SLOVENSKI STANDARD
SIST EN 61850-7-3:2011/A1:2020

01-maj-2020

Komunikacijska omrežja in sistemi za avtomatizacijo porabe električne energije - 7 -3. del: Osnovna komunikacijska struktura - Skupni podatkovni razredi - Dopolnilo A1

Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes

Kommunikationsnetze und -systeme für die Automatisierung in der elektrischen Energieversorgung - Teil 7-3: Grundlegende Kommunikationsstruktur - Gemeinsame Datenklassen

Réseaux et systèmes de communication pour l'automatisation des systèmes électriques - Partie 7-3: Structure de communication de base - Classes de données communes

Ta slovenski standard je istoveten z: **EN 61850-7-3:2011/A1:2020**

ICS:

29.240.30	Krmilna oprema za elektroenergetske sisteme	Control equipment for electric power systems
33.200	Daljinsko krmiljenje, daljinske meritve (telemetrija)	Telecontrol. Telemetering

SIST EN 61850-7-3:2011/A1:2020 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes (IEC 61850-7-3:2010/A1:2020)

Réseaux et systèmes de communication pour l'automatisation des systèmes électriques - Partie 7-3: Structure de communication de base - Classes de données communes
(IEC 61850-7-3:2010/A1:2020)

Kommunikationsnetze und -systeme für die Automatisierung in der elektrischen Energieversorgung - Teil 7-3: Grundlegende Kommunikationsstruktur - Gemeinsame Datenklassen
(IEC 61850-7-3:2010/A1:2020)

This amendment A1 modifies the European Standard EN 61850-7-3:2011; it was approved by CENELEC on 2020-03-16. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 61850-7-3:2011/A1:2020 E

European foreword

The text of document 57/2101/FDIS, future IEC 61850-7-3/A1, prepared by IEC/TC 57 "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61850-7-3:2011/A1:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-12-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-03-16

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Endorsement notice

The text of the International Standard IEC 61850-7-3:2010/A1:2020 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Replace the reference to IEEE C37.118 with the following reference:

Publication	Year	Title	EN/HD	Year
IEC/IEEE 60255-118-1	-	Measuring relays and protection equipment - Part 118-1: Synchrophasor for power systems - Measurements	-	-

Add the following references:

Publication	Year	Title	EN/HD	Year
IEC 60255-151	2009	Measuring relays and protection equipment - Part 151: Functional requirements for over/under current protection	EN 60255-151	2009
IEC/TS 61850-7-7	-	Communication networks and systems for power utility automation - Part 7-7: Machine-processable format of IEC 61850-related data models for tools	-	-
IEC/TS 62351-6[1]	-	Power systems management and associated information exchange - Data and communications security - Part 6: Security for IEC 61850	-	-

[1] Under preparation. Stage at the time of publication: IEC/PRVC 62351-6:2020.

IEC 61850-7-3

Edition 2.0 2020-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

AMENDMENT 1
AMENDEMENT 1

Communication networks and systems for power utility automation – Part 7-3: Basic communication structure – Common data classes

Réseaux et systèmes de communication pour l'automatisation des systèmes électriques – Partie 7-3: Structure de communication de base – Classes de données communes

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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FOREWORD

This amendment has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition, published in 2003.

Compared to the first edition, this second edition:

- defines new common data classes used for new standards defining object models for other domains based on IEC 61850 and for the representation of statistical and historical data;
- provides clarifications and corrections to the first edition of IEC 61850-7-3;

