

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

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

XG

For price, see current catalogue

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Abbreviations.....	9
5 Intended engineering process with SCL.....	10
6 The SCL object model	12
6.1 General	12
6.2 The substation model	15
6.3 The product (IED) model.....	16
6.4 The communication system model	17
6.5 Modelling redundancy	18
7 SCL description file types.....	18
8 The SCL language	19
8.1 Specification method	19
8.2 SCL language extensions	21
8.3 General structure.....	24
8.4 Object and signal designation	25
9 The SCL syntax elements	28
9.1 Header	28
9.2 Substation description	31
9.3 IED description	43
9.4 Communication system description	67
9.5 Data type templates.....	73
Annex A (normative) SCL syntax: XML schema definition	85
A.1 Base types.....	85
A.2 Substation syntax	96
A.3 Data type templates	101
A.4 IED capabilities and structure.....	104
A.5 Communication subnetworks	112
A.6 Main SCL.....	117
Annex B (normative) SCL enumerations according to IEC 61850-7-3 and IEC 61850-7-4	118
Annex C (informative) Syntax extension examples.....	124
C.1 Extension syntax for drawing layout coordinates.....	124
C.2 Extension syntax for maintenance	126
Annex D (informative) Example	127
D.1 Example specification	127
D.2 Example SCL file contents	129
Annex E (informative) XML schema definition of SCL variants	138

Figure 1 – Reference model for information flow in the configuration process.....	11
Figure 2 – SCL object model	13
Figure 3 – Configuration example	15
Figure 4 – UML diagram overview of SCL schema	21
Figure 5 – Elements of the signal identification as defined in IEC 61850-7-2	26
Figure 6 – Elements of the signal name using functional naming.....	27
Figure 7 – Elements of the signal name using product naming	27
Figure 8 – Names within different structures of the object model.....	28
Figure 9 – UML diagram of Header section.....	29
Figure 10 – UML diagram of Substation section	31
Figure 11 – UML diagram for equipment type inheritance and relations	36
Figure 12 – IED structure and access points.....	44
Figure 13 – UML description of IED related schema part – base	45
Figure 14 – UML description of IED related schema part for Control blocks.....	46
Figure 15 – UML description of IED related schema part – LN definition.....	47
Figure 16 – UML diagram overview of the Communication section	68
Figure 17 – UML overview of DataTypeTemplate section	74
Figure C.1 – Coordinate example	124
Figure D.1 – T1-1 Substation configuration.....	127
Figure D.2 – T1-1 Communication configuration	128
Figure D.3 – T1-1 Transformer bay.....	129
Table 1 – The files composing the XML schema definition for SCL.....	20
Table 2 – Attributes of the Private element	23
Table 3 – Attributes of the Header element.....	29
Table 4 – Attributes of the History item (Hitem) element	30
Table 5 – Primary apparatus device type codes	38
Table 6 – Attributes of the Terminal element.....	39
Table 7 – Attributes of the SubEquipment element.....	40
Table 8 – Attributes of the LNode element	40
Table 9 – Attributes of the IED element	48
Table 10 – List of service capabilities and setting elements and attributes	49
Table 11 – Attributes of the Access point element.....	51
Table 12 – Attributes of the IED server element.....	52
Table 13 – Attributes of the Authentication element	53
Table 14 – Attributes of the LDevice element.....	53
Table 15 – Attributes of the LN0 element.....	54
Table 16 – Attributes of the LN element.....	55
Table 17 – Attributes of the DOI element	56
Table 18 – Attributes of the DAI element	56
Table 19 – Attributes of the SDI element	57
Table 20 – Attributes of the DataSet element.....	57
Table 21 – Attributes of the FCDA element.....	58

Table 22 – Attributes of the report control block element.....	59
Table 23 – Attributes of the RptEnabled element	60
Table 24 – Attributes of the ClientLN element	61
Table 25 – Attributes of the log control block element	62
Table 26 – Attributes of the GSE control block element.....	63
Table 27 – Attributes of the sampled value control block element.....	64
Table 28 – Attributes of the Smv Options element	64
Table 29 – Attributes of the setting control block element	65
Table 30 – Attributes of the Input/ExtRef element	66
Table 31 – Attributes of the Association element	67
Table 32 – Attributes of the Subnetwork element	69
Table 33 – Attributes of the ConnectedAP element	70
Table 34 – Attributes of the GSE element	71
Table 35 – Attributes of the SMV element.....	72
Table 36 – PhysConn P-Type definitions	72
Table 37 – Template definition elements	76
Table 38 – Attributes of the LNodeType element.....	76
Table 39 – Attributes of the DO element	77
Table 40 – Attributes of the DOType element.....	77
Table 41 – Attributes of the SDO element.....	77
Table 42 – Data type mapping	78
Table 43 – Attribute value kind (Valkind) meaning	79
Table 44 – Attributes of the DA element	80
Table 45 – Attributes of the BDA element	82
Table 46 – Attributes of the EnumType element.....	83

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMUNICATION NETWORKS AND SYSTEMS IN SUBSTATIONS –**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.

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 testing¹

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.

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>