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## Kommunikation på energimarknaden – Del 301: Utvidgning av den gemensamma informationsmodellen (CIM) för marknader

*Framework for energy market communications –*

*Part 301: Common information model (CIM) extensions for markets*

Som svensk standard gäller europastandarden EN IEC 62325-301:2018. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62325-301:2018.

### Nationellt förord

Europastandarden EN IEC 62325-301:2018

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62325-301, Second edition, 2018 - Framework for energy market communications - Part 301: Common information model (CIM) extensions for markets**

utarbetad inom International Electrotechnical Commission, IEC.

EN från CENELEC som är identiska med motsvarande IEC-standarder och som görs tillgängliga för nationalkommittéerna efter den 1 januari 2018 får en beteckning som inleds med EN IEC istället för som tidigare bara EN.

Tidigare fastställd svensk standard SS-EN 62325-301, utgåva 1, 2014, gäller ej fr o m 2021-04-16.

### *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

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### *Stora delar av arbetet sker internationellt*

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

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### *Var med och påverka!*

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

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### **SEK Svensk Elstandard**

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English Version

**Framework for energy market communications - Part 301:  
Common information model (CIM) extensions for markets  
(IEC 62325-301:2018)**

Cadre pour les communications pour le marché de l'énergie  
- Partie 301: Extensions du modèle d'information commun  
(CIM) pour les marchés  
(IEC 62325-301:2018)

Kommunikation im Energiemarkt - Teil 301: CIM-  
Erweiterungen für Märkte  
(IEC 62325-301:2018)

This European Standard was approved by CENELEC on 2018-04-16. 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## **European foreword**

The text of document 57/1947/FDIS, future edition 2 of IEC 62325-301, 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 IEC 62325-301:2018.

The following dates are fixed:

- latest date by which the document has to be (dop) 2019-01-16  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2021-04-16  
standards conflicting with the  
document have to be withdrawn

This document supersedes EN 62325-301:2014.

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

## **Endorsement notice**

The text of the International Standard IEC 62325-301:2018 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 TS 61970-2 | NOTE | Harmonized as CLC/TS 61970-2. |
| IEC 62361-100  | NOTE | Harmonized as EN 62361-100.   |

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

| <u>Publication</u> | <u>Year</u> | <u>Title</u>                                                                                                                                                         | <u>EN/HD</u>   | <u>Year</u> |
|--------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|
| IEC TS 61970-2     | 2004        | Energy management system application program interface (EMS-API) - Part 2: Glossary                                                                                  | CLC/TS 61970-2 | 2005        |
| IEC 61968-11       | -           | Application integration at electric utilities - System interfaces for distribution management -- Part 11: Common information model (CIM) extensions for distribution | EN 61968-11    | -           |
| IEC 61970-301      | -           | Energy Management System Application Program Interface (EMS-API) - Part 301: Common information model (CIM) base                                                     | EN 61970-301   | -           |
| IEC 61970-302      | -           | Energy management system application program interface (EMS-API) – Part 302: Common information model (CIM) for dynamics                                             | -              | -           |
| IEC 62325-450      | -           | Framework for energy market communications -- Part 450: Profile and context modelling rules                                                                          | EN 62325-450   | -           |
| UML 2.0            | -           | Object management group: Unified Modeling Language 2.0 specification                                                                                                 | -              | -           |

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –**Part 301: Common information model (CIM) extensions for markets**

## FOREWORD

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International Standard IEC 62325-301 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Environmental weather support
- b) Demand-side communication for North American markets
- c) Transparency regulations and flow-based market coupling along with network codes support for European Markets
- d) Registered resource updates.

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

| FDIS         | Report on voting |
|--------------|------------------|
| 57/1947/FDIS | 57/1961/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.

Throughout this document, references are made to the UML model. References to specific UML packages and classes are made by citing the name of package or class in single quotes, example, 'IEC 61970' or 'IdentifiedObject'.

