IEC 61970-600-1

Edition 1.0 2021-06

INTERNATIONAL STANDARD

colour inside

Energy management system application program interface (EMS-API) – Part 600-1: Common Grid Model Exchange Standard (CGMES) – Structure and rules

IEC 61970-600-1:2021-06(en)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.200

ISBN 978-2-8322-9814-5

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ENERGY MANAGEMENT SYSTEM APPLICATION PROGRAM INTERFACE (EMS-API) –

Part 600-1: Common Grid Model Exchange Standard (CGMES) – Structure and rules

FOREWORD

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International Standard IEC 61970-600-1 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This first edition cancels and replaces IEC TS 61970-600-1 published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC TS 61970-600-1:2017:

- Terms and definitions were updated.
- The "Type" column in all tables was deleted to increase readability of the document as all the rules are considered required, hence categorisation is not necessary.
- Requirement HGEN4 was added to define additional rules to the file header compared to IEC 61970-552:2016.

- Annex B on “Summary of specific rules for naming conventions” is deleted as the information was either integrated in the UML or considered outdated.
- Annex D referring to the PST modelling is deleted as it will be fully integrated in IEC 61970-301:2020+AMD1[1].
- Annex E “Implementation guide” is deleted as all rules and implementation guidance is or will be integrated in either Clause 5 of this document or IEC 61970-301:2020 (and its future Amendment 1) or IEC 61970-452 or IEC 61970-456 as referenced by this document. Note that former Subclause E.11.2 on ConformLoadGroup and NonConformLoadGroup was implemented differently due to another issue, please refer to IEC 61970-600-2:2020.
- Rules GENC17, GENC18, GENC19, EQ__4, EQ__5, SV__4, BPPL12, BPPL13, MVAL5, EXCH9, TP__4 and MARP12 were added.
- Rules GENC3, GENC6, PROF2, PROF4, PROF5, PROF8, PROF9, EXCH5, EXCH6, EXCH7, MAS_4, MAS_6, MAS_9, MAS_10, MAS_11, MAS_13, EQ__1, HREF2, HREF3, HREF5, MVAL3, TPBD1, TPBD2, BPPL10, NAMC12 and NAMC13 are deleted as they are considered not relevant due to other changes.
- The following rules were modified: GENC1, GENC2, GENC4, GENC5, GENC7, GENC8, GENC9, GENC10, GENC16, EQBD2, BPPL11, EXCH2, EXCH3, EXCH8, FBOD3, FBOD5, PROF10, PROF11, MAS_1, MAS_8, HGEN3, HREF1,EEXT1, EQ__2, TP__1, TP__2, TP__3, MARP10, MARP11, NAMC1, NAMC4, NAMC11, NAMC14, BPPL1, BPPL2 and BPPL3.
- Explicit equipment boundary profile definition (EQBD) has been deprecated (refer to Subclause 4.6.5 of IEC 61970-301:2020 and future Amendment 1 for details on deprecations) in this edition in favour of using its full profile counterpart (EQ) for exchange of boundary datasets. The topology boundary profile (TPBD) is not included in the CGMES as TP is considered output and therefore it is no need to exchange Topology information part of the boundary model authority set.
- Annex F has been deleted.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
57/2366/FDIS	57/2382/RVD

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 International Standard is English.

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/standardsdev/publications.

A list of all parts in the IEC 61970 series, published under the general title *Energy management system application program interface (EMS-API)*, can be found on the IEC website.

[1] An amendment to IEC 61970-301:2020 is currently under consideration.

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

The purpose of this document is to define the Common Grid Model Exchange Standard (CGMES) based on Common Information Model (CIM) standards defined in IEC 61970-series, IEC 61968-series and IEC 62325-series and to address requirements defined by the European legislation. However, the document is not limited to the European legislation requirements and business processes, it is created to support data exchange between applications that support power system model management and analysis. The data exchange can be between internal applications or between applications at System Operators (SO) and Reginal Coordination Centre (RCC). This covers DSO-DSO, DSO-TSO, TSO-TSO, TSO-RCC/ISO/RTO and RCC-RCC interfaces, but not limited to these.

The CGMES is created to address the information exchange requirements provided in Common Grid Model methodologies (CGMm) in accordance with the legal requirements stated in various European network codes guidelines. The CGMES applies to applications dealing with power system data management, as well as applications supporting the following analyses:

- power flow and contingency analyses,
- short circuit calculations,
- market information and transparency,
- capacity calculation for capacity allocation and congestion management, and
- dynamic security assessment.

The conformity of applications used for system operation and system development data exchanges with the CGMES is crucial for the needed interoperability of these applications. This document provides the grouping of all principle requirements for the CGMES Conformity Assessment Framework and the guiding principles for assessing applications' CGMES conformity. The description of the CGMES Conformity Assessment Process is currently not part of the IEC 61970-600-series, but it is planned to be included as an international standard in order to validate that the CGMES is correctly implemented by suppliers of the applications used by system operators (ISO/TSO/DSO etc) and for Regional Coordination Centres (RCCs).