

TECHNICAL SPECIFICATION

**Communication networks and systems for power utility automation –
Part 2: Glossary**

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TECHNICAL SPECIFICATION

**Communication networks and systems for power utility automation –
Part 2: Glossary**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COMMUNICATION NETWORKS AND SYSTEMS
FOR POWER UTILITY AUTOMATION –****Part 2: Glossary****FOREWORD**

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 61850-2, which is a technical specification, has been prepared by IEC technical committee 57: Power system management and associated information exchange.

This second edition cancels and replaces the first edition, published in 2003. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition:

- a) definition of new definitions used in the new edition of the IEC 61850 standard series (abstract data model for communication; application function; backward compatible; common data class; communication system; composition; configuration compatibility list; configured IED description CID; conformance; data object class; decomposition; documentation; domain; forward compatible; function-related naming; granularity; IED configuration tool; IED parameters; instantiated IED description IID; intelligent electronic device capability description ICD; language; local function; logical device; mandatory data attribute; mandatory data object; meta model; namespace; object reference; optional data attribute; optional data object; performance; power system; power utility automation system; PUAS installation; PUAS parameter set; PUAS product family; product-related naming; secondary system; semantic name; system configuration description SCD; system configuration language SCL; system configuration language implementation conformance statement SICS; system configuration language version; system master; system configuration tool SCT; system design specification; system extension description SED; system related test; system requirement specification; system specification description SSD; system specification tool; technical issued conformance test TICS; tool; virtualisation; extensible mark-up language schema XSD);
- b) updating of existing definitions to the new domain power utility automation of the IEC 61850 standard series and to provide homogeneity (abstract communication service interface ACSI; bay; client; data; data attribute; data object; device; distributed function; engineering tools; expandability; factory acceptance test FAT; flexibility; function; gateway; generic object-oriented system event GOOSE; generic system event model; IED parameter set; information model; instance; intelligent electronic device IED; interchangeability; logical connection; logical node; logical system; manufacturer; merging unit; model implementation conformance statement MICS; physical connection; physical device; physical system; piece of information for communication PICOM; process level functions; process related station level functions; protocol; protocol implementation conformance statement PICS; protocol implementation extra information for testing PIXIT; redundancy; scalability; server; site acceptance test SAT; specific communication service mapping SCSM; station level functions; supporting tools; system; system integrator; system life cycle; system parameters; system test; test equipment; type test);
- c) removal of deprecated definitions (logical device class; generic system state event; substation automation system);
- d) provision of clarifications and corrections to the first edition of IEC 61850-2.

The text of this Technical Specification is based on the following documents:

Draft TS	Report on voting
57/1970/DTS	57/2024/RVDTS

Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This document 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 for power utility automation*.

- 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 – Principles and models
- Part 7-2: Basic information and communication – Abstract communication service interface (ACSI)
- Part 7-3: Basic communication structure – Common data classes
- Part 7-4: Basic communication structure – Compatible logical node classes and data object classes
- Part 8-1: Specific communication service mapping (SCSM) – Mappings to MMS (ISO/IEC 9506-1 and ISO/IEC 9506-2) over ISO/IEC 8802-3
- Part 9-2: Specific communication service mapping (SCSM) – Sampled values over ISO/IEC 8802-3
- Part 9-3: Precision time protocol profile for power utility automation
- Part 10: Conformance testing

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

Part 2: Glossary

1 Scope

This part of IEC 61850, which is a Technical Specification, applies to power utility automation systems (PUAS). It defines the communication between intelligent electronic devices (IEDs) in the power utility automation system and the related system requirements.

This document contains the glossary of specific terminology and definitions used in the context of Power Utility Automation Systems within the various parts of the standard.

This document is, by its nature, a living part since new definitions and abbreviations will be created continuously in the standard documents that are being written inside the IEC related to IEC 61850.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

The following terms and definitions apply to all parts of the IEC 61850 series.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

abstract communication service interface

ACSI

virtual interface inside an IED between the data model (objects, services) and the mapping to the communication stack

3.2

abstract data model for communication

data standardized with their semantic meaning exchanged between the functions by the IEDs

Note 1 to entry: All application functions shall trust these data and perform their algorithm using this data. The formal description of the automation system by SCL is also based on this standardized data.

[SOURCE: IEC 61850-5:2013, 3.1.14]

3.3

access point

communication access point to an IED

Note 1 to entry: This may be a serial port, an Ethernet connection, or a client or server address dependent on the stack being used. Each access point of an IED to a communication bus is uniquely identified. Each server has at

least one logical access point, but the maximal number is not limited by the standard but only by the actual implementation.

3.4

application layer

layer 7 in the OSI reference model for Open Systems Interconnection comprising the interface between the OSI environment and the IED's or user's application

[SOURCE: ISO/IEC 7498-1:1994, 7.1]

3.5

application function

task, which is performed in or by power utility automation systems

Note 1 to entry: Generally, a function consists of subparts which may be distributed to different IEDs, which exchange data with each other. More precisely these sub-functions implemented in the IEDs exchange data. Also between different functions data are exchanged. The exchanged data exposed to the communication system shall be standardized based on the semantic content to be understandable by the receiving function. For this purpose the standard groups the exchanged data in objects called Logical Nodes which refer to the name of the allocated functions by their mnemonic name.

[SOURCE: IEC 61850-5:2013, 3.1.1]

3.6

association

conveyance path established between a client and a server for the exchange of messages

3.7

attribute

named element of data and of a specific type

[SOURCE: IEC 61850-8-1:2011, 3.11, modified (original term was "data attribute")]

3.8

backward compatible

property of a newer system or product that allows interoperability with a former version of such system or product

3.9

bay

subpart of a substation, having some common functionality, closely connected to the other subparts, and forming a substation

[SOURCE: IEC 61850-1:2013, 3.1.2]

3.10

bay level functions

functions that use mainly the data of one bay and act mainly on the primary equipment of that bay

Note 1 to entry: Bay level functions communicate via logical interface 3 within the bay level and via the logical interfaces 4 and 5 to the process level, i.e. with any kind of remote input/output or with intelligent sensors and actuators.

EXAMPLES Feeder or transformer, protection, control and interlocking.

[SOURCE: IEC 61850-5:2013, 3.5.3, modified (Note 1 to entry and examples added)]

3.11**broadcast**

message placed onto a communication network intended to be read and acted on, as appropriate, by any IED. A broadcast message will typically contain the sender's address and a global recipient address

EXAMPLE: Time synchronising.

