

SLOVENSKI STANDARD SIST EN 61850-9-2:2005

01-november-2005

Komunikacijska omrežja in sistemi v postajah – 9-2. del: Preslikave posebne komunikacijske storitve (SCSM) – Vzorčne/odčitane vrednosti po ISO/IEC 8802-3 (IEC 61850-9-2:2004)

Communication networks and systems in substations -- Part 9-2: Specific Communication Service Mapping (SCSM) - Sampled values over ISO/IEC 8802-3

Kommunikationsnetze und systeme in Stationen - Teil 9-2; Spezifische Abbildung von Kommunikationsdiensten (SCSM) - Abgetastete Werte über ISO/IEC 8802-3 (standards.iteh.ai)

Réseaux et systèmes de communication dans les postes -- Partie 9-2: Implémentation spécifique des services de communication (SCSM)₀₀ Valeurs numérisées sur l'ISO/IEC 8802-3 badc34cc58b7/sist-en-61850-9-2-2005

Ta slovenski standard je istoveten z: EN 61850-9-2:2004

ICS:

29.240.30 Krmilna oprema za Control equipment for electric

elektroenergetske sisteme power systems

33.200 Daljinsko krmiljenje, daljinske Telecontrol. Telemetering

meritve (telemetrija)

SIST EN 61850-9-2:2005 en

SIST EN 61850-9-2:2005

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61850-9-2:2005

https://standards.iteh.ai/catalog/standards/sist/001df16c-8cb0-44d4-8f91-badc34cc58b7/sist-en-61850-9-2-2005

EUROPEAN STANDARD

EN 61850-9-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2004

ICS 33.200

English version

Communication networks and systems in substations Part 9-2: Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3

(IEC 61850-9-2:2004)

Réseaux et systèmes de communication dans les postes

Partie 9-1: Implémentation spécifique des services de communication (SCSM) - Kommunikationsdiens Abgetastete Werte über (CEI 61850-9-2:2004) (IEC 61850-9-2:2004)

Kommunikationsnetze und
-systeme in Stationen
Teil 9-2: Spezifische Abbildung von
Kommunikationsdiensten (SCSM) Abgetastete Werte über ISO/IEC 8802-3

I STANDARD PREVIEW

(standards.iteh.ai)

SIST EN 61850-9-2:2005

https://standards.iteh.ai/catalog/standards/sist/001df16c-8cb0-44d4-8f91-badc34cc58b7/sist-en-61850-9-2-2005

This European Standard was approved by CENELEC on 2004-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 Central Secretariat or to any CENELEC member.

This European Standard 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

EN 61850-9-2:2004

- 2 -

Foreword

The text of document 57/690/FDIS, future edition 1 of IEC 61850-9-2, prepared by IEC TC 57, Power systems management and associated information exchange, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61850-9-2 on 2004-04-01.

The following dates were fixed:

 latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement

(dop) 2005-01-01

 latest date by which the national standards conflicting with the EN have to be withdrawn

(dow) 2007-04-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61850-9-2:2004 was approved by CENELEC as a European Standard without any modification. DARD PREVIEW

(standards.iteh.ai)

<u>SIST EN 61850-9-2:2005</u> https://standards.iteh.ai/catalog/standards/sist/001df16c-8cb0-44d4-8f91-bade34cc58b7/sist-en-61850-9-2-2005