Compared to the second edition, this first revision of the second edition:

a) provides clarifications and corrections to the second edition of IEC 61850-7-3, based on the tissues = { 690, 691, 692, 697, 698, 707, 709, 711, 722, 814, 816, 819, 832, 839, 846, 868, 887, 919, 924, 925, 926, 929, 953, 954, 962, 968, 996, 1078, 1079, 1122, 1127, 1184, 1187, 1189, 1220, 1233, 1240, 1242, 1247, 1253, 1265, 1270, 1311, 1372, 1387, 1388, 1403, 1430, 1438, 1578, 1581, 1598, 1602, 1623 };

b) includes semantic of attributes within tables in Clauses 6 and 7 and thus removes the need for explicit semantic definition in Clause 8;

c) Clause 8 now contains definitions of newly introduced explicit enumerated types (with tables); this is fully backward compatible as the value of the literals have not changed;

d) some subclauses in Clause 7 have different numbering because of introduction of some abstract types (that group common attributes for several concrete types);

e) first subclause under any CDC group in Clause 7, that contained the tables with applicable services with respect to functional constraints, have been removed; that information is explicitly defined in IEC 61850-7-2 with functional constraints, and temporarily included as Annex B, Functional constraints;

f) contents of 6.2.7 and 6.2.8 have been moved to the normative Annex D of IEC 61850-7-2: Clarification on usage of quality;

g) implements extension introduced by IEC 62351-6 for security;

h) presence conditions have been redesigned and renamed to support their uniform usage in all of the IEC 61850-7-xxx series as necessary. Below is the table containing the old and the new presence conditions:

new	original	Notes
M	M	
O	O	
MOcond(condID)	Various C, C1, …	In IEC 61850-7-4
MFcond(condID)	Various C, C1, …	In IEC 61850-7-4
OFcond(condID)	Various C, C1, …	In IEC 61850-7-4
MFsubst	PICS_SUBST	
AtLeastOne(1)	GC_1	
AtMostOne	GC_1_EXCL	
AllOrNonePerGroup(n)	GC_2_n	
AllOnlyOneGroup(n)	GC_2_XOR_n	
MO(sibling)	GC_CON_attr	
MOln0	AC_LN0_M	
MFln0	AC_LN0_EX	

new	original	Notes
MOrootLD	C1 in CommonLN	
MOlnNs	AC_DLD_M	
MOdataNs	AC_DLN_M	
MOcdcNs	AC_DLNDA_M	
MFscaledAV	AC_SCAV	
MFscaledMagV	AC_SCAV	
MFscaledAngV	AC_SCAV	
MAllOrNonePerGroup(n)	AC_ST	
O	AC_CO_O	Documentation provided in ControllableCDC class.
	AC_SG_M	Split into explicit subtype, no need for presence condition.
	AC_SG_O	Split into explicit subtype, no need for presence condition.
	AC_SG_C1	Split into explicit subtype, no need for presence condition.
	AC_NSG_M	Split into explicit subtype, no need for presence condition.
	AC_NSG_O	Split into explicit subtype, no need for presence condition.
	AC_NSG_C1	Split into explicit subtype, no need for presence condition.
MOrms	AC_RMS_M	
O	AC_CLC_O	Eliminated presence condition on Vector.ang in favour of documenting the relevant DO (in IEC 61850-7-4).

Clauses 5 to 8 and their subclauses, replacement for Annex A, Annex B and XML enumerations from Annex D are automatically generated from the UML model.

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

FDIS	Report on voting
57/2101/FDIS	57/2132/RVD

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

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

Contrary to usual IEC practice, for ease of use in this case, all tables and figures (including those which have been added since Edition 2) have been numbered consecutively in the amendment and the consolidated version.

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 labeled in this standard as a Code Component. In the current version of this document, such indication is made at the beginning of each concerned top-level clause.

The purchase of this IEC standard carries a copyright license for the purchaser to sell software containing Code Components from this standard directly to end users and to end users via distributors, subject to IEC software licensing conditions, which can be found at: http://www.iec.ch/CCv1.

If any updates are required to the published code component that needs to apply immediately and can not wait for an amendment (i.e. fixing a major problem), a new release of the Code

Component will be issued and distributed through the IEC WebSite. Any new release of the Code Component related to this part will supersede any previously published Code Component including the one published within the current document.

This publication contains attached nsd files which compose the Code Component of this part. These files are intended to be used as a complement and do not form an integral part of this standard.