3.12**bus**

communication system connection between IEDs with communication facilities

3.13**class**

description of a set of objects that share the same attributes, services, relationships and semantics

[SOURCE: IEC 61850-7-3, 3.1]

3.14**client**

entity that uses data from a server

3.15**common data class**

template that groups all the possible data attributes that are parts of a data object class representing information related to status, measurements, control, settings

3.16**communication connection**

connection which utilises the communication mapping function of one or more resources for the conveyance of information

3.17**communication functions**

functions that use communication services to coordinate their actions

3.18**communication stack**

multi-layer stack

Note 1 to entry: In the 7 layer OSI reference model for Open Systems Interconnection, each layer performs specific functions related to Open Systems Interconnection communication.

3.19**communication services**

services implemented over a communication system

3.20**communication system**

interconnected set of all communication links

Note 1 to entry: Depending on the size it is called either LAN (local area network) as used in substations or plants, or WAN (wide area network) as used globally in the power utility system.

[SOURCE: IEC 61850-5:2013, 3.1.10]

3.21**composition**

process of building up devices using logical nodes

3.22 configuration (of a system or device)

step in system design for example selecting functional units, assigning their locations and defining their interconnections

3.23 configuration compatibility list

overview of all compatible hardware and software versions of components and IEDs, including the software versions of relevant supporting tools operating together in an UAS-product family

Note 1 to entry: The configuration compatibility list also contains the supported transmission protocols and protocol versions for communication with other IEDs.

[SOURCE: IEC 61850-4:2011, 3.12]

3.24 configuration list

overview of all compatible hardware and software versions of components and IEDs, including the software versions of relevant supporting tools, operating together in a PUAS product family

Note 1 to entry: Additionally, the configuration list details the supported transmission protocols for communication with IEDs of other manufacturers.

3.25 configured IED description CID

a file format in SCL language that describes the communication-related part of an instantiated IED within a project

Note 1 to entry: This is essentially an SCD file, possibly stripped down to what the concerned IED shall know,

Note 2 to entry: This term is used in IEC 61850-6.

3.26 conformance

accordance of the implementation of a product, process or service with all specified requirements or standards

Note 1 to entry: Additional features to those in the requirements / standards may be included,

Note 2 to entry: All features of the standard/specification are implemented and in accordance, but some additional features are not covered by the standard/specification,

[SOURCE: IEC 62361-103, 3.4]

3.27 conformance test

verification of data flow on communication channels in accordance with the standard conditions concerning access organization, formats and bit sequences, time synchronization, timing, signal form and level and reaction to errors

Note 1 to entry: The conformance test may be carried out and certified to the standard or to specifically described parts of the standard. The conformance test should be carried out by an ISO 9001 certified organisation or system integrator.

[SOURCE: IEC 61850-4:2011, 3.17]

3.28 connection

association established between functional units for conveying information

Note 1 to entry: A connection is established between two IEDs prior to any data exchange. A connection may be of short duration or long term.

3.29**connectivity node**

identifiable, named, common connection point between terminals of primary devices whose only function is to connect them electrically with minimum resistance; for example a bus bar as a connectivity node connects bus bar disconnectors

Note 1 to entry: The connection to a device is done at a device terminal. A connectivity node can connect an arbitrary number of terminals (devices).

3.30**Cyclic Redundancy Check****CRC**

check which is calculated and included in each frame transmitted by the sending device; the receiving device recalculates the CRC for that frame, as received, as a check for any transit damage in that frame

3.31**data**

information represented in a manner suitable for automatic processing

[SOURCE: IEC 60050-701:1988, 701-01-11]

3.32**data object**

meaningful, structured, information of applications, located in an IED, which can be read or written

[SOURCE: IEC 61850-8-1:2011, 3.12, modified ("automation device" replaced by "IED")]

3.33**data attribute**

attribute name (semantic), format, range of possible values, and representation of values

3.34**data class**

class that aggregates data classes or data attributes

Note 1 to entry: Specific data classes carry the semantic within a logical node.

3.35**data link layer**

<IEC 61850-7-2> layer 2 of the OSI reference model for Open Systems Interconnection, responsible for the transmission of data over a physical medium

Note 1 to entry: After establishment of a link, layer 2 performs data rate control, error detection, contention/collision detection, quality of service monitoring and error recovery.

[SOURCE: ISO/IEC 7498-1, 7.6]

3.36**data object**

instance of a data object class in a logical node instance whose values can be read or written

3.37**data object class**

typed by a common data class, providing the semantic within a logical node class, representing meaningful, structured, information of applications

3.38**data set (dataset) class**

named list of ordered references to one or more Functionally Constrained Data (FCD) or Functionally Constrained Data Attributes (FCDA)

Note 1 to entry: This is used to group commonly used data objects for easy retrieval.

3.39**decomposition**

process of stripping application functions in smaller parts (such as logical nodes) to a reasonable or given granularity

3.40**device**

<domain?> element or assembly of elements performing a required function

Note 1 to entry: A device may form part of a larger device.

[SOURCE: IEC 60050-151:2001, 151-11-20, modified ("material" deleted from beginning of definition)]

3.41**device**

<domain?> mechanism or piece of equipment designed to serve a purpose or perform a function for example, circuit breaker, relay or substation computer

[SOURCE: IEEE 100:2000, device (10), The Authoritative Dictionary of IEEE Standards Terms]

3.42**device**

<switchyard> physical plant item for example transformer or circuit breaker

3.43**device**

<power utility automation system> IED which hosts application functions for operating the system

3.44**diameter**

<1½ breaker arrangement> complete switchgear between the two busbars, i.e. the 2 lines and the 3 circuit breakers with all related isolators, earthing switches, CTs and VTs

Note 1 to entry: It has some common functionality and relationship both for operation, maintenance and extensions

[SOURCE: IEC 61850-5:2013, 3.4.2]

3.45**distributed function**

when two, or more, logical nodes, that are located in different IEDs, together represent a common application function

Note 1 to entry: Since all functions communicate in some way, the definition of a local or distributed function is not unique but depends on the definition of the functional steps to be performed until the function is completed. In the case of loss of one LN or one included communication link, the function may be blocked completely or show a graceful degradation, as applicable.

