
Komunikacijska omrežja in sistemi za avtomatizacijo porabe električne energije - 7-2. del: Osnovna informacijska in komunikacijska struktura - Vmesnik abstraktne komunikacijske storitve (ACSI) - Dopolnilo A1

Communication networks and systems for power utility automation - Part 7-2: Basic information and communication structure - Abstract communication service interface (ACSI)

Kommunikationsnetze und -systeme für die Automatisierung in der elektrischen Energieversorgung - Teil 7-2: Grundlegende Informations- und Kommunikationsstruktur - Abstrakte Schnittstelle für Kommunikationsdienste (ACSI)

Réseaux de communication pour l'automatisation des systèmes des compagnies d'électricité - Partie 7-2: Principes des structures d'informations et de communication - Interface de services abstraits de communication (ACSI)

Ta slovenski standard je istoveten z: EN 61850-7-2:2010/A1:2020

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

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EUROPEAN STANDARD

EN 61850-7-2:2010/A1

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English Version

Communication networks and systems for power utility
automation - Part 7-2: Basic information and communication
structure - Abstract communication service interface (ACSI)
(IEC 61850-7-2:2010/A1:2020)

Réseaux et systèmes de communication pour
l'automatisation des systèmes électriques - Partie 7-2:
Informations de base et structure de communication -
Interface abstraite pour les services de communication
(ACSI)
(IEC 61850-7-2:2010/A1:2020)

Kommunikationsnetze und -systeme für die
Automatisierung in der elektrischen Energieversorgung -
Teil 7-2: Grundlegende Informations- und
Kommunikationsstruktur - Abstrakte Schnittstelle für
Kommunikationsdienste (ACSI)
(IEC 61850-7-2:2010/A1:2020)

This amendment A1 modifies the European Standard EN 61850-7-2:2010; 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.

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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

EN 61850-7-2:2010/A1:2020 (E)**European foreword**

The text of document 57/2100/FDIS, future IEC 61850-7-2/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 61850-7-2:2010/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

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Endorsement notice

SIST EN 61850-7-2:2011/A1:2020

The text of the International Standard IEC 61850-7-2:2010/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 references to IEC 61850-6, IEC 61850-7-1, IEC 61850-7-3 and IEC 61850-7-4 with the following references:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61850-6	-	Communication networks and systems for power utility automation - Part 6: Configuration description language for communication in electrical substations related to IEDs	EN 61850-6	-
IEC 61850-7-1	2020	Communication networks and systems for power utility automation - Part 7-1: Basic communication structure - Principles and models	-	-
IEC 61850-7-3	2020	Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes	-	-
IEC 61850-7-4	2020	Communication networks and systems for power utility automation - Part 7-4: Basic communication structure - Compatible logical node classes and data object classes	-	-

Delete the following references:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61850-8-1	-	Communication networks and systems for power utility automation - Part 8-1: Specific communication service mapping (SCSM) - Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3	EN 61850-8-1	-
IEC 61850-9-2	-	Communication networks and systems for power utility automation - Part 9-2: Specific communication service mapping (SCSM) - Sampled values over ISO/IEC 8802-3	EN 61850-9-2	-
ISO 9506	-	Industrial automation systems - Manufacturing Message Specification	-	-

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IEC 61850-7-2

Edition 2.0 2020-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE



AMENDMENT 1
AMENDEMENT 1

**Communication networks and systems for power utility automation –
Part 7-2: Basic information and communication structure – Abstract
communication service interface (ACSI)**

**Réseaux et systèmes de communication pour l'automatisation des systèmes
électriques –
Partie 7-2: Informations de base et structure de communication – Interface
abstraite pour les services de communication (ACSI)**

INTERNATIONAL
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FOREWORD

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

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

This edition includes the following significant technical changes with respect to the previous edition:

- a) class diagrams have been updated;
- b) data types have been gathered in one document and harmonized with IEC 61850-6:2007B;
- c) errors and typos have been corrected;
- d) CDCs for service tracking have been moved to IEC 61850-7-3:2007B to gather all CDCs in one document;
- e) several terms have been harmonized with those in the other parts;
- f) definition and explanation of values for each attribute were moved into the class definition tables;
- g) definition and explanation of values for each service parameter were move to service parameter definition tables;
- h) harmonization of the namingscheme for Enumeration and CodedEnum types to <EnumTitle>Kind resp. <CodedEnumTitle>Kind, fully backward compatible as the value of the literal have not changed;
- i) deprecation of the USVCB model;

