



Irish Standard
I.S. EN 61850-6:2010

Communication networks and systems for power utility automation -- Part 6: Configuration description language for communication in electrical substations related to IEDs (IEC 61850 -6:2009 (EQV))

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NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
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English version

**Communication networks and systems for power utility automation -
Part 6: Configuration description language for communication in
electrical substations related to IEDs
(IEC 61850-6:2009)**

Systèmes et réseaux de communication
pour l'automatisation des services
de distribution d'énergie -
Partie 6: Langage pour la description
de configuration pour la communication
dans les postes électriques,
entre les dispositifs électroniques
intelligents (IED)
(CEI 61850-6:2009)

Kommunikationsnetze und -systeme
für die Automatisierung in der elektrischen
Energieversorgung -
Teil 6: Sprache für die Beschreibung
der Konfiguration für die Kommunikation
in Stationen mit intelligenten
elektronischen Geräten (IED)
(IEC 61850-6:2009)

This European Standard was approved by CENELEC on 2010-02-01. 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, Bulgaria, Croatia, 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: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 57/1025/FDIS, future edition 2 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 2010-02-01.

This European Standard supersedes EN 61850-6:2004.

The main changes with respect to EN 61850-6:2004 are as follows:

- functional extensions added based on changes in other Parts, especially Parts 7-2 and 7-3;
- functional extensions concerning the engineering process, especially for configuration data exchange between system configuration tools, added;
- provision of clarifications and corrections. Issues that require clarification are published in a database available at www.tissue.iec61850.com. Arising incompatibilities are listed in 8.2.3.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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) 2010-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-02-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61850-6:2009 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 61131-3	NOTE Harmonized as EN 61131-3.
IEC 81346-2	NOTE Harmonized as EN 81346-2.

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/TS 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	EN 61850-5	-
IEC 61850-7-1	-	Communication networks and systems in substations - Part 7-1: Basic communication structure for substation and feeder equipment - Principles and models	EN 61850-7-1	-
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)	EN 61850-7-2	-
IEC 61850-7-3	-	Communication networks and systems in substations - Part 7-3: Basic communication structure for substation and feeder equipment - Common data classes	EN 61850-7-3	-
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	EN 61850-7-4	-
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	EN 61850-8-1	-
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	EN 61850-9-2	-

I.S. EN 61850-6:2010

EN 61850-6:2010

- 4 -

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 81346-1	-	Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules	EN 81346-1	-
ISO/IEC 8859-1	-	Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No.1	-	-
RFC 1952	-	GZIP file format specification version 4.3	-	-
RFC 2045	-	Multipurpose Internet Mail Extensions (MIME) - Part 1: Format of Internet Message Bodies	-	-
-	-	Extensible Markup Language (XML) 1.0	-	-
-	-	XML Schema Part 1: Structures	-	-
-	-	XML Schema Part 2: Datatypes	-	-

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Abbreviations.....	10
5 Intended engineering process with SCL.....	11
5.1 General	11
5.2 Scope of SCL	11
5.3 Use of SCL in the Engineering process	12
5.4 IED modifications	15
5.5 Data exchange between projects	16
6 The SCL object model	18
6.1 General	18
6.2 The substation model	22
6.3 The product (IED) model.....	23
6.4 The communication system model	24
6.5 Modelling of redundancy	25
6.6 Data flow modelling	25
7 SCL description file types.....	26
8 SCL language	28
8.1 Specification method	28
8.2 Language versions and compatibility.....	30
8.3 SCL language extensions	33
8.4 General structure.....	36
8.5 Object and signal designation	37
9 The SCL syntax elements	41
9.1 Header	41
9.2 Substation description	43
9.3 IED description	56
9.4 Communication system description	87
9.5 Data type templates.....	94
10 Tool and project engineering rights	106
10.1 IED configurator	106
10.2 System configurator.....	107
10.3 Right transfer between projects.....	107
Annex A (normative) SCL syntax: XML schema definition	109
Annex B (informative) SCL enumerations according to IEC 61850-7-3 and IEC 61850-7-4 ..	147
Annex C (informative) Syntax extension examples.....	153
Annex D (informative) Example	166
Annex E (informative) SCL syntax: General XML schema definition	180
Annex F (informative) XML schema definition of SCL variants	204
Annex G (normative) SCL Implementation Conformance Statement (SICS).....	210
Bibliography	215

