



IEC 61850-6

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CONSOLIDATED VERSION

# INTERNATIONAL STANDARD



**Communication networks and systems for power utility automation –  
Part 6: Configuration description language for communication in power utility  
automation systems related to IEDs**

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## CONTENTS

FOREWORD.....	8
INTRODUCTION.....	12
1 Scope.....	13
1.1 General.....	13
1.2 Published versions of the standard and related namespace names.....	13
1.3 Identification of the namespace.....	13
1.4 Code Component distribution.....	14
2 Normative references.....	14
3 Terms and definitions.....	16
4 Abbreviations.....	17
5 Intended engineering process with SCL.....	18
5.1 General.....	18
5.2 Scope of SCL.....	18
5.3 Use of SCL in the engineering process.....	19
5.4 IED modifications.....	22
5.5 Data exchange between projects.....	23
6 The SCL object model.....	26
6.1 General.....	26
6.2 The process model.....	29
6.3 The product (IED) model.....	30
6.4 The communication system model.....	31
6.5 Modelling of redundancy.....	32
6.6 Data flow modelling.....	33
7 SCL description file types.....	33
8 SCL language.....	35
8.1 Specification method.....	35
8.2 Language versions and compatibility.....	38
8.2.1 MustUnderstand rules.....	39
8.2.2 SCL name space and versions.....	40
8.2.3 Incompatibilities to earlier versions.....	41
8.3 SCL language extensions.....	42
8.3.1 General.....	42
8.3.2 Data model extensions.....	42
8.3.3 Additional semantics to existing syntax elements.....	42
8.3.4 Data type constraints.....	42
8.3.5 XML name spaces.....	42
8.3.6 Private data.....	43
8.3.7 Another XML syntax.....	44
8.3.8 Summary: Standard conformance for extension handling.....	44
8.3.9 Extension example.....	44
8.4 General structure.....	45
8.5 Object and signal designation.....	46
8.5.1 General.....	46
8.5.2 Object designations in an object hierarchy.....	46
8.5.3 Signal identifications to be used in the communication system.....	47
8.5.4 Signal identifications usable by applications.....	50

8.5.5	Naming example.....	50
8.5.6	Universal Unique Identifier.....	51
9	The SCL syntax elements.....	52
9.1	Header.....	52
9.2	Process description .....	58
9.2.1	General .....	58
9.2.2	Voltage level.....	65
9.2.3	Bay level .....	67
9.2.4	Power equipment.....	68
9.2.5	SubEquipment level.....	78
9.2.6	Process function logical nodes .....	79
9.2.7	Non power equipment.....	81
9.2.8	Substation section example .....	83
9.3	IED description .....	86
9.3.1	General .....	86
9.3.2	The IED, Services and Access Point.....	90
9.3.3	The IED server .....	107
9.3.4	The logical device.....	109
9.3.5	LN0 and other Logical Nodes.....	110
9.3.6	Data object (DOI) definition .....	113
9.3.7	Data set definition.....	118
9.3.8	Report control block.....	120
9.3.9	Log control block.....	126
9.3.10	GSE control block.....	128
9.3.11	Sampled value control block.....	131
9.3.12	Setting control block .....	134
9.3.13	Binding to external signals.....	135
9.3.15	Binding to external controls.....	140
9.3.14	Associations .....	141
9.4	Communication system description .....	143
9.4.1	General .....	143
9.4.2	Subnetwork definition .....	144
9.4.3	Address definition .....	146
9.4.4	GSE address definition .....	147
9.4.5	SMV address definition.....	149
9.4.6	Physical connection parameters .....	149
9.4.7	Communication section example.....	151
9.5	Data type templates .....	152
9.5.1	General .....	152
9.5.2	LNodeType definitions .....	156
9.5.3	DO type definition .....	158
9.5.4	Data attribute (DA) definition .....	160
9.5.5	Data attribute structure type .....	167
9.5.6	Enumeration types.....	169
9.5.7	Data type template examples.....	171
10	Tool and project engineering rights.....	171
10.1	IED configurator.....	171
10.2	System configurator .....	172
10.3	Right transfer between projects.....	172

