

**Energy management system application program
interface (EMS-API) - Part 403: Generic data access**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 61970-403:2008 sisaldab Euroopa standardi EN 61970-403:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 20.10.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 29.08.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 61970-403:2008 consists of the English text of the European standard EN 61970-403:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 20.10.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 29.08.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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**Energy management system application program interface (EMS-API) -
Part 403: Generic data access
(IEC 61970-403:2008)**

Interface de programmation d'application
pour systèmes de gestion d'énergie
(EMS-API) -
Partie 403: Accès
aux données génériques
(CEI 61970-403:2008)

Schnittstelle für Anwendungsprogramme
für Netzführungssysteme (EMS-API) -
Teil 403: Allgemeiner Datenzugriff
(IEC 61970-403:2008)

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 57/929/FDIS, future edition 1 of IEC 61970-403, prepared by IEC TC 57, Power systems management and associated information exchange, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61970-403 on 2008-07-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
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- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-07-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61970-403:2008 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 61968-1	NOTE Harmonized as EN 61968-1:2004 (not modified).
IEC 61968-3	NOTE Harmonized as EN 61968-3:2004 (not modified).
IEC 61970-301	NOTE Harmonized as EN 61970-301:2004 (not modified).
IEC 61970-404	NOTE Harmonized as EN 61970-404:2007 (not modified).
IEC 61970-405	NOTE Harmonized as EN 61970-405:2007 (not modified).
IEC 61970-407	NOTE Harmonized as EN 61970-407:2007 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61970-1	- ¹⁾	Energy management system application program interface (EMS-API) - Part 1: Guidelines and general requirements	EN 61970-1	2006 ²⁾
IEC/TS 61970-2	- ¹⁾	Energy management system application program interface (EMS-API) - Part 2: Glossary	CLC/TS 61970-2	2005 ²⁾
IEC/TS 61970-401	- ¹⁾	Energy management system application program interface (EMS-API) - Part 401: Component interface specification (CIS) framework	-	-
IEC 61970-402	- ¹⁾	Energy management system application program interface (EMS-API) - Part 402: Common services	EN 61970-402	2008 ²⁾
OMG DAF	2002	Utility Management System (UMS) Data Access Facility (DAF)	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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INTRODUCTION

This standard is one of the IEC 61970 series parts that define services for utility operational systems. This standard is based upon the work of the Electric Power Research Institute (EPRI) Control Center API (CCAPI) research project (RP-3654-1).

The IEC 61970-4xx series specifies a set of interfaces that a component (or application) should implement to be able to exchange information with other components and/or access publicly available data in a standard way. The 61970-4xx series component interfaces describe the specific event types and message contents that can be used by applications independent of any particular component technology. The implementation of these messages using a particular component technology is described in the 61970-5xx series of documents. Thus, IEC 61970-4xx documents describe a Platform Independent Model (PIM), while IEC 61970-5xx documents describe a Platform Specific Model (PSM).

IEC 61970-403 Generic Data Access (GDA) defines services that are needed to access public entity objects for the power system domain that are defined in the IEC 61970-3xx series: Common Information Model (CIM). GDA permits a client to access data maintained by another component (either an application or database) or system without any knowledge of the logical schema used for internal storage of the data. Knowledge of the existence of the common model is sufficient.

This request and reply oriented service is intended for synchronous, non-real time access of complex data structures as opposed to high-speed data access of SCADA data, for example, which is provided by IEC 61970-404, High Speed Data Access. An example where the GDA would be used is for bulk data access of a persistent store to initialise an analysis application with the current state of a power system network, and then storage of the results with notification.

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

Part 403: Generic data access

1 Scope

This International Standard provides a generic request/reply-oriented data access mechanism for applications from independent suppliers to access CIM data in combination with IEC 61970-402: Common Services. An application is expected to use the Generic Data Access (GDA) service as part of an initialisation process or an occasional information synchronization step. GDA is generic in that it can be used by an application to access any CIM data. GDA is also generic in that it also provides a back end storage mechanism independent query capability that can be used to facilitate the creation of CIM data warehouses.

This specification provides a simple, concise service that meets the functionality requirements of current and future applications while:

- avoiding unnecessary complexity;
- not requiring any specific database technology for implementation.

This service is designed to support interaction where the application or system requesting information is developed, supplied, maintained, or operated by a separate agency from the application supplying the data. Furthermore, the update portion of this service assumes that it is undesirable for one system to directly write into another¹⁾. To support these objectives, the GDA capabilities are divided into three categories:

- a) read access;
- b) update access;
- c) change notification events.

It should be noted that the update portion of this service does not support unconditional access to critical real-time data. Rather, the update portion allows a requesting application to ask for data to be changed in a service provider, but the service provider is under no obligation to carry out that change at any particular time. Furthermore, a positive response from the update service does not indicate that the update has occurred, but only that the service provider has successfully received the request and that the request is syntactically and semantically correct.

GDA could be classified as an Enterprise Information Integration (EII) technology adapter specialized to the power industry via the assumed use of the CIM. There are a number of EII products currently available on the market, but there is no accepted cross-platform standard for writing connectors for these products and overall these products do not take full advantage of a common semantic model such as the CIM. In recommending GDA, WG 13 is recommending a standard EII connector model in the form of a simpler, less expensive, and more specialized interface.

¹⁾ For more information on how 61970 excludes direct control of one application by another, see IEC 61970-402 Annex C: The IEC 61970 services and mapping IEC 61968 verbs.

Though the target of this IEC standard includes the utility control center technical domain, generic data access encompasses a general set of concepts that can be applied to many types of systems. Examples of these systems include:

- Energy and distribution management systems
- Work and asset management systems
- Geographic information systems
- Outage management systems
- Other types of technically oriented operational business systems.

In recognition that the integration between applications in two or more of these systems is often necessary, the intent of this specification is to address general GDA requirements to the extent that they are common to different types of systems while effectively addressing utility operation application specific needs.

2 Normative references

The following referenced documents are indispensable for the application 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 61970-1, *Energy management system application program interface (EMS-API) – Part 1: Guidelines and general requirements*

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

IEC 61970-401, *Energy management system application program interface (EMS-API) – Part 401: Component interface specification (CIS) framework*

IEC 61970-402, *Energy management system application program interface (EMS-API) – Part 402: Component interface specification (CIS) – Common services*

OMG, Utility Management System Data Access Facility, document formal/2002-11-08

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61970-2 apply.

NOTE Refer to International Electrotechnical Vocabulary, IEC 60050, for general glossary definitions.

4 Background

This part of IEC 61970 specifies Component Interface Specifications (CIS) for Energy Management Systems Application Program Interfaces (EMS-API). It specifies the interfaces that a component (or application) shall implement to be able to exchange information with other components (or applications) and/or to access publicly available data in a standard way (see IEC 61970-1 for an overview of these standards). The goal of the creation of this document is to improve the interoperability of utility operational applications and systems. This specification provides a mechanism for applications from independent suppliers to access 61970 Common Information Model (CIM) data using a common service for the purpose of supplementary processing, storage, or display.