SLOVENSKI STANDARD
SIST EN 62056-53:2004

01-januar-2004

Electricity metering - Data exchange for meter reading, tariff and load control - Part 53: COSEM application layer (IEC 62056-53:2002)

Electricity metering - Data exchange for meter reading, tariff and load control -- Part 53: COSEM application layer

Messung der elektrischen Energie - Zählerstandsübertragung, Tarif- und Laststeuerung -- Teil 53: COSEM-Anwendungsschicht

Equipements de mesure de l'énergie électrique - Echange des données pour la lecture des compteurs, le contrôle des tarifs et de la charge -- Partie 53: Couche application COSEM

Ta slovenski standard je istoveten z: **EN 62056-53:2002**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
35.100.70	Uporabniški sloj	Application layer
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

SIST EN 62056-53:2004 **en**

EUROPEAN STANDARD **EN 62056-53**

NORME EUROPÉENNE

EUROPÄISCHE NORM June 2002

ICS 91.140.50;35.100.70

English version

Electricity metering - Data exchange for meter reading, tariff and load control Part 53: COSEM application layer

(IEC 62056-53:2002)

Equipements de mesure de l'énergie électrique - Echange des données pour la lecture des compteurs, le contrôle des tarifs et de la charge Partie 53: Couche application COSEM (CEI 62056-53:2002)

Messung der elektrischen Energie - Zählerstandsübertragung, Tarif- und Laststeuerung Teil 53: COSEM-Anwendungsschicht (IEC 62056-53:2002)

This European Standard was approved by CENELEC on 2002-03-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

Ref. No. EN 62056-53:2002 E

Foreword

The text of document 13/1268/FDIS, future edition 1 of IEC 62056-53, prepared by IEC TC 13, Equipment for electrical energy measurement and load control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62056-53 on 2002-03-01.

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) 2003-01-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-03-01

The International Electrotechnical Commission (IEC) and CENELEC draw attention to the fact that it is claimed that compliance with this International Standard / European Standard may involve the use of a maintenance service concerning the stack of protocols on which the present standard IEC 62056-53 / EN 62056-53 is based.

The IEC and CENELEC take no position concerning the evidence, validity and scope of this maintenance service.

The provider of the maintenance service has assured the IEC that he is willing to provide services under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the provider of the maintenance service is registered with the IEC. Information may be obtained from:

DLMS [1] User Association
Geneva / Switzerland
www.dlms.ch

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes A, B, and ZA are normative and annexes C and D are informative. Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62056-53:2002 was approved by CENELEC as a European Standard without any modification.

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[1] Device Language Message Specification

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

Publication	Year	Title	EN/HD	Year
IEC 60050-300	2001	International Electrotechnical Vocabulary - Electrical and electronic measurements and measuring instruments Part 311: General terms relating to measurements Part 312: General terms relating to electrical measurements Part 313: Types of electrical measuring instruments Part 314: Specific terms according to the type of instrument	-	-
IEC 61334-4-41	1996	Distribution automation using distribution line carrier systems Part 4: Data communication protocols Section 41: Application protocols - Distribution line message specification	EN 61334-4-41	1996
IEC 61334-6	2000	Part 6: A-XDR encoding rule	EN 61334-6	2000
IEC/TR 62051	1999	Electricity metering - Glossary of terms	-	-
IEC 62056-21	2002	Electricity metering - Data exchange for meter reading, tariff and load control Part 21: Direct local data exchange	EN 62056-21	2002
IEC 62056-42	2002	Part 42: Physical layer services and procedures for connection- oriented asynchronous data exchange	EN 62056-42	2002
IEC 62056-46	2002	Part 46: Data link layer using HDLC protocol	EN 62056-46	2002
IEC 62056-61	2002	Part 61: Object identification system (OBIS)	EN 62056-61	2002
IEC 62056-62	2002	Part 62: Interface classes	EN 62056-62	2002

Publication	Year	Title	EN/HD	Year
ISO/IEC 8649	1996	Information technology - Open systems interconnection - Service definition for the Association Control Service Element (ACSE)	-	-
ISO/IEC/TR2 8650-1	1996	Information technology - Open systems interconnection - Connection-oriented protocol for the association control service element: Protocol specification	-	-
ISO/IEC 8824	1990	Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)	-	-
ISO/IEC 8825	1990	Information technology - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)	-	-
ISO/IEC 13239	2000	Information technology - Telecommunications and information exchange between systems - High-level data link control (HDLC) procedures	-	-

INTERNATIONAL STANDARD

IEC 62056-53

First edition
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Electricity metering – Data exchange for meter reading, tariff and load control –

Part 53: COSEM application layer

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

IEC

Commission Electrotechnique Internationale
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICITY METERING – DATA EXCHANGE FOR METER READING, TARIFF AND LOAD CONTROL –

Part 53: COSEM application layer

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the 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 National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this International Standard may involve the use of a maintenance service concerning the stack of protocols on which the present standard IEC 62056-53 is based.

The IEC takes no position concerning the evidence, validity and scope of this maintenance service.

The provider of the maintenance service has assured the IEC that he is willing to provide services under reasonable and non-discriminatory terms and conditions for applicants throughout the world. In this respect, the statement of the provider of the maintenance service is registered with the IEC. Information may be obtained from:

DLMS[1] User Association
Geneva / Switzerland
www.dlms.ch

International Standard IEC 62056-53 has been prepared by IEC technical committee 13: Equipment for electrical energy measurement and load control.

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

FDIS	Report on voting
13/1268/FDIS	13/1274/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.

1 Device Language Message Specification.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annexes A and B form an integral part of this standard.

Annexes C and D are for information only.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

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

ELECTRICITY METERING – DATA EXCHANGE FOR METER READING, TARIFF AND LOAD CONTROL –

Part 53: COSEM application layer

1 Scope

This part of IEC 62056 specifies the COSEM application layer in terms of structure, services and protocols, for COSEM clients and servers.

Data communication services with COSEM interface objects, using Logical name (LN) referencing and Short name (SN) referencing, are specified. COSEM servers use either LN or SN referencing during a given association: this is negotiated during the Application Association establishment. The COSEM client always uses LN referencing. If the client communicates with a server using SN referencing, the LN services are mapped to SN services.

Annex C includes encoding examples for APDUs. Annex D gives an explanation of the role of data models and protocols in electricity meter data exchange.

2 Normative references

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

IEC 60050-300:2001, *International Electrotechnical Vocabulary – Electrical and electronic measurements and measuring instruments – Part 311: General terms relating to measurements – Part 312: General terms relating to electrical measurements – Part 313: Types of electrical measuring instruments – Part 314: Specific terms according to the type of instrument*

IEC 61334-4-41:1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 41: Application protocols – Distribution line message specification*

IEC 61334-6:2000, *Distribution automation using distribution line carrier systems – Part 6: A-XDR encoding rule*

IEC/TR2 62051:1999, *Electricity metering – Glossary of terms*

IEC 62056-21, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange* [2]

IEC 62056-42:2001, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 42: Physical layer services and procedures for connection-oriented asynchronous data exchange*

IEC 62056-46, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC protocol*

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2 To be published.

IEC 62056-61, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 61: OBIS Object identification system*

IEC 62056-62, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 62: Interface objects*

ISO/IEC 8649:1996, *Information technology – Open Systems Interconnection – Service definition for the Association Control Service Element*

ISO/IEC/TR2 8650-1:1996, *Information technology – Open systems interconnection – Connection-oriented protocol for the association control service element: Protocol specification*

ISO/IEC 8824:1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*

ISO/IEC 8825:1990, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*

ISO/IEC 13239:2000, *Information technology – Telecommunications and information exchange between systems – High-level data link control (HDLC) procedures*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purpose of this part of IEC 62056, the definitions in IEC 60050-300 and IEC/TR 62051, as well as the following, apply.

3.1.1
base_name
the short_name corresponding to the first attribute ("logical_name") of a COSEM interface object

3.1.2
class_id
interface class identification code

3.1.3
client
a station, asking for services

3.1.4
COSEM interface object
an instance of a COSEM interface class

3.1.5
server
a station, delivering services. The tariff device (metering equipment) is normally the server, delivering the requested data or executing the requested tasks.

3.2 Abbreviations

AA	Application Association
AARE	Application Association REsponse
AARQ	Application Association ReQuest
ACSE	Application Control Service Element
AE	Application Entity
AP	Application Process
APDU	Application layer Protocol Data Unit
API	Application Programming Interface
ASE	Application Service Element
ASO	Application Service Object
A-XDR	Adapted eXtended Data Representation
BER	Basic Encoding Rules
CF	Control function
.cnf	confirm service primitive
CO	Connection Oriented
COSEM	COmpanion Specification for Energy Metering
DLMS	Distribution Line Message Specification
DSAP	Data link Service Access Point
GMT	Greenwich Mean Time
HDLC	High-level Data Link Control
HLS	High-Level Security
IC	Interface Class
LLC	Logical Link Control (sub-layer)
LLS	Low Level Security
LPDU	LLC Protocol Data Unit
LSB	Least Significant Bit
LSAP	LLC sub-layer Service Access Point
m	mandatory, used in conjunction with attribute and method definitions
MSB	Most Significant Bit
MSC	Message Sequence Chart
o	optional, used in conjunction with attribute and method definitions
OBIS	OBject Identification System
PDU	Protocol Data Unit
.req	.request service primitive
.res	.response service primitive
SAP	Service Access Point
xDLMS-ASE	extended DLMS Application Service Element