Figure 1 – Reference model for information flow in the configuration process.....	13
Figure 2 – IED type description to System Configurator	14
Figure 3 – IED instance description to System Configurator	15
Figure 4 – Modification process	16
Figure 5 – Engineering right handling in projects.....	18
Figure 6 – SCL object model	20
Figure 7 – SA System Configuration example	22
Figure 8 – ICD files describing implementable IED types of a general IED class.....	28
Figure 9 – UML diagram overview of SCL schema	30
Figure 10 – Elements of the signal identification as defined in IEC 61850-7-2	38
Figure 11 – Elements of the signal name using product naming	38
Figure 12 – Possible elements of the signal name using functional naming	39
Figure 13 – Names within different structures of the object model	40
Figure 14 – UML diagram of Header section	41
Figure 15 – UML diagram of Substation section	44
Figure 16 – UML diagram for equipment type inheritance and relations	48
Figure 17 – Substation section example	55
Figure 18 – IED structure and access points.....	57
Figure 19 – UML description of IED-related schema part – Base	58
Figure 20 – UML description of IED-related schema part for Control blocks	59
Figure 21 – UML description of IED-related schema part – LN definition	60
Figure 22 – UML diagram overview of the Communication section	88
Figure 23 – UML overview of DataTypeTemplate section	95
Figure C.1 – Coordinate example	153
Figure C.2 – Schema overview.....	156
Figure D.1 – T1-1 Substation configuration.....	166
Figure D.2 – T1-1 Communication configuration	167
Figure D.3 – T1-1 Transformer bay.....	168
Table 1 – The files composing the XML schema definition for SCL.....	29
Table 2 – Attributes of the Private element	35
Table 3 – Attributes of the Header element.....	42
Table 4 – Attributes of the History item (Hitem) element	43
Table 5 – Primary apparatus device type codes	50
Table 6 – Attributes of the Terminal element.....	51
Table 7 – Attributes of the SubEquipment element.....	52
Table 8 – Attributes of the LNode element	53
Table 9 – General Equipment codes from IEC 61850-7-4.....	54
Table 10 – Attributes of the IED element	61
Table 11 – List of service capabilities and setting elements and attributes	63
Table 12 – Attributes of the Access point element.....	66
Table 13 – Attributes of the IED server element.....	68
Table 14 – Attributes of the Authentication element	69

Table 15 – Attributes of the LDevice element.....	69
Table 16 – Attributes of the LN0 element.....	70
Table 17 – Attributes of the LN element.....	71
Table 18 – Attributes of the DOI element.....	72
Table 19 – Attributes of the DAI element	73
Table 20 – Attributes of the SDI element	73
Table 21 – Attributes of the DataSet element.....	74
Table 22 – Attributes of the FCDA element.....	75
Table 23 – Attributes of the report control block element.....	76
Table 24 – Attributes of the RptEnabled element	77
Table 25 – Attributes of the ClientLN element.....	78
Table 26 – Attributes of the log control block element	80
Table 27 – Attributes of the GSE control block element.....	81
Table 28 – Attributes of the IEDName element	81
Table 29 – Attributes of the sampled value control block element.....	83
Table 30 – Attributes of the Smv Options element	83
Table 31 – Deprecated Smv options	84
Table 32 – Attributes of the setting control block element	84
Table 33 – Attributes of the Input/ExtRef element	86
Table 34 – Attributes of the association element.....	87
Table 35 – Attributes of the Subnetwork element	89
Table 36 – Attributes of the ConnectedAP element	90
Table 37 – Attributes of the GSE element.....	91
Table 38 – Attributes of the SMV element.....	92
Table 39 – PhysConn P-Type definitions	93
Table 40 – Template definition elements	97
Table 41 – Attributes of the LNodeType element.....	97
Table 42 – Attributes of the DO element	98
Table 43 – Attributes of the DOType element.....	98
Table 44 – Attributes of the SDO element.....	99
Table 45 – Data type mapping.....	99
Table 46 – Attribute value kind (Valkind) meaning	100
Table 47 – Attributes of the DA element	101
Table 48 – Attributes of the BDA element	104
Table 49 – Attributes of the EnumType element.....	105
Table G.1 – IED configurator conformance statement.....	210
Table G.2 – System configurator conformance statement	212

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

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

FOREWORD

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International Standard IEC 61850-6 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition, published in 2004, and constitutes a technical revision.

The main changes with respect to the previous edition are as follows:

- functional extensions added based on changes in other Parts, especially Parts 7-2 and 7-3;
- functional extensions concerning the engineering process, especially for configuration data exchange between system configuration tools, added;
- provision of clarifications and corrections. Issues that require clarification are published in a database available at www.tissue.iec61850.com. Arising incompatibilities are listed in 8.2.3.

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

FDIS	Report on voting
57/1025/FDIS	57/1041/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.

A list of all the parts in the IEC 61850 series, under the general title *Communication networks and systems for power utility automation*, can be found on the IEC website. ¹⁾

This publication contains attached .xml and .xsd files. These files are intended to be used as a complement and do not form an integral part of this standard.

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 standard may be issued at a later date.

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.

¹⁾ It has been decided to amend the general title of the IEC 61850 series from *Communication networks and systems in substations* to *Communication networks and systems for power utility automation*. Henceforth, new editions within the IEC 61850 series will adopt this new general title.

INTRODUCTION

This part of IEC 61850 specifies a description language for the configuration of electrical substation IEDs. This language is called System 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 utility automation system and the process (substation, switch yard). At the application level, the switch yard topology itself and the relation of the switch yard structure to the SAS functions (logical nodes) configured on the IEDs can be described.

NOTE The process description, which is in this standard restricted to switch yards and general process functions, will be enhanced by appropriate add-ons for wind mills, hydro plants and distributed energy resources (DER).

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 61850-8-1 and IEC 61850-9-2, 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 simply by restrictions on the way the values of objects have to be used.

COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

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

1 Scope

This part of IEC 61850 specifies a file format for describing communication-related IED (Intelligent Electronic Device) configurations and IED parameters, communication system configurations, switch yard (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 System 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 (see XML references in Clause 2).

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 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*

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