3.46**distribution**

that part of the power system operating at voltages typically up to 69 kV

3.47
documentation
a set of documents

3.48
domain
given subset of the IEC 61850 application scope, e.g., substation domain, DER domain, etc.

3.49
electronic current transducer
transducer in the primary plant measuring system current providing low level analogue and/or digital data output(s)

3.50
electronic voltage transducer
transducer in the primary plant measuring system voltage(s) providing low level analogue and/or digital output(s)

3.51
engineering
first phase of a project i.e. detail design

3.52
engineering tools
tools that support the creation and documentation of the conditions for adapting the PUAS to the specific substation and customer requirements

Note 2 to entry: Engineering tools are divided into system and product tools.

[SOURCE: IEC 61850-4:2011, 3.1.1, modified ("automation system" replaced by "PUAS", modification of Note 1 to entry)]

3.53
equipment
entity that performs an energy transport function for example transformer, circuit breaker, line

Note 1 to entry: It may be stand alone or interfaced to an automation system via an integral device or associated external device.

3.54
expandability
capability to extend a PUAS (both hardware and software) by use of the engineering tools

3.55
factory acceptance test
customer agreed functional tests of the specifically manufactured PUAS installation or its parts, using the parameter set for the planned application

Note 1 to entry: This test should be carried out in the factory of the system integrator by use of process simulating test equipment.

[SOURCE: IEC 61850-4:2011, 3.20, modified ("system" replaced by "PUAS installation", Note 1 to entry modified)]

3.56
flexibility
capability for the fast and efficient implementation of functional changes, including hardware adaptation, in a PUAS by use of the engineering tools

[SOURCE: IEC 61850-4:2011, 3.3, modified ("criteria" replaced by "capability", addition of "adaptation, in a PUAS by use of the engineering tools")]

3.57

forward compatible

property of a given system or product to interoperate with newer versions of such system or product

3.58

freeze

lock and hold a value at that instant, associated typically with measurands and counters

3.59

function

task performed by the power utility automation system i.e. by application functions

Note 1 to entry: Generally, functions exchange data with other functions. Details are dependent on the functions involved. Functions are performed by IEDs (physical devices). A function may be split into parts residing in different IEDs but communicating with each other (distributed function) and with parts of other functions. These communicating parts are called logical nodes.

Note 2 to entry: In the context of this document, the decomposition of functions or their granularity is ruled by the communication behaviour only. Therefore, all functions considered consist of logical nodes that exchange data. Such logical nodes represent the standardized data model for communication of the allocated function. Functions without an explicit reference to logical nodes mean only that in the actual context, the logical node modelling of these functions is of no importance to the standard.

[SOURCE: IEC 61850-1:2013, 3.1.5, modified (Note 2 to entry modified: text from "Such logical nodes ..." onwards added)]

3.60

functional constraint

property of a data attribute that indicates the services for example read value, write value, substitute value, etc. that may be applied to that data attribute

3.61

functionally constrained data

reference to an ordered collection of data having the same functional constraint for example all MX (measurands)

3.62

functionally constrained data attribute

reference to a single data-attribute, of data, to which a specific functional constraint applies

3.63

function-related naming

set of rules for naming a signal related to the function to which it belongs

3.64

gateway

network interconnection device that performs protocol conversion between networks with different protocol technologies

[SOURCE: IEC 61850-7-1:2011, 8.2.3]

3.65

generic object oriented system event

high speed, binary object, Generic Object Oriented System Event (GOOSE) report multicasted by an IED by exception, on the occurrence of any change of state, typically containing the double command state of each of its status inputs, starters, output elements and relays, actual and virtual

Note 1 to entry: This report is re-issued sequentially with a repetition interval and with shorter intervals under a new event.

Note 2 to entry: A GOOSE report enables high speed trip signals to be issued with a high probability of delivery.

3.66

generic system event model

model defining classes of multicast/broadcast data i.e. GOOSE, for the fast transfer of input and output data values between IEDs

3.67

granularity

extent to which the functions and their allocated data are split in sub-functions and subgroups respectively

Note 1 to entry: Any sub-function which may be implemented also in an IED not containing all other related sub-functions has to communicate in a standardized way with other IEDs hosting these related sub-functions. The guideline is the maximum required granularity to have data grouping which fits nearly any distribution of functions and sub-functions

[SOURCE: IEC 61850-5:2013, 3.6.2]

3.68

hold point

point, defined in the appropriate document, beyond which an activity shall not proceed without the written approval of the initiator of the conformance test

Note 1 to entry: The test facility shall provide a written notice to the initiator at an agreed time prior to the hold point. The initiator, or his representative, is obligated to verify the hold point and approve the resumption of the testing.

[SOURCE: IEC 61850-10:2012, 3.2, modified (addition of "written" in definition)]

3.69

hub

active network component

Note 1 to entry: Each port of a hub links individual media segments together to create a larger network that operates as a single LAN. Collisions in the network are possible.

3.70

Human Machine Interface

HMI

display screen, either part of an IED or as a stand-alone device, presenting relevant data in a logical format, with which the user interacts

Note 1 to entry: An HMI will typically present windows, icons, menus, pointers, and may include a keypad to enable user access and interaction.

3.71

IED configuration tool

tool handling the specific configuration and download of configuration data to a specific IED of a specific type

3.72**IED-parameter set**

all the parameter values needed for the definition of the behaviour of the IED and its adaptation to the system conditions

Note 1 to entry: Where the IED has to operate autonomously, the IED-parameter-set can be generated without system parameters using an IED-specific parameterisation tool. Where the IED is a part of the PUAS, the IED-parameter set may include system parameters, which must be co-ordinated by a general parameterisation tool at the PUAS level.