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60874-10-1	- 1)	Connectors for optical fibres and cables Part 10-1: Detail specification for fibre optic connector type BFOC/2,5 terminated to multimode fibre type A1	-	-
IEC 60874-10-2	_ 1)	Part 10-2: Detail specification for fibre optic connector type BFOC/2,5 terminated to single-mode fibre type B1	-	-
IEC 60874-10-3	- ¹⁾ iT	Part 10-3: Detail specification for fibre optic adaptor type BFOC/2,5 for single and multimode fibre (S.11en.al)	W	-
IEC 61850-7-1	_ 1) https://sta	Communication networks and systems in substations Part 7-1: Basic communication structure for substation and feeder equipment - Principles and models	EN 61850-7-1 4-8f91-	2003 2)
IEC 61850-7-2	_ 1)	Part 7-2: Basic communication structure for substation and feeder equipment - Abstract communication service interface (ACSI)	EN 61850-7-2	2003 ²⁾
IEC 61850-7-3	_ 1)	Part 7-3: Basic communication structure for substation and feeder equipment - Common data classes	EN 61850-7-3	2003 2)
IEC 61850-7-4	_ 1)	Part 7-4: Basic communication structure for substation and feeder equipment - Compatible logical node classes and data classes	EN 61850-7-4	2003 2)
IEC 61850-8-1	_ 1)	Part 8-1: Specific communication service mapping (SCSM) - Mapping to MMS (ISO/IEC 9506 Part 1 and Part 2) over ISO 8802-3	EN 61850-8-1	_ 3)

¹⁾ Undated reference.

=

²⁾ Valid edition at date of issue.

³⁾ In preparation.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 61850-9-1	_ 1)	Part 9-1: Specific Communication Service Mapping (SCSM) - Sampled values over serial unidirectional multidrop point to point link	EN 61850-9-1	2003 ²⁾
ISO/IEC 7498-1	1994	Information technology - Open systems interconnection - Basic reference model Part 1: The basic model	EN ISO/IEC 7498-1	1995
ISO/IEC 8326	1996	Information technology - Open systems Interconnection - Session service definition	-	-
ISO/IEC 8327-1	1997	Information technology - Open Systems Interconnection - Connection-oriented Session protocol: Protocol specification	-	-
ISO/IEC 8649	1996	Information technology - Open systems interconnection - Service definition for the Association Control Service Element (ACSE)	-	-
ISO/IEC/TR2 8650-1	1996 iT	Information technology - Open systems interconnection - Connection-oriented Protocol for the association control service element: Protocol specification	W	-
ISO/IEC 8802-3	2001 https://st	Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications	- 14-8f91-	-
ISO/IEC 8822	1994	Information technology - Open Systems Interconnection - Presentation service definition	-	-
ISO/IEC 8823-1	1994	Information technology - Open Systems Interconnexion - Connection-oriented presentation protocol: Protocol specification	-	-
ISO/IEC 8824-1	2000	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
A1 A2	2000 2000		-	- -
ISO/IEC 8825-1	2000	Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)	-	-

EN 61850-9-2:2004

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
ISO 9506-1	2003	Industrial automation systems - Manufacturing Message Specification Part 1: Service definition	-	-
ISO 9506-2	2003	Part 2: Protocol specification	-	-
IEEE 754	1985	Standard for Binary Floating-Point Arithmetic	-	-
IEEE 802.1Q	1998	IEEE Standards for local and metropolitan area networks: Virtual bridged local area networks	-	-
RFC 791	1981	Internet Protocol	-	-
RFC 792		Internet Control Message Protocol	-	-
RFC 793	1981	Transmission Control Protocol (TCP), Internet Activities Board recommended standard	-	-
RFC 826	1982	Address Resolution Protocol (ARP), Internet Activities Board elective standard	-	-
RFC 894	1984	Internet Protocol on Ethernet Networks, Internet Activities Board elective standard	<u> </u>	-
RFC 919	1984	Broadcasting Internet Datagrams	-	-
RFC 1006	1989 ^{/sta}	version 3 4cc58b7/sist-en-61850-9-2-2005	14 <u>-</u> 8f91-	-
RFC 1112	1989	Host Extensions for IP Multicasting	-	-

SIST EN 61850-9-2:2005

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61850-9-2:2005

https://standards.iteh.ai/catalog/standards/sist/001df16c-8cb0-44d4-8f91-badc34cc58b7/sist-en-61850-9-2-2005

INTERNATIONAL STANDARD

IEC 61850-9-2

First edition 2004-04

Communication networks and systems in substations –

Part 9-2:

Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3

(standards.iteh.ai)

<u>SIST EN 61850-9-2:2005</u> https://standards.iteh.ai/catalog/standards/sist/001df16c-8cb0-44d4-8f91-badc34cc58b7/sist-en-61850-9-2-2005

© IEC 2004 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



PRICE CODE



CONTENTS

FO	REW	ORD	4
INT	ROD	UCTION	6
1	Scop	oe	7
2	Norr	native references	7
3	Tern	ns and definitions	9
4	Abbı	eviations	9
5	Com	munication stack	10
	5.1	Overview of the protocol usage	10
	5.2	Client/server services and communication profiles	11
	5.3	SV service and communication profile	
	5.4	Restrictions	
6	-	ping of IEC 61850-7-2 and IEC 61850-7-3 Data Attributes	
7	Мар	ping of IEC 61850-7-2 classes and services	16
	7.1	Classes of SV data sets	16
	7.2	Definition of SV data sets	
8	Мар	ping of the model for the transmission of sampled values	16
	8.1	Overview	16
	8.2	Mapping of the multicast sampled value control block class and services	
	8.3	Mapping of the unicast sampled value control block class and services	
	8.4	Mapping of the update of the sampled value buffer.	
	8.5 8.6	Additional definitions for the transmission of Sampled values 14-8/91- Definitions for basic data types 57/sist-en-61850-9-2-2005	
9		ormance	
J	9.1	Notation	
	9.2	PICS	
10		station Configuration language (SCL)	
. 0	Cub	nation configuration language (coc)	20
Anr	nex A	(informative) ISO/IEC 8802-3 frame format and ASN.1 basic encoding rules	24
Anr	nex B	(informative) Process bus architectures	27
		(informative) Multicast address selection	
Fig	ure 1	OSI reference model and profiles	10
Fig	ure 2	- Structure of the tag header	14
Fig	ure 3	- Concatenation of several ASDU's into one frame	19
Fig	ure A	. 1 – ISO/IEC 8802-3 frame format	24
_		.2 – Basic encoding rules format	
_		.3 – Format of the tag octets	
_		.4 – Example for an ASN.1 coded APDU frame structure	
_		1 – Alternative process bus architectures	27

Table 1 – Service requiring client/server communication profile11
Table 2 – Service and protocols for client/server communication A-Profile12
Table 3 – Service and Protocols for Peer TCP/IP T-Profile
Table 4 – Service requiring SV communication profile13
Table 5 – Service and protocols for SV communication A-Profile13
Table 6 – SV T-Profile13
Table 7 – Default Virtual LAN IDs and priorities14
Table 8 – Assigned Ethertype values15
Table 9 – MMS TypeDescription definition for MSVCB MMS structure17
Table 10 – Mapping of multicast sampled value services17
Table 11 – MMS TypeDescription definition for USVCB MMS Structure18
Table 12 – Mapping of unicast sampled value services18
Table 13 – Encoding for the transmission of the sampled value buffer20
Table 14 – Encoding for the basic data types21
Table 15 – PICS for A-Profile support22
Table 16 – PICS for T-Profile support22
Table 17 – SV conformance statement N.D.A.R.D.P.R.E.V.L.F.W
Table 18 – Definitions for SV SCL

SIST EN 61850-9-2:2005

https://standards.iteh.ai/catalog/standards/sist/001df16c-8cb0-44d4-8f91-badc34cc58b7/sist-en-61850-9-2-2005

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMUNICATION NETWORKS AND SYSTEMS IN SUBSTATIONS -

Part 9-2: Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international
 consensus of opinion on the relevant subjects since each technical committee has representation from all
 interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user. standards.iteh.ai
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or (regional publication shall be clearly indicated in the latter.
 https://standards.itch.ai/catalog/standards/sist/001dfl 6c-8cb0-44d4-8f91-
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61850-9-2 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

FDIS	Report on voting
57/690/FDIS	57/709/RVD

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

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