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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 407: Time Series Data Access (TSDA)

FOREWORD

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International Standard IEC 61970-407 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
57/889/FDIS	57/908/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- withdrawn;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.

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 61970-407 specifies an interface for the efficient transfer of time series 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. Replay of time series data is also supported. 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 TSDA. When short delay times as well as bulk data transfer is required TSDA 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.

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

Part 407: Time Series Data Access (TSDA)

1 Scope

The IEC 61970-407 Time Series Data Access (TSDA) specification specifies a generalized interface for efficient exchange of data. The specification takes into account the latencies caused by a Local Area Network (LAN) providing efficient data exchange also over Local Area Networks.

IEC 61970-407 is derived from the Object Management Group (OMG) Historical Data Access from Industrial Systems (HDAIS) specification. OMG HDAIS relies on the OMG Data Access Facility (DAF) and OPC Historical Data Access (HDA) specifications. OMG HDAIS is a Platform Specific Model (PSM) with CORBA as the platform and OPC HDA is a PSM with Microsoft COM as the platform. The IEC 61970-407 specification describes the functionality of these PSMs in a technology independent way (i.e., as a Platform Independent Model (PIM)). Hence, it explains the functionality to a level that can be used to create additional PSMs or be an introduction to existing PSMs, i.e. HDAIS and OPC HDA. Implementers wanting an introduction to OMG HDAIS and OPC HDA should read these documents.

The TSDA interface is intended to interoperate with other IEC 61970 based interfaces. Hence, it is possible to use information retrieved from other interface to access the same information using this interface, for example:

- object identifiers,
- attribute names or identifiers,
- class names or identifiers.

Subclause 4.6 provides a generic mapping for the CIM classes and attributes.

The way data is organized in a server implementing the TSDA interface can be seen by using the browse interfaces for data and meta data. It is also possible to use the data access interface directly without using the browse interfaces if the client has an *a priori* knowledge of object, class and attribute identifiers. Object identifiers may be retrieved using data from other interfaces, for example a CIMXML file or the IEC 61970-404 interface. Information on what classes and attributes are available will be described in IEC 61970-45X documents, for example historical SCADA data, historical State Estimator results etc.

IEC 61970-1 provides the EMS-API reference model upon which this standard is based. In that reference model, the terminology used in this part of IEC 61970 is introduced and the role of the CIS is explained.

IEC 61970-401 provides an overview and framework for the CIS (IEC 61970-4XX) standards.

The mapping of IEC 61970-407 to implementation specific technologies or PSMs is further described in a separate series of documents, i.e. the future IEC 61970-5XX. For actual implementations the future IEC 61970-5XX, OMG HDAIS, OMG DAF or OPC HDA are used.

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

IEC 61970-301:2005, *Energy management system application program interface (EMS-API) – Part 301: Common Information Model (CIM) base*

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*

Historical Data Access from Industrial Systems (HDAIS), OMG Adopted Specification Version 1.0, dtc/2003-02-01 November 2003 (Referred herein as 'OMG HDAIS')

Utility Management System (UMS) Data Access Facility (DAF), OMG Adopted Specification, Version 2.0, formal/02-11-08, November 2002 (Referred to herein as ‘OMG DAF’)

Data Acquisition from Industrial Systems (DAIS), OMG Adopted Specification Version 1.0, formal/2002-11-07 November 2002 (Referred herein as 'OMG DAIS')

OPC Historical Data Access Custom Interface Specification, Version 1.20, OPC Foundation, December 2003 (Referred to herein as ‘OPC HDA’)