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

- provides clarifications and corrections to the second edition of IEC 61850-7-2, based on the tissues = { 728, 730, 778, 780, 783, 786, 813, 820, 850, 852, 858, 860, 861, 869, 875, 876, 943, 970, 1038, 1050, 1061, 1062, 1071, 1091, 1092, 1116, 1122, 1127, 1145, 1154, 1194, 1202, 1232, 1242, 1252, 1276, 1283, 1307, 1308, 1319, 1338, 1341, 1356, 1377, 1386, 1428, 1432, 1433, 1435, 1439, 1455, 1569, 1589, 1622, 1630, 1650, 1652 }.

Content in some parts of Clause 6, some UML diagrams, as well as Annex B are automatically generated from the UML model.

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.

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

FDIS	Report on voting
57/2100/FDIS	57/2131/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this document, the following print types are used:

- **bold** is used to highlight defined terms,
- **Tahoma bold** is used where the difference between a capital i (I) and a small L (l) is important to see.
- Table numbering with additional characters 'N' (e.g. Table 16N) are tables following the Ed 2.1 numbering.

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

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.

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INTRODUCTION

This document is part of a set of definitions which details a layered utility communication architecture. This architecture has been chosen to provide abstract definitions of classes and services such that the definitions are independent of specific protocol stacks, implementations, and operating systems.

The IEC 61850 series is intended to provide interoperability between a variety of devices. Communication between these devices is achieved by the definition of a hierarchical class model (for example, logical device, logical node, data, data set, report control, or log) and services provided by these classes (for example, get, set, report, define, delete) in IEC 61850-7-x.

This document defines the abstract communication service interface (ACSI) for use in the utility application domain, which requires real-time cooperation of intelligent electronic devices. The ACSI has been defined so as to be independent of the underlying communication systems. Specific communication service mappings¹ (SCSM) are specified in IEC 61850-8-x and IEC 61850-9-x.

This document defines the abstract communication service interface in terms of

- a hierarchical class model of all information that can be accessed via a communication network,
- services that operate on these classes, and
- parameters associated with each service.

The ACSI description technique abstracts away from all the different approaches to implement the cooperation of the various devices.

This document does not provide comprehensive tutorial material. It is recommended that IEC 61850-5 and IEC 61850-7-1 be read first in conjunction with IEC 61850-7-2 and IEC 61850-7-3.

NOTE 1 Refer to International Electrotechnical Vocabulary, IEC 60050, for general glossary definitions.

NOTE 2 Abstraction in ACSI has two meanings. First, only those aspects of a real device (for example, a breaker) or a real function that are visible and accessible over a communication network are modelled. This abstraction leads to the hierarchical class models and their behaviour defined in IEC 61850-7-2, IEC 61850-7-3, and IEC 61850-7-4. Second, the ACSI abstracts from the aspect of concrete definitions on how the devices exchange information; only a conceptual cooperation is defined. The concrete information exchange is defined in the SCSMs.

NOTE 3 Examples use names of classes (for example XCBR for a class of a logical node) defined in IEC 61850-7-4 and IEC 61850-7-3. The normative names are defined in IEC 61850-7-4 and IEC 61850-7-3 only.

¹ The ACSI is independent of the specific mapping. Mappings to standard application layers or middle ware technologies are possible.

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

IEC 61850-7-2:2010 Edition 2.0		IEC 61850-7-2:2016 Edition 2.1	
Clause/ Subclause number	Name	Clause/ Subclause number	Name
	FOREWORD		FOREWORD
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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	ACSI overview and basic concepts	5	ACSI overview and basic concepts
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5.3.3	Information exchange modelling classes	5.3.3	Information exchange modelling classes
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5.5	The data instance model	5.5	The data instance model
		5.6	Conditions for element presence
		5.7	Functional constraints
		5.8	Trigger options
6	TypeDefinitions	6	Type definition
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		6.2.2.4	INT16 (INT16 basic)
		6.2.2.5	INT32 (INT32 basic)
		6.2.2.6	INT64 (INT64 basic)
		6.2.2.7	INT8U (INT8U basic)
		6.2.2.8	INT16U (INT16U basic)
		6.2.2.9	INT24U (INT24U basic)
		6.2.2.10	INT32U (INT32U basic)
		6.2.2.11	FLOAT32 (FLOAT32 basic)
		6.2.2.12	Octet64 (Octet64 basic)
		6.2.2.13	VisString64 (VisString64 basic)