Annex A (normative) SCL syntax: XML schema definition .....	175
Annex B (informative) SCL enumerations according to IEC 61850-7-3 and IEC 61850-7-4 .....	176
Annex C (informative) Syntax extension examples – Extension syntax for drawing layout coordinates.....	177
Annex D (informative) Example.....	180
D.1 Example specification .....	180
D.1.1 General .....	180
D.1.2 Substation configuration .....	180
D.1.3 Communication system configuration.....	181
D.1.4 Transformer IED .....	181
D.2 Example SCL file contents .....	182
Annex E (informative) SCL syntax: General XML schema definition .....	183
E.1 General.....	183
E.2 Base types.....	183
E.3 Substation syntax .....	214
E.4 Data type templates .....	214
E.5 IED capabilities and structure .....	214
E.6 Communication subnetworks.....	240
E.7 Main SCL.....	240
Annex F (informative) XML schema definition of SCL variants.....	244
Annex G (normative) SCL Implementation Conformance Statement (SICS).....	255
Annex H (informative) ExtRef use cases .....	261
Annex I (normative) SCL – mixed version projects .....	267
I.1 General.....	267
I.2 General mixed version projects involving different edition ICTs / SCTs – General downgrading rules .....	271
I.2.1 New SCL attributes of elements defined in edition SCL to downgrade.....	271
I.2.2 New SCL elements introduced with edition SCL to downgrade.....	271
I.3 Mixed version projects involving Ed1, Ed2 ICTs / SCTs .....	272
I.3.1 Downgrading rules.....	272
I.3.2 Upgrading rules .....	279
I.4 Mixed version projects involving Ed2, Ed2.1 ICTs / SCTs.....	282
I.4.1 General .....	282
I.4.2 Downgrading rules.....	285
I.4.3 Upgrading rules .....	287
I.5 Mixed version projects involving Ed2.1, Ed2.2 ICTs / SCTs.....	288
I.5.1 General .....	288
I.5.2 Downgrading rules.....	289
Bibliography.....	291
Figure 1 – Reference model for information flow in the configuration process .....	20
Figure 2 – IED type description to System Configurator .....	21
Figure 3 – IED instance description to System Configurator.....	22
Figure 4 – Modification process .....	23
Figure 5 – Engineering right handling in projects .....	25
Figure 6 – SCL substation object model.....	27
Figure 7 – SA System Configuration example .....	29

Figure 8 – ICD files describing implementable IED types of a general IED class .....	35
Figure 9 – UML diagram overview of SCL schema .....	37
Figure 10 – Elements of the signal identification as defined in IEC 61850-7-2 .....	48
Figure 11 – Elements of the signal name using product naming .....	48
Figure 12 – Possible elements of the signal name using functional naming .....	49
Figure 13 – Names within different structures of the object model .....	50
Figure 14 – UML diagram of Header section .....	52
Figure 25 – SCL file references .....	56
Figure 26 – IED file references .....	56
Figure 15 – UML diagram of Substation section .....	60
Figure 24 – UML diagram of Process and Line elements .....	64
Figure 16 – UML diagrams for equipment type inheritance and relations .....	69
Figure 17 – Substation section example .....	83
Figure 18 – IED structure and access points .....	87
Figure 19 – UML description of IED-related schema part – Base .....	88
Figure 20 – UML description of IED-related schema part for Control blocks .....	89
Figure 21 – UML description of IED-related schema part – LN definition .....	90
Figure 22 – UML diagram overview of the Communication section .....	143
Figure 23 – UML overview of DataTypeTemplate section .....	153
Figure C.1 – Coordinate example .....	177
Figure D.1 – T1-1 Substation configuration .....	180
Figure D.2 – T1-1 Communication configuration .....	181
Figure D.3 – T1-1 Transformer bay .....	182
Figure I.1 – Edition 1-Edition 2 – Area of compatibility .....	267
Figure I.2 – Edition 1-Edition 2 Mixed engineering with different SCL versions .....	269
Figure I.3 – Edition 1-Edition 2 Mixed engineering with different SCL versions with one SCT managing data flow restriction .....	270
Figure I.4 – Edition 1-Edition 2 Mixed engineering with same SCL version – restricted to (Ed1∩Ed2)Ued2 .....	271
Figure I.5 – Workflow with SED 2007B4 import following mustUnderstand/mayIgnore rules .....	283
Figure I.6 – Workflow with ICT A imports SCD 2007B4 following the mustUnderstand rules .....	284
Figure I.7 – Workflow with SCT exports SCD 2007B following the downgrading rules .....	285
Table 53 – Attributes of the IEC 61850-6 XML namespace .....	14
Table 1 – The files composing the XML schema definition for SCL .....	37
Table 2 – Attributes of the Private element .....	44
Table 3 – Attributes of the Header element .....	54
Table 53 – Attributes of the tSciFileUUIDReference element .....	55
Table 4 – Attributes of the History item (Hitem) element .....	58
Table 5 – Primary apparatus device type codes .....	76
Table 6 – Attributes of the Terminal element .....	78
Table 7 – Attributes of the SubEquipment element .....	79

