Application integration at electric utilities - System interfaces for distribution management - Part 11: Common information model (CIM) extensions for distribution (IEC 61968-11:2013)

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

See Eesti standard EVS-EN 61968-11:2013 sisaldab Euroopa standardi EN 61968-11:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 61968-11:2013 consists of the English text of the European standard EN 61968-11:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 07.06.2013.	Date of Availability of the European standard is 07.06.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.200

EUROPEAN STANDARD

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English version

Application integration at electric utilities - System interfaces for distribution management - Part 11: Common information model (CIM) extensions for distribution

(IEC 61968-11:2013)

Intégration d'applications pour les services électriques -
Interfaces système pour la gestion de distribution -
Partie 11 : Extensions du modèle d'information commun (CIM) pour la distribution
(CEI 61968-11:2013)

Integration von Anwendungen in Anlagen der Elektrizitätsversorgung -
Systemschnittstellen für Netzführung -
Teil 11: Erweiterungen des allgemeinen Informationsmodells (CIM) für die Verteilung
(IEC 61968-11:2013)

This European Standard was approved by CENELEC on 2013-04-10. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 61968-11:2013 E

Foreword

The text of document 57/1295/FDIS, future edition 2 of IEC 61968-11, prepared by IEC TC 57 "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61968-11:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-01-10
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-04-10

This document supersedes EN 61968-11:2010.

EN 61968-11:2013 includes the following significant technical changes with respect to EN 61968-11:2010:

- Introduction of new classes to support flexible naming of identified objects (new classes available in base CIM, EN 61970-301).
- Introduction of new classes to support single line diagrams exchange (new classes available in base CIM, EN 61970-301).
- Consolidated transmission and distribution models for lines, transformers, switching, sensing and other auxiliary equipment (some Ed.1 classes slightly changed and moved from DCIM to base CIM, EN 61970-301, other new classes available in base CIM, EN 61970-301).
- Support for separate phase definitions, typically needed for unbalanced network modelling (new classes available in base CIM, EN 61970-301).
- Support for temporary network changes through models of cuts, jumpers and clamps (new classes available in base CIM, EN 61970-301).
- Flexible model for organisations and their roles.
- Support for coordinate systems in description of geographical locations.
- Support for configuration events tracking.
- Lightweight model for assets and asset catalogues.
- Support for linkage between network-oriented models and premises-oriented (metering) models.
- Support for premises area network devices.

In informative sections of this document, words printed in Arial Black apply to terms that are used as tokens in the normative clauses (to facilitate the reading and the text search).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Endorsement notice

The text of the International Standard IEC 61968-11:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61968-3	NOTE	Harmonized as EN 61968-3.
IEC 61968-4	NOTE	Harmonized as EN 61968-4.
IEC 61968-9	NOTE	Harmonized as EN 61968-9.
IEC 61968-13	NOTE	Harmonized as EN 61968-13.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60076-1	-	Power transformers - Part 1: General	EN 60076-1	-
IEC 61968-1	-	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general requirements	EN 61968-1	-
IEC 61968-2	-	Application integration at electric utilities - System interfaces for distribution management - Part 2: Glossary	-	-
IEC 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN 61970-301	-
IEC 61970-501	-	Energy management system application program interface (EMS-API) - Part 501: Common Information Model Resource Description Framework (CIM RDF) schema	EN 61970-501	-
IEC 62361-100	-	Harmonization of quality codes across TC 57 - Part 100: Naming and design rules for CIM profiles to XML schema mapping	EN 62361-100	-
IEEE 802.3	-	IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications	-	-

CONTENTS

Major changes with respect to the first edition are summarised below[1];

- Introduction of new classes to support flexible naming of identified objects (new classes available in base CIM, IEC 61970-301).
- Introduction of new classes to support single line diagrams exchange (new classes available in base CIM, IEC 61970-301).
- Consolidated transmission and distribution models for lines, transformers, switching, sensing and other auxiliary equipment (some Ed.1 classes slightly changed and moved from DCIM to base CIM, IEC 61970-301, other new classes available in base CIM, IEC 61970-301).
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A list of all parts of the IEC 61968 series, under the general title: *Application integration at electric utilities – System interfaces for distribution management* can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

[1] For enhancements in the base CIM, see IEC 61970-301 documenting CIM15.

INTRODUCTION

The IEC 61968 series of standards is intended to facilitate inter-application integration as opposed to intra-application integration. Intra-application integration is aimed at programs in the same application system, usually communicating with each other using middleware that is embedded in their underlying runtime environment, and tends to be optimised for close, real-time, synchronous connections and interactive request/reply or conversation communication models. Therefore, these inter-application interface standards are relevant to loosely coupled applications with more heterogeneity in languages, operating systems, protocols and management tools. This series of standards is intended to support applications that need to exchange data every few seconds, minutes, or hours rather than waiting for a nightly batch run. This series of standards, which are intended to be implemented with middleware services that exchange messages among applications, will complement, not replace utility data warehouses, database gateways, and operational stores.

As used in IEC 61968, a distribution management system (DMS) consists of various distributed application components for the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping and facilities management. Standard interfaces are defined for each class of applications identified in the interface reference model (IRM), which is described in IEC 61968-1.

APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

Part 11: Common information model (CIM) extensions for distribution

1 Scope

This part of IEC 61968 specifies the distribution extensions of the common information model (CIM) specified in IEC 61970-301. It defines a standard set of extensions of common information model (CIM), which support message definitions in IEC 61968-3 to IEC 61968-9, IEC 61968-13 and IEC 61968-14[2]. The scope of this standard is the information model that extends the base CIM for the needs of distribution networks, as well as for integration with enterprise-wide information systems typically used within electrical utilities. The information model is defined in UML which is platform-independent and electronically processable language that is then used to create message payload definitions in different required formats. In this way, this standard will not be impacted by the specification, development and/or deployment of next generation infrastructures, either through the use of standards or proprietary means.

For the purposes of this part of IEC 61968, the distribution CIM (DCIM) model refers to the IEC CIM model as defined by IEC 61970-301 and this part of IEC 61968.

The common information model (CIM) is an abstract model of the major objects in an electric utility enterprise typically involved in utility operations. By providing a standard way of representing power system resources as object classes and attributes, along with their relationships, the CIM facilitates the integration of software applications developed independently by different vendors. The CIM facilitates integration by defining a common language (i.e., semantics and syntax) based on the CIM to enable these applications or systems to access public data and exchange information independent of how such information is represented internally.

IEC 61970-301 defines a core CIM for energy management system (EMS) applications, including many classes that would be useful in a wider variety of applications. Due to its size, the CIM classes are grouped into logical packages, and collections of these packages are maintained as separate International Standards. This document extends the core CIM with packages that focus on distribution management systems (DMS) including assets, work, customers, load control, metering, and others. IEC 62325-301[3] extends the CIM with packages that focus on market operations and market management applications. Other CIM extensions may be published as International Standards, each maintained by a separate group of domain experts. Depending on a project's needs, the integration of applications may require classes and packages from one or more of the CIM standards.

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 60076-1, *Power transformers – Part 1: General*

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2 IEC 61968-5, IEC 61968-6, IEC 61968-7, IEC 61968-8 and IEC 61968-14 are under consideration.

3 Under consideration.