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Clause/ Subclause number	Name	Clause/ Subclause number	Name
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6.1.2.3	ObjectReference	6.2.3.4	ObjectReference (ObjectReference basic)
6.1.2.4	PHYCOMADDR type	6.2.3.2	PhyComAddr (PhyComAddr basic)
6.1.2.5	ARRAY type		<i>moved to 6.1</i>
6.1.2.6	ServiceError type		<i>moved to 6.2.4.3</i>
6.1.2.7	EntryID type	6.2.3.5	EntryID (EntryID basic)
6.1.2.8	Packed list type		<i>moved to 6.1</i>
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6.1.2.9.1	General		<i>moved to 6.2.3.7</i>
6.1.2.9.2	TimeStamp syntax		<i>moved to 6.2.3.7</i>
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6.1.2.9.3.3	TimeQuality	6.2.3.8	TimeQuality (TimeQuality packed list)
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		6.2.4.5	Control service status / additional cause (ControlServiceStatusKind enumeration)
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6.1.2.12	ReasonCode (ReasonForInclusion)	6.3.3.3	Reason for inclusion in reports (ReasonForInclusionInReport packed list)
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		6.3.4	ACSI enumerated types
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		6.3.4.2	ACSI class (ACSIClassKind enumeration)
7	GenServerClass model	7	GenServerClass model
7.1	GenServerClass definition	7.1	GenServerClass definition
7.1.1	GenServerClass syntax		<i>moved to 7.1</i>
7.1.2	GenServerClass attributes		<i>moved to 7.1</i>
7.1.2.1	ServiceAccessPoint [1..n]		<i>moved to 7.1</i>
7.1.2.2	LogicalDevice [1..n]		<i>moved to 7.1</i>
7.1.2.3	FileSystem [0..n]		<i>moved to 7.1</i>
7.1.2.4	TAppAssociation [0..n] – two- party application association		<i>moved to 7.1</i>
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7.2	Server class services	7.2	Server class services
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7.2.2.1	GetServerDirectory parameter table		<i>moved to 7.2.2</i>
7.2.2.2	Request		<i>moved to 7.2.2</i>
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IEC 61850-7-2:2010 Edition 2.0		IEC 61850-7-2:2016 Edition 2.1	
Clause/ Subclause number	Name	Clause/ Subclause number	Name
7.2.2.3	Response+		<i>moved to 7.2.2</i>
7.2.2.3.1	Reference [0..n]		<i>moved to 7.2.2</i>
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8	Application association model	8	Application association model
8.1	Introduction	8.1	Introduction
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8.3.1	TWO-PARTY-APPLICATION-ASSOCIATION (TPAA) class definition	8.3.1	TWO-PARTY-APPLICATION-ASSOCIATION (TPAA) class definition
8.3.1.1	TWO-PARTY-APPLICATION-ASSOCIATION (TPAA) class syntax		<i>moved to 8.3.1</i>
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8.3.1.2.2	AuthenticationParameter		<i>moved to 8.3.1</i>
8.3.2	Two-party application association services	8.3.2	Two-party application association services
8.3.2.1	Overview	8.3.2.1	Overview
8.3.2.2	Associate	8.3.2.2	Associate
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8.3.2.2.2	Request		<i>moved to 8.3.2.2</i>
8.3.2.2.2.1	ServerAccessPointReference		<i>moved to 8.3.2.2</i>
8.3.2.2.2.2	AuthenticationParameter		<i>moved to 8.3.2.2</i>
8.3.2.2.3	Response+		<i>moved to 8.3.2.2</i>
8.3.2.2.4	Result		<i>moved to 8.3.2.2</i>
8.3.2.2.5	Response-		<i>moved to 8.3.2.2</i>
8.3.2.3	Abort	8.3.2.3	Abort
8.3.2.3.1	Abort parameter		<i>moved to 8.3.2.3</i>
8.3.2.3.2	Request		<i>moved to 8.3.2.3</i>
8.3.2.3.2.1	AssociationId		<i>moved to 8.3.2.3</i>
8.3.2.3.2.2	Reason		<i>moved to 8.3.2.3</i>
8.3.2.3.3	Indication		<i>moved to 8.3.2.3</i>
8.3.2.3.3.1	AssociationId		<i>moved to 8.3.2.3</i>
8.3.2.3.3.2	Reason		<i>moved to 8.3.2.3</i>
8.3.2.4	Release	8.3.2.4	Release
8.3.2.4.1	Release parameter		<i>moved to 8.3.2.4</i>
8.3.2.4.2	Request		<i>moved to 8.3.2.4</i>
8.3.2.4.3	Response+		<i>moved to 8.3.2.4</i>