Table 8 – Attributes of the LNode element .....	80
Table 9 – General Equipment codes from IEC 61850-7-4 .....	82
Table 10 – Attributes of the IED element.....	92
Table 11 – List of service capabilities and setting elements and attributes .....	96
Table 12 – Attributes of the Access point element.....	103
Table 50 – Usage of Service element at IED level and Server / ServerAt level .....	104
Table 13 – Attributes of the IED server element .....	108
Table 14 – Attributes of the Authentication element .....	108
Table 15 – Attributes of the LDevice element.....	109
Table 16 – Attributes of the LN0 element .....	111
Table 17 – Attributes of the LN element .....	112
Table 18 – Attributes of the DOI element .....	114
Table 19 – Attributes of the DAI element.....	115
Table 20 – Attributes of the SDI element.....	117
Table 21 – Attributes of the DataSet element.....	118
Table 22 – Attributes of the FCDA element .....	119
Table 23 – Attributes of the report control block element.....	121
Table 24 – Attributes of the RptEnabled element .....	123
Table 25 – Attributes of the ClientLN element .....	125
Table 26 – Attributes of the log control block element .....	127
Table 27 – Attributes of the GSE control block element.....	129
Table 28 – Attributes of the IEDName element.....	130
Table 29 – Attributes of the sampled value control block element .....	132
Table 30 – Attributes of the Smv Options element.....	133
Table 31 – Deprecated Smv options .....	133
Table 32 – Attributes of the setting control block element .....	134
Table 33 – Attributes of the Input/ExtRef element .....	137
Table 51 – Usage of ExtRef attributes in different use cases .....	139
Table 52 – Attributes of the Output/ExtCtrl element .....	141
Table 34 – Attributes of the association element .....	142
Table 35 – Attributes of the Subnetwork element .....	145
Table 36 – Attributes of the ConnectedAP element .....	146
Table 37 – Attributes of the GSE element .....	148
Table 38 – Attributes of the SMV element .....	149
Table 39 – PhysConn P-Type definitions.....	150
Table 40 – Template definition elements .....	156
Table 41 – Attributes of the LNodeType element.....	157
Table 42 – Attributes of the DO element .....	158
Table 43 – Attributes of the DOType element.....	159
Table 44 – Attributes of the SDO element .....	160
Table 45 – Data type mapping .....	160
Table 46 – Attribute value kind (valKind) meaning.....	162
Table 47 – Attributes of the DA element.....	164



Table 48 – Attributes of the BDA element .....	169
Table 49 – Attributes of the EnumType element.....	170
Table 52 – Allowed SCT engineering actions .....	174
Table G.1 – IED configurator conformance statement .....	255
Table G.2 – System configurator conformance statement.....	257

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**COMMUNICATION NETWORKS AND SYSTEMS  
FOR POWER UTILITY AUTOMATION –****Part 6: Configuration description language for communication  
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**IEC 61850-6 edition 2.2 contains the second edition (2009-12) [documents 57/1025/FDIS and 57/1041/RVD], its amendment 1 (2018-06) [documents 57/1918/FDIS and 57/1940/RVD] and its amendment 2 (2024-11) [documents 57/2711/FDIS and 57/2733/RVD].**

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

This second amendment constitutes a technical revision.

The main changes with respect to IEC 61850-6:2009+AMD1:2018 are as follows:

- a) functional extensions concerning the engineering processes to improve files exchange followup, SCL elements identification and control configuration handling, added;
- b) provision of clarifications and corrections. Issues that require clarification are published in a database available at <https://iec61850.tissue-db.com/>. Arising incompatibilities are listed in 8.2.3.

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.

