SLOVENSKI
STANDARD

SIST EN 61850-6:2005

Komunikacijska omrežja in sistemi v postajah – 6. del: Jezik za opisovanje konfiguracije za komunikacijo v postajah z inteligentnimi elektronskimi napravami (IED) (IEC 61850-6:2004)

Communication networks and systems in substations - Part 6: Configuration description language for communication in electrical substations related to IEDs (IEC 61850-6:2004)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61850-6

May 2004

ICS 33.200

English version

Communication networks and systems in substations
Part 6: Configuration description language for communication
in electrical substations related to IEDs
(IEC 61850-6:2004)

Réseaux et systèmes de communication
dans les postes
Partie 6: Langage pour la description
de configuration pour la communication
dans les postes électriques,
entre les dispositifs électroniques
intelligents (IED)
(CEI 61850-6:2004)

Kommunikationsnetze und -systeme
in Stationen
Teil 6: Sprache für die Beschreibung
der Konfiguration für die Kommunikation
in Stationen mit intelligenten
elektronischen Geräten (IED)
(IEC 61850-6:2004)

This European Standard was approved by CENELEC on 2004-05-01. 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.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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

Ref. No. EN 61850-6:2004 E

Foreword

The text of document 57/693/FDIS, future edition 1 of IEC 61850-6, 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 61850-6 on 2004-05-01.

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) 2005-02-01

– latest date by which the national standards conflicting
  with the EN have to be withdrawn   (dow) 2007-05-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 61850-6:2004 was approved by CENELEC as a European Standard without any modification.

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   Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 61346-1	1996	Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations Part 1: Basic rules	EN 61346-1	1996
IEC 61346-2	2000	Part 2: Classification of objects and codes for classes	EN 61346-2	2000
IEC/TS 61850-2	- [1]	Communication networks and systems in substations Part 2: Glossary	-	-
IEC 61850-5	- [1]	Part 5: Communication requirements for functions and device models	EN 61850-5	2003 [2]
IEC 61850-7-1	- [1]	Part 7-1: Basic communication structure for substation and feeder equipment - Principles and models	EN 61850-7-1	2003 [2]
IEC 61850-7-2	- [1]	Part 7-2: Basic communication structure for substation and feeder equipment - Abstract communication service interface (ACSI)	EN 61850-7-2	2003 [2]
IEC 61850-7-3	- [1]	Part 7-3: Basic communication structure for substation and feeder equipment - Common data classes	EN 61850-7-3	2003 [2]
IEC 61850-7-4	- [1]	Part 7-4: Basic communication structure for substation and feeder equipment - Compatible logical node classes and data classes	EN 61850-7-4	2003 [2]
IEC 61850-8-1	- [1]	Part 8-1: Specific Communication Service Mapping (SCSM) - Mapping to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3	EN 61850-8-1	2004 [2]

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[1] Undated reference.

[2] Valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IEC 61850-9-1	-[1]	Part 9-1: Specific Communication Service Mapping (SCSM) - Sampled values over serial unidirectional multidrop point to point link	EN 61850-9-1	2003[2]
IEC 61850-9-2	-[1]	Part 9-2: Specific Communication Service Mapping (SCSM) - Sampled values over ISO/IEC 8802-3	EN 61850-9-2	2004[2]
ISO/IEC 8859-1	-[1]	Information technology - 8-bit single-byte coded graphic character sets Part 1: Latin alphabet No.1	-	-
XML 1.0	-[1]	Extensible Markup Language (XML) 1.0, W3C	-	-
XML W3C	-[1]	Namespaces in XML, W3C	-	-
XML-0	-[1]	XML Schema - Part 0: Primer, W3C	-	-
XML-1	-[1]	Part 1: Structures, W3C	-	-
XML-2	-[1]	Part 2: Datatypes, W3C	-	-
RFC 1952	-[1]	GZIP file format specification version 4.3	-	-
RFC 2045	-[1]	Multipurpose Internet Mail Extensions (MIME) - Part 1: Format of Internet Message Bodies	-	-

INTERNATIONAL STANDARD

IEC
61850-6

First edition
2004-03

Communication networks and systems
in substations –

Part 6:
Configuration description language
for communication in electrical
substations related to IEDs

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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COMMUNICATION NETWORKS AND SYSTEMS IN SUBSTATIONS –

Part 6: Configuration description language for communication in electrical substations related to IEDs

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.

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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 61850-6 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
57/693/FDIS	57/713/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.

IEC 61850 consists of the following parts, under the general title *Communication networks and systems in substations:*

Part 1:   Introduction and overview

Part 2:   Glossary

Part 3:   General requirements

Part 4:   System and project management

Part 5:   Communication requirements for functions and device models

Part 6:   Configuration description language for communication in electrical substations related to IEDs

Part 7-1:   Basic communication structure for substation and feeder equipment – Principles and models

Part 7-2:   Basic communication structure for substation and feeder equipment – Abstract communication service interface (ACSI)

Part 7-3:   Basic communication structure for substation and feeder equipment – Common data classes

Part 7-4:   Basic communication structure for substation and feeder equipment – Compatible logical node classes and data classes

Part 8-1:   Specific Communication Service Mapping (SCSM) – Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3

Part 9-1:   Specific Communication Service Mapping (SCSM) – Sampled values over serial unidirectional multidrop point to point link

Part 9-2:   Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3

Part 10:   Conformance testing[1]

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

• reconfirmed;
• withdrawn;
• replaced by a revised edition, or
• amended.