[SOURCE: IEC 61850-4:2011, 3.6, modified (removal of "and configuration data")]

3.73**IED parameters**

parameters defining the behaviour of an IED and its relation to the process

[SOURCE: IEC 61850-4:2011, 3.5.2]

3.74**implementation**

development phase in which the hardware and software of a system become operational

3.75**information**

knowledge concerning objects, such as facts, events, things, processes, or ideas, including concepts, that within a certain context has a particular meaning

[SOURCE: IEC 60050-101:2001, 101-12-01]

3.76**information model**

data model concerning power utility automation applications functions and the IEDs hosting the functions

3.77**initiator of conformance test**

party initiating a conformance test that is to be performed by a test facility

3.78**inspection**

activity such as measuring, examining, testing or gauging of one or more characteristics of an entity and comparing the results with specified requirements in order to establish whether conformity is achieved for each characteristic

3.79**instance (of a class)**

entity that has a unique identity, with the attributes of a defined class, to which a set of services can be applied and which has a state that stores the effects of the services

[SOURCE: IEC 61850-7-2, 3.5, modified]

3.80**instance name**

identifier associated with and designating an instance

3.81**instantiated IED description IID**

file format in SCL language that describes the communication-related part of a preconfigured IED in a specific project

3.82**instantiation**

creation of an instance of a specified class

3.83**Intelligent Electronic Device
IED**

device incorporating one or more processors with the capability to execute application functions, store data locally in a memory and exchange data with other IEDs (sources or sinks) over a digital link

Note 1 to entry: Examples are electronic meters, digital/numerical relays, and digital controllers. They host the application functions and the related data according to the data model and allow exchanging data according to the IEC 61850 services/interfaces.

3.84**Intelligent Electronic Device capability description ICD**

file format in SCL language that describes the functional and engineering capabilities of an IED type

3.85**interchangeability**

possibility to replace an IED from the same vendor or from different vendors providing the same functionality with no impact on the rest of the system

Note 1 to entry: Interchangeability requires standardization of functions and, in a strong sense, of IEDs also. Both such requirements are outside the scope of this standard. Utilizing interoperable IEDs (see definition of interoperability) with the same communication interface and about the same data (LNs) according to IEC 61850, with the same functionality and performance or minor accepted differences, the exchange may be possible but some engineering actions are still needed.

[SOURCE: IEC 61850-1:2013, 3.1.7, modified]

3.86**interface**

shared boundary between two functional units, defined by functional characteristics for example common physical interconnection characteristics, signal characteristics or other characteristics as appropriate, and the provision of a declared collection of services

3.87**interface related station level functions**

functions representing the interface of the PUAS local station-operator HMI to a remote control centre Tele-Control Interface (TCI) or to the remote engineering Tele-Monitoring Interface (TMI) for monitoring and maintenance purposes

Note 1 to entry: These functions communicate via the logical interfaces 1 and 6 with the bay level and via logical interface 7 to technical services and via the remote control interface to the outside world. Logically, there is no difference if the HMI is local or remote. In the context of the substation, there exists at least a virtual interface for the PUAS at the boundary of the substation. The same is true for both the TCI and TMI. These virtual interfaces may be realised in some implementations such as proxy servers.

[SOURCE: IEC 61850-5:2013, 3.5.6, modified]

3.88**internet protocol****TCP/IP standard internet protocol**

datagram that provides the basis of connectionless packet delivery

Note 1 to entry: This includes control and error message protocol providing the equivalent functions to network services, layer 3, of the OSI reference model for Open Systems Interconnection.

3.89**interoperability**

ability of two or more IEDs from the same vendor, or different vendors, to exchange information and use that information for correct execution of specified functions

[SOURCE: IEC 61850-1:2013, 3.1.8]

3.90**language**

identifiable set of vocabulary terms that has defined syntax (rules and constraints) and semantics (meaning)

[SOURCE: IEC 61850-6:2009, 3.2, modified (addition of "syntax (rules and constraints) and semantics (meaning)"]

3.91**life cycle**

of an IED or system, covers all phases from the feasibility/concept phase through to the final decommissioning phase

3.92**link layer**

see data link layer

3.93**local area network**

communications network which typically covers the area within a building or small industrial complex

Note 1 to entry: In the context of this standard, this is the area within the substation.

3.94**local function**

function which is performed by sub-functions in one physical device

Note 1 to entry: If the performance of the function is not depending on functions in other devices no standardized link is needed. Sometimes, functions with a weak dependency only from other ones are also called local functions. The loss of such links should not result in blocking these functions but in worst case to some graceful degradation,

[SOURCE: IEC 61850-5, 3.1.2]

3.95**log**

record (journal), of chronologically ordered data for example events with time tags and annotations

3.96**logical connection**

communication link between functions represented by logical nodes

[SOURCE: IEC 61850-5:2013, 3.2.1]

3.97**logical device**

entity that represents a set of typical automation, protection or other functions

3.98**logical device object**

instance of the class of logical device

[SOURCE: IEC TS 61850-7-2:2003, 2.71]

3.99**logical node**

smallest part of an application function that exchanges data to fulfil its role

Note 1 to entry: Logical nodes represent the standardized data model for communication of the allocated function.

[SOURCE: IEC 61850-1, 3.1.9 modified]

3.100**logical node class**

aggregation of data, data sets, report controls, log controls, logs, GOOSE controls and sampled measured values

Note 1 to entry: Logical node classes represent typical functions of the substation system. IEC 61850-7-4 defines a list of compatible logical node classes for protection functions, supervisory control, metering, switchgear, power transformers, etc.

3.101**logical node data**

information contained within a logical node

Note 1 to entry: The term encompasses ACSI data, control blocks, etc.

3.102**logical node object**

instance of a logical node class

3.103**logical system**

communicating set of all application functions performing some overall task like “management of a substation” or “management of a plant”

Note 1 to entry: The boundary of a logical system is given by its logical interfaces. The backbone of the logical system is the communication relationship between its functions and sub-functions. The exchanged data are grouped in Logical Nodes.

[SOURCE: IEC 61850-5:2013, 3.1.5]

3.104**mandatory data attribute**

data attribute that shall exist on any common data class type instance it belongs

3.105**mandatory data object**

data object that shall be implemented in the logical node it belongs

3.106**manufacturer**

producer of IEDs and/or supporting tools

Note 1 to entry: A manufacturer may be able to deliver a PUAS solely by use of his own IEDs and supporting tools (PUAS product family).

[SOURCE: IEC 61850-4:2011, 3.13]

3.107

mapping

set of values having a defined correlation with the quantities, or values, of another set

3.108

merging unit

physical unit performing the time coherent combination of the current and/or voltage data coming from sensors

Note 1 to entry: The merging unit can be part of the sensors in the field or may be a separate unit for example in the control room.

3.109

merging unit

interface unit that accepts multiple analogue CT/VT and produces multiple time synchronised IEC 61850-9-2 compliant frames to provide data communication via the logical interface 4

3.110

message

inherent attribute of a communication between IEDs, functions or instances, that conveys service specific data or commands, on receipt of which it is expected that action will be taken

3.111

meta model

method of describing information and information exchange for any applicable domain

3.112

model

representation of some aspects of reality

Note 1 to entry: The purpose of creating a model is to help understand, describe, or predict how things work in the real world by exploring a simplified representation of a particular entity or phenomenon.