The committee has decided that the contents of this amendment and the base 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This document is part of a set of specifications, that details layered substation communication architecture. This architecture has been chosen to provide abstract definitions of classes and services such that the specifications are independent of specific protocol stacks and objects. The mapping of these abstract classes and services to communication stacks is outside the scope of IEC 61850-7-x and may be found in IEC 61850-8-x (station bus) and IEC 61850-9-x (process bus).

IEC 61850-7-1 gives an overview of this communication architecture. This part of IEC 61850 defines constructed attributed classes and common data classes related to applications in the power system using IEC 61850 modeling concepts such as substations, hydro power or distributed energy resources. These common data classes are used in IEC 61850-7-4 to define compatible dataObject classes. The SubDataObjects, DataAttributes or SubAttributes of the instances of dataObject are accessed using services defined in IEC 61850-7-2.

This part of IEC 61850 is used to specify the abstract common data class and constructed attribute class definitions. These abstract definitions are mapped into concrete object definitions that are to be used for a particular protocol (for example MMS, ISO 9506 series).

Some restructuration of the document was done between Edition 2 and Ed 2.1. The following table provides a cross reference.

	IEC 61850-7-3:2007A		IEC 61850-7-3:2007B
Clause/ Subclause number	**Name**	**Clause/ Subclause number**	**Name**
	FOREWORD		FOREWORD
	INTRODUCTION		INTRODUCTION
1	Scope	1	Scope
2	Normative references	2	Normative references
3	Terms and definitions	3	Terms and definitions
4	Abbreviated terms	4	Abbreviated terms
5	Conditions for attribute inclusion	5	Conditions for element inclusion
6	Constructed attribute classes	6	Constructed attribute classes
6.1	General	6.1	General
6.2	Quality		*moved to IEC 61850-7-2*
6.3	Analogue value		*moved to Subclause 6.11*
6.4	Configuration of analogue value	6.2	Configuration of analogue value (ScaledValueConfig)
6.5	Range configuration	6.3	Range configuration (RangeConfig)
6.6	Step position with transient indication	6.4	Step position with transient indication (ValWithTrans)
6.7	Pulse configuration	6.5	Pulse configuration (PulseConfig)
6.8	Originator		*moved to IEC 61850-7-2*
6.9	Unit definition	6.6	Unit definition (Unit)
6.10	Vector definition	6.7	Vector definition (Vector)
6.11	Point definition	6.8	Point definition (Point)
6.12	CtlModels definition		*moved to Clause 8*
6.13	SboClasses definition		*moved to Clause 8*
6.14	Cell	6.9	Cell (Cell)
6.15	CalendarTime definition	6.10	Calendar time definition (CalendarTime)

	IEC 61850-7-3:2007A		IEC 61850-7-3:2007B
Clause/ Subclause number	**Name**	**Clause/ Subclause number**	**Name**
		6.11	Analogue value
		6.11.1	General
		6.11.2	Analogue value (AnalogueValue)
		6.11.3	Analogue value control (AnalogueValueCtl)
		6.11.4	Analogue float value control (AnalogueValueCtlF)
		6.11.5	Analogue integer value control (AnalogueValueCtlInt)
7	Common data class specifications	7	Common data class specifications
7.1	General	7.1	General
7.2	Name spaces		
		7.2	Modelling introduction
		7.2.1	General
		7.2.2	<<abstract>> Common attributes for primitive CDC (BasePrimitiveCDC)
		7.2.3	<<abstract>> Common attributes for composed CDC (BaseComposedCDC)
		7.2.4	<<abstract>> Substitution (SubstitutionCDC)
7.3	Common data class specifications for status information	7.3	Status information
		7.3.1	General
7.3.1	Application of services		*moved to Annex B*
7.3.2	Single point status (SPS)	7.3.2	Single point status (SPS)
7.3.3	Double point status (DPS)	7.3.3	Double point status (DPS)
7.3.4	Integer status (INS)	7.3.4	<<statistics>> Integer status (INS)
7.3.5	Enumerated status (ENS)	7.3.5	<<abstract>> Enumerated status (ENS)
7.3.6	Protection activation information (ACT)	7.3.6	Protection activation information (ACT)
7.3.7	Directional protection activation information (ACD)	7.3.7	Directional protection activation information (ACD)
7.3.8	Security violation counting (SEC)	7.3.8	Security violation counting (SEC)
7.3.9	Binary counter reading (BCR)	7.3.9	<<statistics>> Binary counter reading (BCR)
7.3.10	Histogram (HST)	7.3.10	Histogram (HST)
7.3.11	Visible string status (VSS)	7.3.11	Visible string status (VSS)
		7.3.12	Object reference status (ORS)
		7.3.13	Time value status (TCS)
7.4	Common data class specifications for measurand information	7.4	Measurand information
7.4.1	Application of services		*moved to Annex B*
		7.4.1	General
		7.4.2	<<abstract,statistics>> Common harmonic measurand information (HarmonicMeasurandCDC)
7.4.2	Measured value (MV)	7.4.3	<<statistics>> Measured value (MV)
7.4.3	Complex measured value (CMV)	7.4.4	<<statistics>> Complex measured value (CMV)