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

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[1] Under consideration.

INTRODUCTION

This part of IEC 61850 specifies a description language for the configuration of electrical substation IEDs. This language is called Substation Configuration description Language (SCL). It is used to describe IED configurations and communication systems according to IEC 61850-5 and IEC 61850-7-x. It allows the formal description of the relations between the substation automation system and the substation (switchyard). At the application level, the switchyard topology itself and the relation of the switchyard structure to the SAS functions (logical nodes) configured on the IEDs can be described.

SCL allows the description of an IED configuration to be passed to a communication and application system engineering tool, and to pass back the whole system configuration description to the IED configuration tool in a compatible way. Its main purpose is to allow the interoperable exchange of communication system configuration data between an IED configuration tool and a system configuration tool from different manufacturers.

IEC 61850-8-x and IEC 61850-9-x, which concern the mapping of IEC 61850-7-x to specific communication stacks, may extend these definitions according to their need with additional parts, or just by restrictions on the way the values of objects have to be used.

COMMUNICATION NETWORKS AND SYSTEMS IN SUBSTATIONS –

Part 6: Configuration description language for communication in electrical substations related to IEDs

1 Scope

This part of the IEC 61850 series specifies a file format for describing communication related IED (Intelligent Electronic Device) configurations and IED parameters, communication system configurations, switchyard (function) structures, and the relations between them. The main purpose of this format is to exchange IED capability descriptions, and SA system descriptions between IED engineering tools and the system engineering tool(s) of different manufacturers in a compatible way.

The defined language is called Substation Configuration description Language (SCL). The IED and communication system model in SCL is according to IEC 61850-5 and IEC 61850-7-x. SCSM specific extensions or usage rules may be required in the appropriate parts.

The configuration language is based on the Extensible Markup Language (XML) version 1.0.

This standard does not specify individual implementations or products using the language, nor does it constrain the implementation of entities and interfaces within a computer system. This part of the standard does not specify the download format of configuration data to an IED, although it could be used for part of the configuration data.

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 61346-1:1996, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 1: Basic rules*

IEC 61346-2:2000, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 2: Classification of objects and codes for classes*

IEC 61850-2, *Communication networks and systems in substations – Part 2: Glossary*

IEC 61850-5, *Communication networks and systems in substations – Part 5: Communication requirements for functions and device models*

IEC 61850-7-1, *Communication networks and systems in substations – Part 7-1: Basic communication structure for substation and feeder equipment – Principles and models*

IEC 61850-7-2, *Communication networks and systems in substations – Part 7-2: Basic communication structure for substation and feeder equipment – Abstract communication service interface (ACSI)*

IEC 61850-7-3, *Communication networks and systems in substations – Part 7-3: Basic communication structure for substation and feeder equipment – Common data classes*

IEC 61850-7-4, *Communication networks and systems in substations – Part 7-4: Basic communication structure for substation and feeder equipment – Compatible logical node classes and data classes*

IEC 61850-8-1, *Communication networks and systems in substations – Part 8-1: Specific Communication Service Mapping (SCSM) – Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3*

IEC 61850-9-1, *Communication networks and systems in substations – Part 9-1: Specific Communication Service Mapping (SCSM) – Sampled values over serial unidirectional multidrop point to point link*

IEC 61850-9-2, *Communication networks and systems in substations – Part 9-2: Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3*

ISO/IEC 8859-1, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

Extensible Markup Language (XML) 1.0, W3C, available at <http://www.w3.org/TR/2000/REC-xml-20001006>

Namespaces in XML, W3C, available at <http://www.w3.org/TR/1999/REC-xml-names-19990114>

XML Schema Part 0: Primer, W3C, available at <http://www.w3.org/TR/2001/REC-xmlschema-0-20010502>

XML Schema Part 1: Structures, W3C, available at <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502>

XML Schema Part 2: Datatypes, W3C, available at <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>

RFC 1952, *GZIP file format specification version 4.3*, RFC, available at <http://www.ietf.org/rfc/rfc1952.txt>

RFC 2045, Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies, RFC, available at <http://www.ietf.org/rfc/rfc2045.txt>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61850-2 apply.

4 Abbreviations

In general, the glossary and abbreviations defined in IEC 61850-2 apply. The following abbreviations are either special for this part of the standard, or particularly useful for understanding this part and are repeated here for convenience.

BDA	Basic Data Attribute, that is not structured
CIM	Common Information Model for energy management applications
DAI	Instantiated Data Attribute
DO	DATA in IEC 61850-7-2, data object type or instance, depending on the context
DOI	Instantiated Data Object (DATA)
DTD	Document Type Definition for an XML document
ID	Identifier
IED	Intelligent Electronic Device
LDInst	Instantiated Logical Device