SLOVENSKI STANDARD
SIST EN 62056-47:2007

01-november-2007

Merjenje električne energije – Izmenjevanje podatkov za odbiranje stanja električnih števcev ter krmiljenje tarife in obremenitve – 47. del: Transportne plasti za omrežja IPv4 (IEC 62056-47:2006)

Electricity metering - Data exchange for meter reading, tariff and load control -- Part 47: COSEM transport layers for IPv4 networks

Messung der elektrischen Energie - Zählerstandsübertragung, Tarif- und Laststeuerung - - Teil 47: COSEM Transportschichten für IPv4 Netzwerke

Equipements de mesure de l'énergie électrique - Echange des données pour la lecture des compteurs, le contrôle des tarifs et de la charge - Partie 47 : Couches de transport COSEM pour réseaux IPv4

Ta slovenski standard je istoveten z: **EN 62056-47:2007**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
35.100.40	Transportni sloj	Transport layer
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

SIST EN 62056-47:2007 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 62056-47

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ICS 91.140.50; 35.100.40

English version

Electricity metering - Data exchange for meter reading, tariff and load control - Part 47: COSEM transport layers for IPv4 networks

(IEC 62056-47:2006)

Equipements de mesure de l'énergie électrique - Echange des données pour la lecture des compteurs, le contrôle des tarifs et de la charge - Partie 47 : Couches de transport COSEM pour réseaux IPv4 (CEI 62056-47:2006)

Messung der elektrischen Energie - Zählerstandsübertragung, Tarif- und Laststeuerung - Teil 47: COSEM Transportschichten für IPv4 Netzwerke (IEC 62056-47:2006)

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 62056-47:2007 E

Foreword

The text of document 13/1386/FDIS, future edition 1 of IEC 62056-47, prepared by IEC TC 13, Electrical energy measurement, tariff- and load control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62056-47 on 2006-12-01.

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)	2007-09-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-12-01

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 62056-47 / EN 62056-47 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

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62056-47:2006 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 62056-46	NOTE	Harmonized as EN 62056-46:2002 (not modified).

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[1] Device Language Message Specification

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 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/TR 62051	1999	Electricity metering - Glossary of terms	-	-
IEC/TR 62051-1	2004	Electricity metering - Data exchange for meter reading, tariff and load control - Glossary of terms - Part 1: Terms related to data exchange with metering using DLMS/COSEM	-	-
IEC 62056-53	2006	Electricity metering - Data exchange for meter reading, tariff and load control - Part 53: COSEM application layer	EN 62056-53	2007
IEC 62056-62	2006	Electricity metering - Data exchange for meter reading, tariff and load control - Part 62: Interface classes	EN 62056-62	2007
STD 0005	1981	Internet Protocol	-	-
STD 0006	1980	User Datagram Protocol	-	-
STD 0007	1981	Transmission Control Protocol	-	-

INTERNATIONAL STANDARD

IEC 62056-47

First edition
2006-11

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

Part 47: COSEM transport layers for IPv4 networks

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International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 47: COSEM transport layers for IPv4 networks

FOREWORD

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DLMS[1] User Association

Geneva / Switzerland

www.dlms.ch

International Standard IEC 62056-47 has been prepared by IEC technical committee 13: Equipment for electrical energy measurement and load control.

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1 Device Language Message Specification

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

FDIS	Report on voting
13/1386/FDIS	13/1397/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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site 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.

A list of all parts of IEC 62056 series, published under the general title *Electricity metering – Data exchange for meter reading, tariff and load control,* can be found on the IEC website.

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

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

Part 47: COSEM transport layers for IPv4 networks

1 Scope

This part of IEC 62056 specifies the transport layers for COSEM communication profiles for use on IPv4 networks.

These communication profiles contain a connection-less and a connection-oriented transport layer, providing OSI-style services to the service user COSEM application layer. The connection-less transport layer is based on the Internet standard User Datagram Protocol. The connection-oriented transport layer is based on the Internet standard Transmission Control Protocol.

Although the major part of the COSEM transport layers is the UDP and TCP as they are specified in the relevant Internet standards, they include an additional sub-layer, called wrapper.

Annex A shows how the OSI-style transport layer services can be converted to and from UDP and TCP function calls.

