

# SLOVENSKI STANDARD

## SIST EN 61970-404:2008

01-januar-2008

---

**Aplikacijski programski vmesnik za sistem upravljanja z energijo (EMS-API) - 404.  
del: Specifikacija vmesnika komponent (CIS) - Visokohitrostni podatkovni dostop  
(IEC 61970-404:2007)**

Energy management system application program interface (EMS-API) -- Part 404: High Speed Data Access (HSDA)

Schnittstelle für Anwendungsprogramme für Energieremanagementsysteme (EMS-API) -- Teil 404: Hochgeschwindigkeitsdatenzugang (HSDA)

Interface de programmation d'application pour système de gestion d'énergie (EMS-API) - Partie 404: Accès aux données haute vitesse (HSDA)

SIST EN 61970-404:2008

<https://standards.iteh.ai/catalog/standards/sist-en-61970-404-2008-ea3d-41f0-984cb4a1c29f6dff>

**Ta slovenski standard je istoveten z: EN 61970-404:2007**

---

**ICS:**

29.240.30	Krmilna oprema za elektroenergetske sisteme	Control equipment for electric power systems
35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment

**SIST EN 61970-404:2008**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61970-404:2008

<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

## EN 61970-404

September 2007

ICS 33.200

English version

**Energy management system application program interface (EMS-API) -  
Part 404: High Speed Data Access (HSDA)  
(IEC 61970-404:2007)**

Interface de programmation d'application  
pour système de gestion d'énergie  
(EMS-API) -

Partie 404: Accès aux données  
haute vitesse (HSDA)  
(CEI 61970-404:2007)

Schnittstelle für Anwendungsprogramme  
für Energiemanagementsysteme  
(EMS-API) -  
Teil 404: Hochgeschwindigkeitsdatenzugang  
(HSDA)  
(IEC 61970-404:2007)

**iTeh STANDARD PREVIEW  
(standards.iteh.ai)**

This European Standard was approved by CENELEC on 2007-09-01. 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.

<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c>

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

**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 57/887/FDIS, future edition 1 of IEC 61970-404, 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 61970-404 on 2007-09-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2008-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2010-09-01

Annex ZA has been added by CENELEC.

---

## Endorsement notice

The text of the International Standard IEC 61970-404:2007 was approved by CENELEC as a European Standard without any modification.

---

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61970-404:2008  
<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008>

## 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	– <sup>1)</sup>	Energy management system application program interface (EMS-API) - Part 1: Guidelines and general requirements	EN 61970-1	2006 <sup>2)</sup>
IEC/TS 61970-2	– <sup>1)</sup>	Energy management system application program interface (EMS-API) - Part 2: Glossary	CLC/TS 61970-2	2005 <sup>2)</sup>
IEC 61970-301	2003	Energy management system application program interface (EMS-API) - Part 301: Common Information Model (CIM) Base	EN 61970-301	2004
IEC/TS 61970-401	– <sup>1)</sup>	Energy management system application program interface (EMS-API) - Part 401: Component Interface specification (CIS) framework	–	–
		<small><a href="https://standards.iteh.ai/catalog/standards/sist-en-61970-404-2008-b4a1c2916df7/sist-en-61970-404-2008">https://standards.iteh.ai/catalog/standards/sist-en-61970-404-2008-b4a1c2916df7/sist-en-61970-404-2008</a></small>		
IEC 61970-402	– <sup>3)</sup>	Energy management system application program interface (EMS-API) - Part 402: Component Interface Specification (CIS) - Common services	–	–
OMG DAIS DA	2005	Data Acquisition from Industrial Systems section Data Access (DAIS DA)	–	–
OMG DAF	2005	Utility Management System (UMS) Data Access Facility (DAF)	–	–
OPC DA	2000	OPC Data Access Custom Interface Specification	–	–

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

<sup>3)</sup> At draft stage.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61970-404:2008

<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008>



# INTERNATIONAL STANDARD

---

Energy management system application program interface (EMS-API) –  
Part 404: High Speed Data Access (HSDA)  
([standards.iteh.ai](https://standards.iteh.ai))

SIST EN 61970-404:2008  
<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

S

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	7
3 Terms, definitions and identification conventions .....	7
3.1 Terms and definitions .....	7
3.2 Conventions .....	7
4 CIS Specification .....	7
4.1 Background (informative) .....	7
4.2 SCADA use case (informative) .....	8
4.3 Data model (normative) .....	9
4.4 Messages (normative) .....	12
4.5 Interface (normative) .....	12
4.5.1 Objects and interfaces .....	12
4.5.2 Server and session interfaces.....	15
4.5.3 Browse interfaces .....	16
4.5.4 Group management interfaces.....	16
4.5.5 IO interfaces.....	17
4.5.6 Client interfaces .....	17
4.6 Mapping of HSDA (normative) .....	17
Annex A (informative) Details on SCADA use case.....	20
SIST EN 61970-404:2008 <a href="https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c2916d1f/sist-en-61970-404-2008">https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c2916d1f/sist-en-61970-404-2008</a>	
Figure 1 – Control system structure .....	8
Figure 2 – Data subscription .....	9
Figure 3 – DAIS Data Access Data Model .....	10
Figure 4 – Example HSDA Node and Item structure .....	12
Figure 5 – HSDA objects and interfaces.....	13
Figure 6 – Typical interaction between the HSDA objects .....	15
Figure A.1 – Example use cases .....	20
Figure A.2 – Example on/off command object .....	21
Figure A.3 – Command sequence .....	21
Table 1 – HSDA to IEC 61970-301 mapping .....	18

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## Part 404: High Speed Data Access (HSDA)

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61970-404 has been prepared by IEC Technical Committee 57: Power systems management and associated information exchange.

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

FDIS	Report on voting
57/887/FDIS	57/906/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.

A list of all parts of the IEC 61970 series, under the general title *Energy Management System Application Program Interface (EMS-API)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

A bilingual version of this publication may be issued at a later date.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 61970-404:2008](https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008)  
<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008>

## INTRODUCTION

This part of IEC 61970 is part of the IEC 61970 series that defines Application Program Interfaces (APIs) for an Energy Management System (EMS). The IEC 61970-4XX and IEC 61970-5XX series documents comprise Component Interface Specifications (CISs). The IEC 61970-4XX series CIS are specified as Platform Independent Models (PIMs), which means they are independent of the underlying technology used to implement them. PIM specifications are also referred to as Level 1 specifications. The IEC 61970-5XX series CIS, on the other hand, are specified as Platform Specific Models (PSMs). PSM specifications are also referred to as Level 2 specifications.

IEC 61970-4XX CISs specify the functional requirements for interfaces that a component (or application) should implement to exchange information with other components (or applications) and/or to access publicly available data in a standard way. The component interfaces describe the specific event types and message contents that can be used by applications for this purpose.

IEC 61970-404 specifies an interface for the efficient transfer of data in a distributed environment. Small amounts of data are transferred with short delay but also large amounts of data are transferred in short time but with possibly longer delay. This is a typical requirement for a SCADA system that acts as a real time data provider to other sub-systems. Other systems than SCADA may also benefit from the characteristics of HSDA. When short delay times as well as bulk data transfer is required, HSDA is a good fit.

These component interface specifications refer to entity objects for the power system domain that is defined in the IEC 61970-3XX series, including IEC 61970-301.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 61970-404:2008](#)

<https://standards.iteh.ai/catalog/standards/sist/ab917080-ea3d-41f0-984c-b4a1c29f6dff/sist-en-61970-404-2008>