IEC 61850-7-2:2010 Edition 2.0		IEC 61850-7-2:2016 Edition 2.1	
Clause/ Subclause number	Name	Clause/ Subclause number	Name
8.3.2.4.3.1	AssociationId		<i>moved to 8.3.2.4</i>
8.3.2.4.3.2	Result		<i>moved to 8.3.2.4</i>
8.3.2.4.4	Response-		<i>moved to 8.3.2.4</i>
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8.4.1	MULTICAST-APPLICATION-ASSOCIATION (MCAA) class definition	8.4.1	MULTICAST-APPLICATION-ASSOCIATION (MCAA) class definition
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8.4.2.1	AuthenticationParameter		<i>moved to 8.4.1</i>
9	GenLogicalDeviceClass model	9	GenLogicalDeviceClass model
9.1	GenLogicalDeviceClass definition	9.1	GenLogicalDeviceClass definition
9.1.1	GenLogicalDeviceClass syntax		<i>moved to 9.1</i>
9.1.2	GenLogicalDeviceClass attributes		<i>moved to 9.1</i>
9.1.2.1	LDName – logical device name		<i>moved to 9.1</i>
9.1.2.2	LogicalNode [1..n]		<i>moved to 9.1</i>
9.2	GenLogicalDeviceClass services	9.2	GenLogicalDeviceClass services
9.2.1	GetLogicalDeviceDirectory	9.2.1	GetLogicalDeviceDirectory
9.2.1.1	GetLogicalDeviceDirectory/catalog/standards/sist/df1b5319-492c-480bf-f84a3499b8d6/sist-en-61850-7-2-2011-a1-2020 parameter table		<i>moved to 9.2.180bf</i>
9.2.1.2	Request		<i>moved to 9.2.1</i>
9.2.1.2.1	LDname – logical device object name		<i>moved to 9.2.1</i>
9.2.1.3	Response+		<i>moved to 9.2.1</i>
9.2.1.4	Response-		<i>moved to 9.2.1</i>
10	GenLogicalNodeClass model	10	GenLogicalNodeClass model
10.1	GenLogicalNodeClass definition	10.1	GenLogicalNodeClass definition
10.1.1	GenLogicalNodeClass diagram	10.1.1	GenLogicalNodeClass diagram
10.1.2	GenLogicalNodeClass syntax	10.1.2	GenLogicalNodeClass attributes
10.1.3	GenLogicalNodeClass attributes		<i>moved to 10.1.2</i>
10.1.3.1	LNName – Logical node name		<i>moved to 10.1.2</i>
10.1.3.2	LNRef – Logical node ObjectReference		<i>moved to 10.1.2</i>
10.1.3.3	DataObject [1..n]		<i>moved to 10.1.2</i>
10.1.3.4	DataSet [0..n]		<i>moved to 10.1.2</i>
10.1.3.5	BufferedReportControlBlock [0..n]		<i>moved to 10.1.2</i>
10.1.3.6	UnbufferedReportControlBlock [0..n]		<i>moved to 10.1.2</i>
10.1.3.7	Log [0..n]		<i>moved to 10.1.2</i>
10.1.3.8	LogControlBlock [0..n]		<i>moved to 10.1.2</i>
10.1.3.9	SettingGroupControlBlock [0..1]		<i>moved to 10.1.2</i>