[SOURCE: IEC 61850-7-1:2011, 3.2]

3.113

model implementation conformance statement MICS

statement that details the standard data object model elements supported by a device

[SOURCE: IEC 61850-10:2012, 3.4]

3.114

multicast

uni-directional, connectionless communication between a server and a selected set of clients

3.115

name plate

name for the set of data typically found on an item of a plant for example a power transformer, or an IED for example a protection relay, that uniquely describes that device's identity and attributes

3.116

namespace

domain in which any name and its related information is univocal

3.117**negative test**

test to verify the correct response of a device or a system to the following standards:

- IEC 61850 conformant information and services which are not implemented in the device or system under test;
- Non IEC 61850 conformant information and services sent to the device or system under test

[SOURCE: IEC 61850-10, 2012, 3.5]

3.118**network**

layer 3 of the OSI reference model for Open Systems Interconnection, provides functional and procedural means of connectionless or connection-mode transmission, also independence from routing and communications relaying considerations, enabling the transparent transfer of data between transport entities

[SOURCE: ISO/IEC 7498-1:1994, 7.5]

3.119**object instance**

descriptor of an instance of a class of entity that is uniquely identifiable within the PUAS domain, with defined boundaries and identity which encapsulates states and behaviour

Note 1 to entry: States are represented by attributes, behaviour by services and state machines.

3.120**object attribute**

field or a category or value of data that, together with other attributes, specify the services or data values related to the function and performance of an object

3.121**object name**

unique full reference identifier of a specific data object that is unique within the PUAS domain, or within a specific domain

Note 1 to entry: It is constructed by concatenation, using dot '.' delimiters, to as many hierarchical levels as required, for example:

'BasicDataClass.StructuredComponent.X.X.X.etc.'

3.122**object reference**

a univocal link to an object within a power utility automation system project domain

3.123**open protocol**

protocol whose stack is either standardised or publicly available

[SOURCE: IEC 61850-1:2013, 3.1.11]

3.124**optional data attribute**

data attribute that may or may not exist in any common data class type instance it belongs

3.125**optional data object**

data object that shall be implemented in the logical node it belongs if the associated functionality is implemented in the IED

3.126**parameters**

variables which define the behaviour of functions of the PUAS and its IEDs within a given range of values

[SOURCE: IEC 61850-4:2011, 3.5]

3.127**performance**

the capabilities of a machine or product, especially when observed under particular conditions

3.128**physical connection**

communication link between IEDs to support logical connections

[SOURCE: IEC 61850-5:2013, 3.2.2, modified (modified text from "IEDs ...")]

3.129**physical device**

intelligent electronic device as used in the context of this standard

[SOURCE: IEC 61850-1:2013, 3.1.13]

3.130**physical layer**

layer 1 of the OSI reference model for Open Systems Interconnection provides the mechanical, electrical, functional and procedural means to activate, maintain and de-activate physical connections for bit transmission between data-link entities. Physical layer entities are interconnected by means of a physical medium

[SOURCE: ISO/IEC 7498-1:1994, 7.7]

3.131**physical node**

point of connection on a physical device to a communication network. A physical node is a multi-functional unit providing both the communication server and the mapping to the real substation IED

3.132**physical system**

set of all interacting devices hosting the application functions and the interconnecting physical communication network

Note 1 to entry: The boundary of a physical system is given by its physical interfaces. Examples are industrial systems, management systems, information systems, and within the scope of this standard, substation or power utility automation systems. The backbone of physical system is its communication system together with all implemented data.

[SOURCE: IEC 61850-5:2013, 3.1.6]

3.133**piece of information for communication PICOM**

Piece of Information for COMMunication describing the information transfer with given communication attributes between two logical nodes

Note 1 to entry: A PICOM contains in addition to the information to be transmitted also requirement attributes like performance and was adopted from CIGRE working group 34.03. It does not represent the actual message structure and the format for data as exchanged over the communication network. The assumed logical point-to-point connection describes the source and sink of the information transfer but does not define the communication procedure like client-server or publisher-subscriber for multicast and broadcast.

[SOURCE: IEC 61850-5, 3.1.5]

3.134**point to point**

one to one communication link between two nodes, used only for communication between those two nodes

3.135**positive test**

test to ensure the correct implementation of the system capabilities as defined by the supplier

Note 1 to entry: A positive test has a described and defined response.

3.136**power system**

set of all components for generating, transmitting and distributing electrical energy

Note 1 to entry: Parts of the power system are also all consumers of electrical energy

Note 2 to entry: Examples are generators, power transformers, switchgear in substations, overhead line and cables

[SOURCE: IEC 61850-5:2013, 3.1.9]

3.137**power utility automation system PUAS**

set of communicating components or devices (IEDs) arranged in a communication architecture to perform any type of power utility automation functions.

Note 1 to entry: Parts of the power system are also all consumers of electrical energy

Note 2 to entry: Examples are generators, power transformers, switchgear in substations, overhead line and cables

[SOURCE: IEC 61850-1:2013, 3.1.16]

3.138**PUAS installation**

concrete instance of a PUAS consisting of multiple, interoperable, IEDs from one, or more, manufacturers

[SOURCE: IEC 61850-4:2011, 3.10, modified (original definition refers to UAS installation)]

3.139**PUAS parameter set**

all the parameters needed for the definition of the behaviour of the overall PUAS and its adaptation to the power utility system conditions

Note 1 to entry: The PUAS parameter set includes the IED parameter sets of all participating IEDs.

[SOURCE: IEC 61850-4:2011, 3.7, modified (original definition refers to UAS parameter set)]

3.140

PUAS product family

range of different IEDs from one manufacturer, with various functionalities and with the ability to perform power utility automation system functions

Note 1 to entry: The IEDs of a product family are unified in relation to the design, the operational handling, the mounting and wiring requirements and they use common or co-ordinated, supporting tools.