IEC 61850-7-3:2007A		IEC 61850-7-3:2007B	
Clause/ Subclause number	**Name**	**Clause/ Subclause number**	**Name**
7.4.4	Sampled value (SAV)	7.4.5	<<statistics>> Sampled value (SAV)
7.4.5	Phase to ground/neutral related measured values of a three-phase system (WYE)	7.4.6	<<statistics>> Phase to ground/neutral related measured values of a three-phase system (WYE)
7.4.6	Phase to phase related measured values of a three-phase system (DEL)	7.4.7	<<statistics>> Phase to phase related measured values of a three-phase system (DEL)
7.4.7	Sequence (SEQ)	7.4.8	<<statistics>> Sequence (SEQ)
7.4.8	Harmonic value (HMV)	7.4.9	<<statistics>> Harmonic value (HMV)
7.4.9	Harmonic value for WYE (HWYE)	7.4.10	<<statistics>> Harmonic value for WYE (HWYE)
7.4.10	Harmonic value for DEL (HDEL)	7.4.11	<<statistics>> Harmonic value for DEL (HDEL)
7.5	Common data class specifications for controls	7.5	Controls
7.5.1	Application of services		*moved to Annex B*
		7.5.1	General
		7.5.2	<<abstract>> Controllable testing (ControlTestingCDC)
7.5.2	Controllable single point (SPC)	7.5.3	Controllable single point (SPC)
7.5.3	Controllable double point (DPC)	7.5.4	Controllable double point (DPC)
7.5.4	Controllable integer status (INC)	7.5.5	<<statistics>> Controllable integer status (INC)
7.5.5	Controllable enumerated status (ENC)	7.5.6	<<abstract>> Controllable enumerated status (ENC)
7.5.6	Binary controlled step position information (BSC)	7.5.7	<<statistics>> Binary controlled step position information (BSC)
7.5.7	Integer controlled step position information (ISC)	7.5.8	<<statistics>> Integer controlled step position information (ISC)
7.5.8	Controllable analogue process value (APC)	7.5.9	<<statistics>> Controllable analogue process value (APC)
7.5.9	Binary controlled analog process value (BAC)	7.5.10	<<statistics>> Binary controlled analogue process value (BAC)
7.6	Common data class specifications for status settings	7.6	Status settings
7.6.1	Application of services		*moved to Annex B*
		7.6.1	General
7.6.2	Single point setting (SPG)	7.6.2	Single point setting
7.6.3	Integer status setting (ING)	7.6.3	Integer status setting
7.6.4	Enumerated status setting (ENG)	7.6.4	Enumerated status setting
7.6.5	Object reference setting (ORG)	7.6.5	Object reference setting
7.6.6	Time setting group (TSG)	7.6.6	Time setting
7.6.7	Currency setting group (CUG)	7.6.7	Currency setting
7.6.8	Visible string setting (VSG)	7.6.8	Visible string setting
7.7	Common data class specifications for analogue settings	7.7	Analogue settings
7.7.1	Application of services		*moved to Annex B*
		7.7.1	General

