along the whole life cycle of high-voltage switchgear and controlgear (see Annex C).

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

The intended benefits of this document are to:

– solve interoperability issues;
– reuse digital properties defined by IEC TC 17 standards;
– reduce the costs, time and efforts of mapping data for each customer request;
– optimize the workflow of industrial stakeholders' 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.

1 Scope

This part of IEC 62271 relates to high-voltage switchgear and controlgear for all rated voltage levels above 1 kV AC and 1,5 kV DC and assemblies thereof and provides materials for the reference dictionary for all products covered by the IEC 62271 series.

This dictionary is a preliminary work which can be used to facilitate exchanges in digital format of data related to high-voltage switchgear and controlgear components, devices, equipment, and assemblies of the power systems.

Such a dictionary improves the interoperability of the power systems required for these data exchanges along the power system lifetime and over its life cycle.

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

This document defines, digitalizes and then summarizes the properties related to high-voltage switchgear and controlgear nameplates and information usually exchanged during the enquiries, tenders, and orders life phases defined by IEC TC 17 standards of physical elements.

The intention is not to cover manufacturer specific features.

The intention is not to cover IEC TC 17 standards dealing only with assessment methodology (calculation, tests, rules, etc.).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61360-1:2017, *Standard data element types with associated classification scheme - Part 1: Definitions - Principles and methods*

Bibliography

[1] eclass basic: available at https://eclass.eu/

[2] IEC 60050-121, *International Electrotechnical Vocabulary - Part 121: Electromagnetism*, available at https://www.electropedia.org

[3] IEC 60050-151, *International Electrotechnical Vocabulary - Part 151: Electrical and magnetic devices*, available at https://www.electropedia.org

[4] IEC 60050-195, *International Electrotechnical Vocabulary (IEV) - Part 195: Earthing and protection against electric shock*, available at https://www.electropedia.org

[5] IEC 60050-212, *International Electrotechnical Vocabulary (IEV) - Part 212: Electrical insulating solids, liquids and gases*, available at https://www.electropedia.org

[6] IEC 60050-321, *International Electrotechnical Vocabulary - Part 321: Instrument transformers*, available at https://www.electropedia.org

[7] IEC 60050-441, *International electrotechnical vocabulary - Part 441: switchgear, controlgear and fuses*, available at https://www.electropedia.org

[8] IEC 60050-442*International electrotechnical vocabulary - Part 442: Electrical accessories*, available at https://www.electropedia.org

[9] IEC 60050-471, *International Electrotechnical Vocabulary - Part 471: Insulators*, available at https://www.electropedia.org

[10] IEC 60050-601, *International Electrotechnical Vocabulary - Part 601: Generation, transmission and distribution of electricity - General*, available at https://www.electropedia.org

[11] IEC 60050-603, *International Electrotechnical Vocabulary - Part 603: Generation, transmission and distribution of electricity - Power systems planning and management*, available at https://www.electropedia.org

[12] IEC 60050-614, *International electrotechnical vocabulary - Part 614: Generation, transmission and distribution of electricity - Operation*, available at https://www.electropedia.org

[13] IEC 60050-801, *International Electrotechnical Vocabulary - Part 801: Acoustics and electroacoustics*, available at https://www.electropedia.org

[14] IEC 60050-826, *International Electrotechnical Vocabulary (IEV) - Part 826: Electrical installations*, available at https://www.electropedia.org

[15] IEC 60068-2-57:2013, *Environmental testing - Part 2-57: Tests - Test Ff: Vibration - Time-history and sine-beat method*

[16] IEC 60071-1:2019, *Insulation co-ordination - Part 1: Definitions, principles and rules*

[17] IEC 60137:2017, *Insulated bushings for alternating voltages above 1 000 V*

[18] IEC 60282-1:2020, *High-voltage fuses - Part 1: Current-limiting fuses*

[19] IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

[20] IEC 60721-2-2:2012, *Classification of environmental conditions - Part 2-2: Environmental conditions appearing in nature - Precipitation and wind*

[21] IEC 60721-3-4:2019, *Classification of environmental conditions - Part 3-4: Classification of groups of environmental parameters and their severities - Stationary use at non-weather protected locations*

[22] IEC 60947-1:2020, *Low-voltage switchgear and controlgear - Part 1: General rules*

[23] IEC 61000-1-1:2023, *Electromagnetic compatibility (EMC) - Part 1-1: General - Application and interpretation of fundamental definitions and terms*

[24] IEC 61082-1:2014, *Preparation of documents used in electrotechnology - Part 1: Rules*

[25] IEC 61439-1:2020, *Low-voltage switchgear and controlgear assemblies - Part 1: General rules*

[26] IEC 61462:2023, *Composite hollow insulators - Pressurized and unpressurized insulators for use in electrical equipment with AC rated voltage greater than 1 000 V AC and DC voltage greater than 1500V - Definitions, test methods, acceptance criteria and design recommendations*

[27] IEC 61850-7-3:2010, *Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes*

[28] IEC 61850-7-4:2010, *Communication networks and systems for power utility automation - Part 7-4: Basic communication structure - Compatible logical node classes and data object classes*
IEC 61850-7-4:2010/AMD1:2020

[29] IEC 61869-1:2023, *Instrument transformers - Part 1: General requirements*

[30] IEC 61869-2:2012, *Instrument transformers - Part 2: Additional requirements for current transformers*

[31] IEC 61869-3:2011, *Instrument transformers - Part 3: Additional requirements for inductive voltage transformers*