[SOURCE: IEC 61850-4:2011, 3.7, modified (original definition refers to UAS product family)]

3.141

presentation layer

layer 6 of the OSI reference model for Open Systems Interconnection, provides an interface between the concrete local syntax used by the Application layer and the negotiated abstract and transfer syntaxes to be used for the transfer of data during a communication session between the two communicating application entities

[SOURCE: ISO/IEC 7498-1:1994, 7.2]

3.142

product-related naming

set of rules for naming a signal related to the IED where such signal resides

3.143

process level functions

all functions interfacing to the process, i.e. binary and analogue input/output functions like data acquisition (including sampling) and issuing of commands

Note 1 to entry: These functions communicate via the logical interfaces 4 and 5 to the bay level. The process level functions may be implemented in the bay level IEDs together with the bay level functions if no process bus is applied. If a process bus is applied the process level functions are implemented in process level IEDs.

[SOURCE: IEC 61850-5:2013, 3.5.4]

3.144

process related station level functions

functions using the data of more than one bay or of the complete substation and acting on the primary equipment of more than one bay or of the complete substation

Note 1 to entry: Examples of such functions are station wide interlocking, automatic sequencers or busbar protection. These functions communicate mainly via the logical interface 8.

[SOURCE: IEC 61850-5:2013, 3.5.5]

3.145

profile(s)

defined format(s) used by a particular protocol to transmit data objects or commands, etc.

3.146

protocol

set of rules that determines the behaviour of functional units in achieving communication

[SOURCE: IEC 61850-1:2013, 3.1.15]

3.147

protocol

set of rules that determines how the messages are built and how the contained information is encoded and decoded

3.148

protocol converter

intelligent electronic device connected between two communication networks, that is capable of translating messages received in one protocol on one network to a second protocol for re-transmission on the other network and vice versa

3.149

protocol data unit

encoded message containing the service parameters

3.150

protocol implementation conformance statement PICS

summary of the capabilities of the system to be tested

3.151

protocol implementation conformance statement PICS

Protocol Implementation Conformance Statements (PICS) contains information regarding the ACSI services implemented in an IED through the complete protocol stack

3.152

protocol implementation extra information for testing

PIXIT

document (PIXIT) containing system specific information regarding the capabilities of the system to be tested

Note 1 to entry: Provides information regarding the physical set-up that is not part of the ACSI specific implementation. This could be information regarding the hardware, socket, and other information.

3.153

redundant

redundancy

existence of more than one means for performing a required function in an item

[SOURCE: IEC 60050-192:2015, 192-10-02]

3.154

redundant

redundancy

spare or duplicate functionality that allows a system to continue to operate without degradation of performance in the event of single failure for example a blown fuse

3.155

remote terminal unit RTU

typically an outstation in a SCADA system, unit acting as an interface between the communication network and the substation equipment

Note 1 to entry: The function of an RTU may reside in one IED or may be distributed.

[SOURCE: IEC 61850-4:2011, 3.8, NOTE]

3.156
report

agreed, or client defined, set of data compiled by an IED for transmission to a client at regular, or specified time intervals, or on demand. A report may also be generated as a result of one or more, trigger conditions that may be either pre-set or pre-defined by the client

3.157
review

systematic examination, as defined in the appropriate document, of the quality document(s) for an activity

Note 1 to entry: The test facility must provide the documentation to be reviewed to the initiator of the conformance test at an agreed time prior to the associated hold or witness point. How the review is conducted is subject to agreement.

3.158
role

function assumed or part played by a person, tool, device or interface in a particular situation

3.159
scalability

capability to create a cost effective system while recognizing various functionalities, various IEDs, substation sizes and substation voltage ranges

[SOURCE: IEC 61850-4:2011, 3.4]

3.160
secondary system

interacting set of all components and subsystems to operate, to protect and to monitor the primary system

Note 1 to entry: In case of full application of numerical technology, the secondary system is synonymous with the power utility automation system. For this purpose it uses fully numerical technology and digital communication links (WAN as communication system). Substation automation systems are one kind of power utility automation systems responsible for the nodes in the power system or power grid.

[SOURCE: IEC 61850-5:2013, 3.1.8]

3.161
selector

defines the references to a class instance for accessing the instance values

3.162
self-description

principle that a device contains information on its configuration

Note 1 to entry: The representation of this information has to be standardised and has to be accessible via communication (in the context of this standard series).

[SOURCE: IEC 61850-1:2013, 3.1.17, modified (addition of Note 1 to entry)]

3.163
semantic name

name with a well-known and defined meaning in the context of a power utility automation system

3.164
server

on a communication network, a functional node that provides data to, or that allows access to its resources by clients. A server may also be a logical subdivision, which has independent control of its operation, within the software algorithm (and/or possibly hardware) structure

3.165
server class

external visible behaviour of an IED or application process

3.166
service

functional capability of a resource which can be modelled by a sequence of service primitives

3.167
service access point

point representing a logical construct through which a peer selects a communication protocol or access to an application

Note 1 to entry: The selection of the entire seven layers of a service access point represents a communication profile.

[SOURCE: IEC 61850-8-1:2011, Clause 4]

3.168
service primitive

abstract, implementation independent, representation of an interaction between the service user and the service provider

3.169
session

layer 5 of the OSI reference model for Open Systems Interconnection, manages the establishment and release, of session connections, also the synchronisation of data exchange between presentation entities

[SOURCE: ISO/IEC 7498:1994, 7.3]

3.170
SF₆

Sulphur HexaFluoride gas, used as an insulating medium in gas insulated circuit breakers and associated plant

3.171
site acceptance test SAT

verification that the power utility automation system is working as specified

Note 1 to entry: The site acceptance test is the pre-condition for the PUAS being accepted, put into service, and the start of the warranty period.

3.172
specific communication service mapping SCSM

standardised procedure which provides the concrete mapping of ACSI services and objects onto a particular protocol stack/communication profile

Note 1 to entry: To facilitate interoperability, it is intended to have a minimum number of standardized mappings (SCSM). Special application sub-domains such as 'station bus' and 'process bus' may result in more than one mapping. However, for the specific protocol stack selected, only one single SCSM and one single profile should be specified.

Note 2 to entry: A SCSM shall detail the instantiation of abstract services into protocol specific single service or sequence of services that achieve the service as specified in ACSI. Additionally, a SCSM shall detail the mapping of ACSI objects into objects supported by the application protocol.

Note 3 to entry: SCSMs are specified in IEC 61850-8-x and IEC 61850-9-x.

[SOURCE: IEC 61850-1:2013, 3.1.20]

3.173

state machine

functional behaviour of any IED, logical node or object, can be defined and delineated by means of a state machine

Note 1 to entry: This describes, normally by means of a state diagram, the functionality, responses, actions and re-actions, as a series of discrete, linked states, together with the criteria governing the transition from one state to another specific state.