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 (IEV) – 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 62051:1999, *Electricity metering – Glossary of terms*

IEC 62051-1:2004, Ed.1., *Electricity metering – Data exchange for meter reading, tariff and load control – Glossary of terms – Part 1: Terms related to data exchange with metering equipment using DLMS/COSEM*

IEC 62056-53, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 53: COSEM application layer* [3]

IEC 62056-62, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 62: Interface classes* [3]

STD0005 – *Internet Protocol*
Author: J. Postel
Date: September 1981
Also: RFC0791, RFC0792, RFC0919, RFC0922, RFC0950, RFC1112

STD0006 – *User Datagram Protocol*
Author: J. Postel
Date: 28 August 1980
Also: RFC0768

STD0007 – *Transmission Control Protocol*
Author: J. Postel
Date: September 1981
Also: RFC0793

See also Bibliography for other related Internet RFCs.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the definitions given in IEC 60050-300, IEC 62051 and IEC 62051-1 apply.

3.2 Abbreviations

APDU	Application Layer Protocol Data Unit
COSEM	COmpanion Specification for Energy Metering
COSEM_on_IP	The TCP-UDP/IP based COSEM communication profile
IP	Internet Protocol
PDU	Protocol Data Unit
PAR	Positive Acknowledgement with Retransmission
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
WPDU	Wrapper Protocol Data Unit

4 Overview

This standard specifies two transport layers for the COSEM_on_IP communication profiles: a connection-less transport layer, based on UDP, Internet standard STD0006 and a connection-oriented transport layer, based on TCP, Internet standard STD0007.

In these profiles, the COSEM application layer uses the services of one of these transport layers, which use then the services of the Internet Protocol (IPv4) network layer to communicate with other nodes connected to the abstract IPv4 network.

When used in these profiles, the COSEM application layer can be considered as another Internet standard application protocol (like the well-known HTTP, FTP or SNMP) and it may co-exist with other Internet application protocols, as shown in

Figure 1.

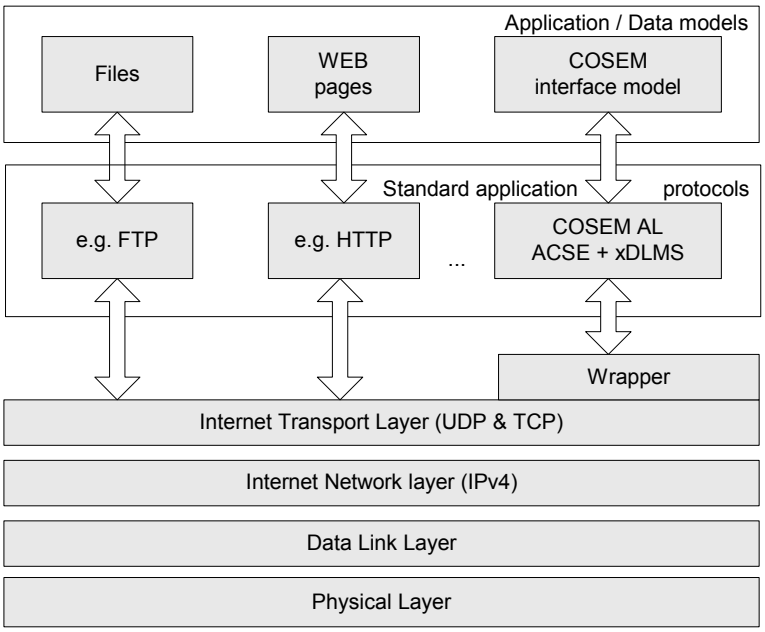

Figure 1 – COSEM as a standard Internet application protocol

As the COSEM application layer specified in IEC 62056-53 uses and provides OSI-style services, a wrapper has been introduced between the UDP/TCP layers and the COSEM application layer.

Therefore, the COSEM transport layers consist of a wrapper sub-layer and the UDP or TCP transport layer.

The wrapper sub-layer is a lightweight, nearly state-less entity: its main function is to adapt the OSI-style service set, provided by the COSEM transport layer, to UDP or TCP function calls and vice versa.

In addition, the wrapper sub-layer has the following functions:

- it provides an additional addressing capability (wPort) on top of the UDP/TCP port;
- it provides information about the length of the data transported. This feature helps the sender to send and the receiver to recognize the reception of a complete APDU, which may be sent and received in multiple TCP packets.

As specified in IEC 62056-53, B.3.3, the COSEM application layer is listening only on one UDP or TCP port. On the other hand, as defined in IEC 62056-62, a COSEM physical device may host several client application processes or server logical devices. The additional addressing capability provided by the wrapper sub-layer allows identifying these application processes.

The structure of the COSEM transport layer and their place in COSEM-on_IP is shown in Figure 2.