[32] IEC 61987-10:2009, *Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 10: Lists of Properties (LOPs) for Industrial-Process Measurement and Control for Electronic Data Exchange - Fundamentals*

[33] IEC 62262:2002, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*
IEC 62262:2002/AMD1:2021

[34] IEC 62271-1:2017, *High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear*
IEC 62271-1:2017/AMD1:2021

[35] IEC 62271-100:2021, *High-voltage switchgear and controlgear - Part 100: Alternating-current circuit-breakers*

[36] IEC 62271-102:2018, *High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches*
IEC 62271-102:2018/AMD1:2022

[37] IEC 62271-103:2021, *High-voltage switchgear and controlgear - Part 103: Alternating current switches for rated voltages above 1 kV up to and including 52 kV*

[38] IEC 62271-104:2020, *High-voltage switchgear and controlgear - Part 104: Alternating current switches for rated voltages higher than 52 kV*

[39] IEC 62271-105:2021, *High-voltage switchgear and controlgear - Part 105: Alternating current switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV*

[40] IEC 62271-106:2021, *High-voltage switchgear and controlgear - Part 106: Alternating current contactors, contactor-based controllers and motor starters*

[41] IEC 62271-107:2019, *High-voltage switchgear and controlgear - Part 107: Alternating current fused circuit-switchers for rated voltages above 1 kV up to and including 52 kV*

[42] IEC 62271-108:2020, *High-voltage switchgear and controlgear - Part 108: High-voltage alternating current disconnecting circuit-breakers for rated voltages above 52 kV*

[43] IEC 62271-109:2019, *High-voltage switchgear and controlgear - Part 109: Alternating-current series capacitor by-pass switches*

[44] IEC 62271-110:2017, *High-voltage switchgear and controlgear - Part 110: Inductive load switching*

[45] IEC 62271-111 / IEEE C37.60:2019, *High-voltage switchgear and controlgear - Part 111: Automatic circuit reclosers for alternating current systems up to and including 38 kV*

[46] IEC 62271-112:2021, *High-voltage switchgear and controlgear - Part 112: Alternating current high-speed earthing switches for secondary arc extinction on transmission lines*

[47] IEC 62271-200:2021, *High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

[48] IEC 62271-201:2014, *High-voltage switchgear and controlgear - Part 201: AC solid-insulation enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

[49] IEC 62271-202:2022, *High-voltage switchgear and controlgear - Part 202: AC prefabricated substations for rated voltages above 1 kV and up to and including 52 kV*

[50] IEC 62271-203:2022, *High-voltage switchgear and controlgear - Part 203: AC gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

[51] IEC 62271-204:2022, *High-voltage switchgear and controlgear - Part 204: Rigid gas-insulated transmission lines for rated voltage above 52 kV*

[52] IEC 62271-205:2008, *High-voltage switchgear and controlgear - Part 205: compact switchgear assemblies for rated voltages above 52 kV*

[53] IEC 62271-209:2019, *High-voltage switchgear and controlgear - Part 209: Cable connections for gas-insulated metal-enclosed switchgear for rated voltages above 52 kV - Fluid-filled and extruded insulation cables - Fluid filled and dry-type cable terminations*
IEC 62271-209:2019/AMD1:2022

[54] IEC 62271-211:2014, *High-voltage switchgear and controlgear - Part 211: Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages of 52 kV*

[55] IEC 62271-212:2022, *High-voltage switchgear and controlgear - Part 212: Compact Equipment Assembly for Distribution Substation (CEADS) for AC voltages up to 52 kV*

[56] IEC 62271-213:2021, *High-voltage switchgear and controlgear - Part 213: Voltage detecting and indicating system*

[57] IEC 62271-215:2021, *High-voltage switchgear and controlgear - Part 215: Phase comparator used with VDIS*

[58] IEC 62670-2:2015, *Photovoltaic concentrators (CPV) - Performance testing - Part 2: Energy measurement*

[59] IEC Common Data Dictionary at:
https://cdd.iec.ch/cdd/iec61360/iec61360.nsf/Welcome?OpenPage

[60] IEC Electropedia: available at https://www.electropedia.org

[61] IEC glossary if not available in IEC Electropedia at: https://products.iec.ch/home

[62] IEC TS 60815-1:2008, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles*

[63] IEC TS 62271-304:2019, *High-voltage switchgear and controlgear - Part 304: Design classes for indoor enclosed switchgear and controlgear for rated voltages above 1 kV up to and including 52 kV to be used in severe climatic conditions*

[64] IEC/IEEE 62271-37-013:2021, *High-voltage switchgear and controlgear - Part 37-013: Alternating current generator circuit-breakers*

[65] ISO/IEC/IEEE 82079-1:2019, *Preparation of information for use (instructions for use) of products - Part 1: Principles and general requirements*

[66] ISO 10320:2019, *Geosynthetics - Identification on site*

[67] ISO 13584-42:2010, *Industrial automation systems and integration - Parts library - Part 42: Description methodology: Methodology for structuring parts families*

[68] ISO 772:2022, *Hydrometry - Vocabulary and symbols*

[69] ISO 9223:2012, *Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation*

[70] ISO Online browsing platform: available at https://www.iso.org/obp/ui/#searchhttps://www.iso.org/obp

[71] ISO/IEC 6523-1:2023, *Information technology. Structure for the identification of organizations and organization parts. Part 1: identification of organization identification schemes.*

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

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