3.174

station level functions

functions applying to the whole power system

Note 1 to entry: There are two classes of station level functions i.e. process related station level functions and interface related station level functions.

[SOURCE: IEC 61850-5:2013, 3.5.2]

3.175

subdevice

part of a primary device, for example one phase of a three-phase device

3.176

subnetwork

communication system connection between IEDs which have serial communication facilities

Note 1 to entry: All devices connected to a subnetwork can directly communicate to each other, without an intervening router. Routers or gateways can connect subnetworks.

3.177

subscribed data

data that a client has requested to be supplied on a regular basis, or when trigger condition(s) are satisfied

3.178

supporting tools

tools that support the user in the engineering, the operation and the management of the PUAS and its IEDs.

Note 1 to entry: The supporting tools can perform the following tasks: engineering, project management, parameter change, diagnostics, testing, documentation, and other services.

Note 2 to entry: Usually the supporting tools are part of the PUAS and they run on an IED (for example PC).

[SOURCE: IEC 61850-4:2011, 3.1, modified (addition of notes to entry)]

3.179

switch

active network component

Note 1 to entry: Switches connect two or more sub networks, which themselves could be built of several segments connected by repeaters

Note 2 to entry: Switches establish the borders for so called collision domains. Collisions cannot take place between networks divided by switches, data packets destined to a specific sub network do not appear on the other

sub networks. To achieve this, switches must have knowledge of the hardware addresses of the connected stations. In cases where only one active network component is connected to a switch port, collisions on the network can be avoided.

3.180

switchgear interface unit SIU

IED interfacing with primary elements and allocated near the field to perform process level functions

3.181

system, logical

union of all communicating application-functions performing some overall task like “management of a system”, via logical nodes

Note 1 to entry: The boundary of a system is given by its logical or physical interfaces. Within the scope of the IEC 61850 series, ‘system’ always refers to the Power Utility Automation System (PUAS), unless otherwise noted.

3.182

system, physical

system composed of all devices hosting these functions and the interconnecting physical communication network

Note 1 to entry: The boundary of a system is given by its logical or physical interfaces. Within the scope of the IEC 61850 series, ‘system’ always refers to the Power Utility Automation System (PUAS), unless otherwise noted.

3.183

system configuration description

SCD

file format in SCL language that describes the communication-related part of all IEDs within a specific project

3.184

system configuration language

SCL

high level language specified as an XML schema for describing power utility automation IEDs configuration and communication systems

Note 1 to entry: It also allows the formal description of the relations between the utility automation system and the process (substation, switchyard).

3.185

system configuration language Implementation Conformance Statement

SICS

standardised list of mandatory and optional features to clearly state which of them are supported by System configuration tools and IED configuration tools

3.186

system configuration language Implementation Conformance Statement

SICS

statement with the summary of the capabilities of the SCL engineering tool

[SOURCE: IEC 61850-10:2012, 3.10]

3.187

system configuration language version

version of the SCL which may be checked against SCL schema

3.188

system master

IED that functions either as a RTU or provides a centralised function for example time synchronising reference

3.189**system configuration tool SCT**

tool handling the communication between the IEDs in the system, configuration of issues common for several IEDs, and the logical association of the IED's functions to the process to be controlled and supervised

3.190**system design specification**

description of a system design showing how a system requirement specification is fulfilled with selected products, and how the required functions are implemented on them

3.191**system extension description SED**

file format in SCL language that describes the communication interfaces of one specific project related to a specific utility automation system that are available for interacting with other utility automation system defined in other project

3.192**system integrator**

turnkey deliverer of PUAS installations

Note 1 to entry: The responsibility of system integration includes the engineering, the delivery and mounting of all participating IEDs, the factory and site acceptance tests and the trial operation. The quality assurance, maintenance and spares delivery obligations and the warranty, shall be agreed upon in the contract between the system integrator and the customer.

[SOURCE: IEC 61850-4:2011, 3.14]

3.193**system life cycle**

has two independent meanings and values:

- a) for the manufacturer, the time period between the start of the production of a newly developed PUAS product family and the discontinuation of support for the relevant IEDs,
- b) for the customer, the time period between the commissioning of the system installation and the decommissioning of the last IED of the system installation

[SOURCE: IEC 61850-4:2011, 3.15]

3.194**system parameters**

data that define the cooperation of IEDs in the PUAS

Note 1 to entry: They are especially important in the definitions for configuration of the PUAS, communication between IEDs, for marshalling of data between IEDs, for processing and visualisation of data from other IEDs for example at the station level, and for parameterisation.

[SOURCE: IEC 61850-4:2011, 3.5.1]

3.195**system related test**

verification of correct behaviour of the IEDs and of the overall PUAS under specific application conditions

Note 1 to entry: The system related test is part of the final stage of the development of IEDs as belonging to PUAS-product family.

3.196**system requirement specification**

specification of all requirements including functions, technical quality, and interfaces to the surrounding world

3.197

system specification description SSD

file format in SCL language that describes the single line diagram and functions of the substation and the required logical nodes

3.198

system specification tool

tool used to create a system requirement specification including the relation of system functions to the plant/substation to be managed; especially a tool creating a specification in a formally defined, standardized format for evaluation by other tools

3.199

system test

check of correct behaviour of the IEDs and of the overall PUAS under various application conditions

Note 1 to entry: The system test marks the final stage of the development of IEDs as part of a PUAS product family.

[SOURCE: IEC 61850-4:2011, 3.18]

3.200

technical issues conformance statement

TICS

statement with device specific information regarding the implemented technical issues detected after publication of the standard

Note 1 to entry: The TICS is not subject to standardisation.

[SOURCE: IEC 61850-10:2012, 3.14]

3.201

telecommunication environment

communication interfaces associated with telecommunications

3.202

telecommunications interface

interface point to the telecommunication network link to the remote power system network control centre

3.203

telemonitoring interface

communications link to a monitoring engineer's workplace

3.204

test equipment

all tools and instruments which simulate and verify the inputs/outputs of the operating environment of the PUAS such as switchgear, transformers, network control centres or connected telecommunication units on the one side, and the communication channels between the IEDs of the PUAS on the other

[SOURCE: IEC 61850-4:2011, 3.16]

3.205

test facility

organisation which is able to provide appropriate test equipment and trained staff to perform conformance testing

Note 1 to entry: The management of conformance tests and the resulting information should follow a quality system and a test facility should be certified in accordance with IEC 61850-10.