A list of all parts of the IEC 62325 series, under the general title: *Framework for energy market communications*, 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.**

## INTRODUCTION

This part of IEC 62325 is one of a series of standards for deregulated energy market data exchanges. This standard series was originally based upon the work of the European transmission system operators TF 14 EDI (Electronic data interchange) and the Electric Power Research Institute (EPRI) TR 1009455 and TR 1011431 (CIM extensions to support market operations, phase 1 and phase 2).

The principal objective of the IEC 62325 series is to produce standards which facilitate the integration of market application software developed independently by different vendors into a market management system, as well as integration of market management systems and market participant systems. This is accomplished by defining message exchanges to enable these applications or systems to access public data and exchange information independent of how such information is represented internally.

The common information model (CIM) specifies the basis for the semantics for this message exchange. The profile specifications, which are contained in other parts of IEC 62325, specify the content of the messages exchanged. Profile specifications in other parts of IEC 62325 support both European style markets based on the European regulations, Third Party Access and zonal market concepts, and North American style markets characterized by day ahead unit commitment by a market operator, intraday and real time balancing through central dispatch, and settlement based on locational marginal prices. These markets are used in the US and in other parts of the world and are not exclusively limited to North America.

The CIM is an abstract model that represents all the major objects in an electric utility enterprise typically needed to model the operational aspects of a utility. This model includes public classes and attributes for these objects, as well as the relationships between them.

The IEC 62325 series are part of a series of standards dealing with the CIM. IEC 61970 defines the EMS application programming interfaces and IEC 61968 defines System interfaces for distribution management. IEC 62325-301 corresponds to IEC 61970-301 and IEC 61968-11 which describe parts of the common information model relevant to modeling interfaces for EMS, DMS and MMS systems. While there are multiple IEC standard series dealing with different parts of the CIM, there is a single, unified information model comprising the CIM behind all these individual standard series.

## FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

### Part 301: Common information model (CIM) extensions for markets

#### 1 Scope

This part of IEC 62325 specifies the common information model (CIM) for energy market communications.

The CIM is an abstract model that represents all the major objects in an electric utility enterprise typically involved in utility operations and electricity market management. 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 market management system (MMS) applications developed independently by different vendors, between entire MMS systems developed independently, or between an MMS system and other systems concerned with different aspects of market management, such as capacity allocation, day-ahead management, balancing, settlement, etc.

The CIM facilitates integration by defining a common language (i.e. semantics) 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.

The object classes represented in the CIM are abstract in nature and may be used in a wide variety of applications. The use of the CIM goes far beyond its application in a market management system.

Due to the size of the complete CIM, the object classes contained in the CIM are grouped into a number of logical packages, each of which represents a certain part of the overall power system being modeled. Collections of these packages are progressed as separate international standards. This particular document specifies a set of packages which provide a logical view of the functional aspects of market management within an electricity market, and other functional aspects including environmental aspects that are closely related to electricity markets and that are shared between all applications. Other standards specify more specific parts of the model that are needed by only certain applications. Subclause 4.2 provides the current grouping of packages into standards documents.

This new edition of IEC 62325-301 contains support for demand-side communication within a wholesale market. The IEC 62325-301 additions include support for demand-side resource registration and enrollment of a market participating resource as well as support for deployment and performance evaluation of demand side resources. A new package has been included in this edition of IEC 62325-301 to support environmental (weather) data. This new package 'Environmental' provides support for weather conditions including forecasts, observations, measurements, phenomena, and alerts. Additional updates have been added within the 'MarketManagement' package to support the transparency regulations, flow based market coupling and new network codes to support the European Markets. These updates include new classes, attributes and associations within the IEC 62325 packages as well as updates to existing classes, attributes and associations to accurately represent the existing use cases.

## 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 61968-11, *Application integration at electric utilities – System interfaces for distribution management – Part 11: Common information model (CIM) extensions for distribution*

IEC TS 61970-2:2004, *Energy management system application program interface (EMS-API) – Part 2: Glossary*

IEC 61970-301, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM) base*

IEC 61970-302, *Energy management system application program interface (EMS-API) – Part 302: Common information model (CIM) for dynamics*

IEC 62325-450, *Framework for energy market communications – Part 450: Profile and context modelling rules*

Object management group: *UML 2.0 specification* – available at <<http://www.omg.org>>