This IEC standard includes Code Components i.e. components that are intended to be directly processed by a computer. Such content is any text found between the markers <CODE BEGINS> and <CODE ENDS>, or otherwise is clearly labelled in this standard as a Code Component. In the current version of this document, such indication is made at the beginning of Annex A which identifies the list of XSD files and refers to the code component definition in Subclause 1.3.

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This consolidated edition brings two distinct sets of changes:

- 1) Resolved Interop Issues (covered by the table below) which have already followed the technical issues (Tissues) process as described in IEC 61850-1 and have reached the green "status".
- 2) Resolved Editorial Tissues which may have led to interoperability issues.

The resolutions of these issues which lead to these changes are described in greater detail in the Tissue database hosted at <https://iec61850.tissue-db.com/>.

The only new features compared to the previous IEC 61850-6:2009+AMD1:2018 are the introduction of the UUID to identify elements and files, the modelling of controls binding from a client perspective, and the definition of translated labels for elements which may be represented in any user interface. Apart from this, this consolidated edition strictly respects the scope of the original edition.

### Technical issues summary

N°, Subject, Clause and Paragraph are as they appear on the Tissue database hosted at <https://iec61850.tissue-db.com/> where all technical issues have been stored from the origin of IEC 61850.

"Subject" defines very briefly the topic under focus.

The Tissues which have been considered are:

N°	Subject	Clause	Paragraph
1590	RCB: Offline changes increment ConfRev by 10000?	9.3.8	Table 23
1647	SDO@count definition inconsistent	9.5.3	Table 44
1648	DA@count definition needs restriction	9.5.4.1	Table 47
1669	Incorrect example of header	9.1	1
1672	Allow connection Server and ServerAt to the same SCL.Subnetwork	9.3.2	Below Table 50
1674	Harmonization with 62351-6	9.3.2	Services Element
1675	SCSM support capability - Harmonization with 62351-6	9.3.2	Services
1683	ICD file for IED functionality spanning for multiple VL and BAY	9.2.1	The name value is also a global identification of
1708	Presence of Sample Mode field not controllable through SmvOpts	9.3.11	Smv Options element
1729	Incorrect SCL example in (informative) Annex	D.2	2
1734	Improved schema validation	A.5	1
1740	Exceptions of enumeration types for IEC 61850-7-4	9.5.6	last in 9.5.6
1745	Definition of type and id in DataTypeTemplates not consistent	9.5.6	Table 49
1768	Server associate-request has no SCL parameters	9.3.2	Table 11
1771	SCL Services ReportControl max vs. Indexed	9.3.8	8
1774	Missing description of KDC	9.3.2	4
1786	Downgrade of SCD Exports not Mandatory	Annex G	Table G.2
1787	There is no clear mapping of all 7-2 ACSI type to SCL basic types	9.5.4.2	1
1808	Please clarify if ix first index is 0 or 1	9.3.6 Data object (DOI) definition	Table 19 and Table 20
1813	Typo "Valkind"	9.5.4.1	Table 46
1816	Add SICS statement for xsi:type usage in P elements	9.4.3 Annex G	7 Table G.1 and G.2
1818	Clarification of ExtRef attributes usage	9.3.13	Table 51
1823	Clarify iedType attribute usage in DataTypeTemplates	9.5.1	2
1831	IdInst reference should concretized	9.3.7	Table 22
1832	SICS I45 not clear enough	Annex G	Table G.1
1833	Service SettingGroups.ConfSG clarification	9.3.2	Table 11
1834	SICS I211 text not inline with Service section	Annex G	Table G.1
1839	Not clear definition of InInst to LN0 type elements	9.3.5	5
1843	SCT handle different OriginalSciXxx and SCL version/revision/release	9.3.2 I.4.3.3	G.1
1854	SupSubscription	9.3.2	Table 11
1885	sAddr length	I.5.3.5	1
1886	Part 6 - Typo in Abbreviation	4	ICT

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## INTRODUCTION

This part of IEC 61850 specifies a description language for the configuration of power utility 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.

While this part describes the language to describe the configuration of IEC 61850 systems, other parts of the standard describe how to configure the system and possible restrictions. Therefore implementations claiming conformance to this standard shall take into account constraints from the other normative references. Some references to the other parts have been included for the purpose of clarification but these references are not all inclusive.

**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-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 simply by restrictions on the way the values of objects have to be used.

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