	IEC 61850-7-3:2007A		IEC 61850-7-3:2007B
Clause/ Subclause number	**Name**	**Clause/ Subclause number**	**Name**
7.7.2	Analogue setting (ASG)	7.7.2	Analogue setting
7.7.3	Setting curve (CURVE)	7.7.3	Setting curve
7.7.4	Curve shape setting (CSG)	7.7.4	Curve shape setting
7.8	Common data class specifications for description information	7.8	Description information
7.8.1	Application of services		*moved to Annex B*
		7.8.1	General
7.8.2	Device name plate (DPL)	7.8.2	Device name plate (DPL)
7.8.3	Logical node name plate (LPL)	7.8.3	Logical node name plate (LPL)
7.8.4	Curve shape description (CSD)	7.8.4	Curve shape description (CSD)
		7.8.5	Visible string description (VSD)
	moved from IEC 61850-7-2	7.9	Service tracking
8	Data attribute semantic		*moved to content of tables*
		8	Enumerated data attribute types
Annex A	Value range for units and multiplier	Annex A	Value range for units and multiplier
Annex B	Functional constraints	Annex B	Functional constraints
Annex C	Tracking of configuration revisions	Annex C	Tracking of configuration revisions
Annex D	SCL enumerations	Annex D	SCL enumerations
		Annex E	Conditions for element presence
		Annex F	Compatibility of the different revisions of the standard

1 Scope

Move the existing content of Clause 1 to new Subclause 1.1 General.

Add the following new Subclauses 1.2 and 1.3:

1.2 Namespace name and version

This new section is mandatory for any IEC 61850 namespace (as defined by IEC 61850-7-1:2011).

The parameters which are identifying this new release of this namespace are:

– Namespace Version: 2007
– Namespace Revision: B
– Namespace name: “IEC 61850-7-3:2007B”
– Namespace release: 3
– Namespace release date: 2019-10-02

IEC 61850-7-3 depends on IEC 61850-7-2:2007B latest release

The table below provides an overview of all published versions of this namespace.

Edition	Publication date	Webstore	Namespace
Edition 1.0	2003-05	IEC 61850-7-3:2003	IEC 61850-7-3:2003
Edition 2.0	2010-12	IEC 61850-7-3:2010	IEC 61850-7-3:2007
Amendment 1 of Edition 2.0	2020-02	IEC 61850-7-3:2010/AMD1:2020	IEC 61850-7-3:2007B
Edition 2.1	2020-02	IEC 61850-7-3:2010+AMD1:2020 CSV	IEC 61850-7-3:2007B

1.3 Code Component distribution

The Code Component will be available in light and full version:
– Full version will contain definition of the whole LNs defined in this standard with the documentation associated and access will be restricted to purchaser of this part
– Light version will not contain the documentation but will contain the whole definition of the LNs as per full version, and this light version will be freely accessible on the IEC website for download, but the usage remains under the licensing conditions.

The link for downloading the light version of this code component is:

http://www.iec.ch/public/TC57/supportdocuments/IEC_61850-7-3.NSD.2007B3.light.zip

The Code Components for IEC 61850 data models (like basic types, presence conditions, … definition in this IEC standard) are available as the file format NSD defined by standard IEC 61850-7-7.

The Code Component(s) included in this IEC standard are potentially subject to maintenance works and user shall select the latest release in the repository located at:
http://www.iec.ch/TC57/supportdocuments

The latest version/release of the document will be found by selecting the file IEC_61850-7-2.NSD.{VersionStateInfo}.light.zip with the filed VersionStateInfo of the highest value.

Each Code Component is a ZIP package containing the electronic representation of the Code Component itself, with a file describing the content of the package (IECManifest.xml).
The IECManifest contains different sections giving information on: