SLOVENSKI STANDARD
SIST EN 62056-62:2004

01-januar-2004

Electricity metering - Data exchange for meter reading, tariff and load control - Part 62: Interface classes (IEC 62056-62:2002)

Electricity metering - Data exchange for meter reading, tariff and load control -- Part 62: Interface classes

Messung der elektrischen Energie - Zählerstandsübertragung, Tarif- und Laststeuerung -- Teil 62: Interface-Klassen

Equipements de mesure de l'énergie électrique - Echange des données pour la lecture des compteurs, le contrôle des tarifs et de la charge -- Partie 62: Classes d'interface

Ta slovenski standard je istoveten z: **EN 62056-62:2002**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

SIST EN 62056-62:2004 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 62056-62

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ICS 91.140.50; 33.040.50

English version

Electricity metering - Data exchange for meter reading, tariff and load control Part 62: Interface classes (IEC 62056-62:2002)

Equipements de mesure de l'énergie électrique - Echange des données pour la lecture des compteurs, le contrôle des tarifs et de la charge
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(CEI 62056-62:2002)

Messung der elektrischen Energie - Zählerstandsübertragung, Tarif- und Laststeuerung
Teil 62: Interface-Klassen
(IEC 62056-62:2002)

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.

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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 62056-62:2002 E

Foreword

The text of document 13/1270/FDIS, future edition 1 of IEC 62056-62, 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 62056-62 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 62056-62 / EN 62056-62 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 (see also 4.6.2 and Annex E) 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, C, D and ZA are normative and annexe E is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62056-62:2002 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61334-6	NOTE	Harmonized as EN 61334-6:2000 (not modified).

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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/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 62056-31	1999	Part 31: Use of local area networks on twisted pair with carrier signalling	EN 62056-31	2000
IEC 62056-46	2002	Part 46: Data link layer using HDLC protocol	EN 62056-46	2002
IEC 62056-53	2002	Part 53: COSEM application layer	EN 62056-53	2002
IEC 62056-61	2002	Part 61: Object identification system (OBIS)	EN 62056-61	2002

Publication	Year	Title	EN/HD	Year
ANSI C12.19 / IEEE 1377	1997	Utility Industry End Device Data Tables	-	-

INTERNATIONAL STANDARD

IEC 62056-62

First edition
2002-02

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

Part 62: Interface classes

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 62: Interface classes

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 62056-62 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 with applicants throughout the world. In this respect, the statement of the provider of the maintenance service is registered with the IEC. Information (see also chapter 4.6.2 and Annex E) may be obtained from:

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

International Standard IEC 62056-62 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
13/1270/FDIS	13/1276/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, B, C and D form an integral part of this standard.

Annex E is 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.

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

INTRODUCTION

Driven by the need of the utilities to optimize their business processes, the meter becomes more and more part of an integrated metering and billing system. Whereas in the past the commercial value of a meter was mainly generated by its data acquisition and processing capabilities, nowadays the critical issues are system integration and interoperability.

The Companion Specification for Energy Metering (COSEM) addresses these challenges by looking at the meter as an integrated part of a commercial process which starts with the measurement of the delivered product (energy) and ends with the revenue collection.

The meter is specified by its "behaviour" as seen from the utility's business processes. The formal specification of the behaviour is based on object modelling techniques (interface classes and objects). The specification of these objects forms a major part of COSEM.

The COSEM server model (see 4.5) represents only the externally visible elements of the meter. The client applications that support the business processes of the utilities, of the customers and of the meter manufacturers make use of this server model. The meter offers means to retrieve its structural model (the list of objects visible through the interface), and provides access to the attributes and specific methods of these objects.

The set of different interface classes form a standardized library from which the manufacturer can assemble (model) its individual products. The elements are designed so that with them the entire range of products (from residential to commercial and industrial applications) can be covered. The choice of the subset of interface classes used to build a meter, their instantiation and their implementation are part of the product design and therefore left to the manufacturer. The concept of the standardized metering interface class library provides the different users and manufacturers with a maximum of diversity without having to sacrifice interoperability.