[SOURCE: IEC 61850-10:2012, 3.13]

3.206

test item

one single test step from the sequence of tests defined to verify conformance

3.207

tool

program or piece of software that helps people doing their tasks

3.208

transient data

data pertaining to or designating a phenomenon or a quantity which varies between two consecutive states during a time interval short compared to the time-scale of interest

Note 1 to entry: Data objects with this designation only exist at the time they occur and must be logged to provide the evidence of their existence.

[SOURCE: IEC 60050-161:1990, 161-02-01, modified (original term was "transient", addition of Note 1 to entry)]

3.209

transmission

refers to that part of the power system operating at voltages of typically 110 kV and above

3.210

transport layer

layer 4 of the ISO OSI reference model for Open Systems Interconnection establishes the transport connection and addressing, controls and monitors the data rate flow and the release of the transport connection. Enables variable size data files to be seamlessly transported

[SOURCE: ISO/IEC 7498-1:1994, 7.4]

3.211

type test

verification of correct behaviour of the IEDs of the PUAS by use of the system tested software under the environmental test conditions stated in the technical data

Note 1 to entry: This test marks the final stage of IED hardware development and is the precondition for the start of full production. This test shall be carried out with IEDs that have been manufactured through the normal production cycle.

[SOURCE: IEC 61850-4:2011, 3.19]

3.212

unicast

point to point

communication between a server and a single client

3.213

unified modelling language

standardised constructs and semantics for diagrams, including state machines, which are used to describe/specify the functionality of an IED, object model or a process

3.214**unsolicited data or unsolicited message**

data or message which is supplied to a client from a server without the client subscribing to that data or message, for example reset, abort, time. Does not require a connection to be established

3.215**utility communications architecture**

concepts of standardised models for power system objects

[SOURCE: IEC 61850-1]

3.216**virtualisation**

process of creating a view of those aspects of a real device that are of interest for the information exchange with other devices

Note 1 to entry: In the context of this standard, only those details that are required to provide interoperability of devices are defined.

3.217**witness point**

point, defined in the appropriate document, at which an inspection will take place on an activity

Note 1 to entry: The activity may proceed without the approval of the initiator of the conformance test. The test facility must provide a written notice to the initiator at an agreed time prior to the witness point. The initiator or his representative, has the right but is not obligated, to verify the witness point.

[SOURCE: IEC 61850-10:2012, 3.16]

3.218**EXtensible Mark-up Language****XML**

high level language that can be used to construct plain-text file formats describing application-specific structured data

Note 1 to entry: This enables data files to be generated and read by a computer, and which are also human legible.

Note 2 to entry: XML is independent of platform for example hardware, software and application, and provides free-extensibility. XML file readers (browsers) are available that are non-proprietary.

Note 3 to entry: For further information see:

EXtensible Markup Language (XML) 1.0, W3C, available at <<http://www.w3.org/TR/1998/REC-xml-19980210>>

3.219**EXtensible Mark-up Language Schema****XSD**

description of a type of XML document, typically expressed in terms of constraints on the structure and content of documents of that type, above and beyond the basic syntactical constraints imposed by XML itself

Note 1 to entry: For further information see <http://www.w3.org/TR/xmlschema11-1/> and <http://www.w3.org/TR/xmlschema11-2/>

4 Abbreviated terms

This clause defines the abbreviated terms used within all parts of the IEC 61850 series. Regarding abbreviated terms used for DO name elements defined in IEC 61850-7-4 section 4.0, in order to have only one repository of them, they are removed from the following table.

ACD	ACTivation information of Directional protection	IEC 61850-7-3
ACSE	Application Common Service Element	IEC 61850-8-1
ACSI	Abstract Communication Service Interface	IEC 61850-1
ACT	Protection ACTivation information	IEC 61850-7-3
AIS	Air Insulated Switchgear	IEC 61850-1
A-Profile	Application Profile	IEC 61850-8-1
APCI	Application Protocol Control Information	IEC 61850-9-2
APDU	Application Protocol Data Unit	IEC 61850-9-2
API	Application Program Interface	IEC 61850-7-1
ASDU	Application Service Data Unit	IEC 61850-7-1
ASG	Analogue SettinG	IEC 61850-7-3
ASN.1	Abstract Syntax Notation One	IEC 61850-7-1
BER	Basic Encoding Rules ASN.1	IEC 61850-9-2
BR	Buffered Report (Functional Constraint)	IEC 61850-7-2
BRC	Buffered Report Control class	IEC 61850-7-2
BRCB	Buffered Report Control Block	IEC 61850-7-2
CAD	Computer Aided Design	IEC 61850-4
CD ROM	Compact Disc Read Only Memory	IEC 61850-4
CDC	Common Data Class	IEC 61850-1
CDCAName	Common Data Class Attribute Name	IEC 61850-8-1
cdcNs	common data class Name space	IEC 61850-7-3
CDCNSpace	Common Data Class Name Space	IEC 61850-7-2
CF	ConFIGuration (Functional Constraint)	IEC 61850-7-2
CFI	Canonical Format Identifier	IEC 61850-9-2
CIM	Common Information Model of IEC 61970-301	IEC 61850-6
CL	Connectionless	IEC 61850-8-1
Client-CR	Client Conformance Requirement	IEC 61850-8-1
ConNode	Connectivity Node	IEC 61850-6
CRC	Cyclic Redundancy Check	IEC 61850-2
CSMA/CD	Carrier Sense Multiple Access/Collision Detection	IEC 61850-9-2
CT	Current transducer	IEC 61850-7-4
d.c.	direct current	IEC 61850-3
DA	Data Attribute	IEC 61850-7-2
DAT	Data Attribute Type	IEC 61850-7-2
dataNs	Data Name Space	IEC 61850-7-3
DataRef	Data Reference	IEC 61850-7-2
DatAttrRef	Data Attribute Reference	IEC 61850-7-2
DC	DesCription (functional constraint)	IEC 61850-7-2
dchg	Trigger option for data-change	IEC 61850-7-1
DF	Data Frame	IEC 61850-9-2
DO	Data Object	IEC 61850-1
DORef	Data Object Reference	IEC 61850-6
DPC	Double Point Control	IEC 61850-7-2
DPS	Double Point Status information	IEC 61850-7-1