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

Part 62: Interface classes

1 Scope

This part of IEC 62056 specifies a model of a meter as it is seen through its communication interface(s). Generic building blocks are defined using object oriented methods, in the form of interface classes to model meters from simple up to very complex functionality.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 62056. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 62056 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050-300:2001, *International Electrotechnical Vocabulary – Electrical and electronic measurements and measuring instruments – Chapter 311: General terms relating to measurements – Chapter 312: General terms relating to electrical measurements – Chapter 313: Types of electrical measuring instruments – Chapter 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 62051:1999, *Electricity metering – Glossary of terms*

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

IEC 62056-31:1999, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 31: Using local area networks on twisted pair with carrier signalling*

IEC 62056-46:2001, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC-protocol*

IEC 62056-53:2001, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 53: COSEM Application layer*

IEC 62056-61:2001, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 61: OBIS Object identification system*

ANSI C12.19:1997 / IEEE 1377:1997, *Utility Industry End Device Data Tables*

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[2] To be published.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purpose of this part of IEC 62056 the terms and definitions given in IEC 60050-300 and IEC 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 object

3.1.2
class_id
class identification code

3.1.3
COSEM object
an instance of an interface class

3.2 Abbreviations

AARE	Application Association Response
AARQ	Application Association ReQuest
ACSE	Application Control Service Element
APDU	Application Protocol Data Unit
ASE	Application Service Element
A-XDR	Adapted eXtended Data Representation
COSEM	Companion Specification for Energy Metering
DLMS	Distribution Line Message Specification
GMT	Greenwich Mean Time
HLS	High-level Security
IC	Interface Class
LLS	Low Level Security
LN	Logical Name
LSB	Least Significant Bit
M	Mandatory
MSB	Most Significant Bit
O	Optional
OBIS	OBject Identification System
PDU	Protocol Data Unit
SAP	Service Access Point
SN	Short Name

4 Basic principles

4.1 General

This subclause describes the basic principles on which the COSEM interface classes are built. It also gives a short overview on how interface objects (instantiations of the interface classes) are used for communication purposes. Meters, support tools and other system components that follow these specifications can communicate with each other in an interoperable way.

Object modelling: for specification purposes this standard uses the technique of object modelling. An object is a collection of attributes and methods.

The information of an object is organized in attributes. They represent the characteristics of an object by means of attribute values. The value of an attribute may affect the behaviour of an object. The first attribute in any object is the "logical_name". It is one part of the identification of the object.

An object offers a number of methods to either examine or modify the values of the attributes. Objects that share common characteristics are generalized as an interface class with a class_id. Within a specific class the common characteristics (attributes and methods) are described once for all objects. Instantiations of an interface class are called COSEM objects.

Manufacturers may add proprietary methods or attributes to any object, using negative numbers.

Figure 1 illustrates these terms by means of an example:

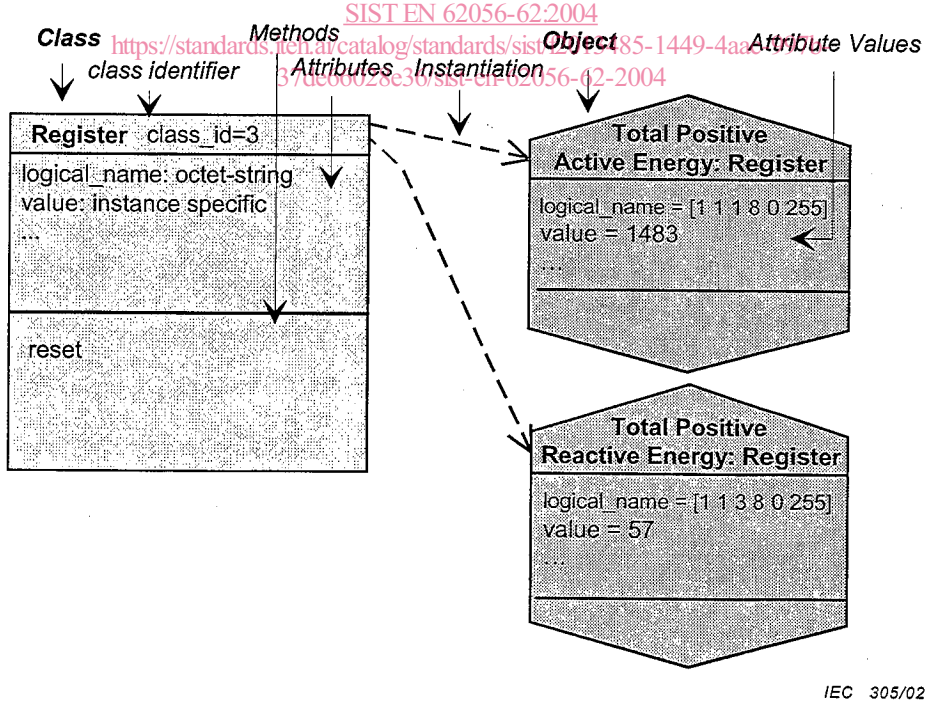

Figure 1 – An interface class and its instances

The interface class "register" is formed by combining the features necessary to model the behaviour of a generic register (containing measured or static information) as seen from the client (central unit, hand held terminal). The contents of the register are identified by the attribute "logical_name". The logical_name contains an OBIS identifier (see IEC 62056-61). The actual (dynamic) content of the register is carried by its "value" attribute.