

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

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 62056-47:2007 sisaldab Euroopa standardi EN 62056-47:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.03.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 62056-47:2007 consists of the English text of the European standard EN 62056-47:2007.</p> <p>This document is endorsed on 23.03.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>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.</p>	<p><b>Scope:</b></p> <p>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.</p>
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ICS 35.100.40, 91.140.50

Võtmesõnad:

**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)

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Tarif- und Laststeuerung -  
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für IPv4 Netzwerke  
(IEC 62056-47:2006)

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

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

## 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.

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Annex ZA has been added by CENELEC.

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## 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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<sup>1)</sup> 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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

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

**Part 47:  
COSEM transport layers for IPv4 networks**



Reference number  
IEC 62056-47:2006(E)

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# INTERNATIONAL STANDARD

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## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references .....	5
3 Terms, definitions and abbreviations .....	6
4 Overview .....	6
5 The COSEM connection-less, UDP-based transport layer.....	8
5.1 General.....	8
5.2 Service specification for the COSEM UDP-based transport layer.....	9
5.3 Protocol specification for the COSEM UDP-based transport layer.....	12
6 The COSEM connection-oriented, TCP-based transport layer.....	14
6.1 General.....	14
6.2 Service specification for the COSEM TCP-based transport layer .....	15
6.3 Protocol specification for the COSEM TCP-based transport layer .....	25
Annex A (informative) Converting OSI-style transport layer services to and from RFC-style TCP function calls .....	32
Bibliography.....	38
INDEX .....	39
Figure 1 – COSEM as a standard Internet application protocol .....	7
Figure 2 – Transport layers of the COSEM_on_IP profile .....	8
Figure 3 – Services of the COSEM connection-less, UDP-based transport layer .....	9
Figure 4 – The wrapper protocol data unit (WPDU) .....	13
Figure 5 – The COSEM connection-less, UDP-based transport layer PDU (UDP-PDU) .....	13
Figure 6 – Services of the COSEM connection-oriented, TCP-based transport layer .....	16
Figure 7 – The TCP packet format .....	26
Figure 8 – Figure TCP connection establishment .....	27
Figure 9 – Disconnecting a TCP connection.....	28
Figure 10 – Data communication using the COSEM TCP-based transport layer .....	30
Figure 11 – High-level state transition diagram for the wrapper sub-layer .....	30
Figure A.1 – TCP connection state diagram .....	32
Figure A.2 – MSC and state transitions for establishing a transport layer and TCP connection .....	33
Figure A.3 – MSC and state transitions for closing a transport layer and TCP connection .....	34
Figure A.4 – Polling the TCP sub-layer for TCP abort indication .....	35
Figure A.5 – Sending an APDU in three TCP packets .....	36
Figure A.6 – Receiving the message in several packets.....	37
Table 1 – Reserved wrapper Port numbers in the UDP-based COSEM profile.....	14

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICITY METERING –  
DATA EXCHANGE FOR METER READING,  
TARIFF AND LOAD CONTROL –****Part 47: COSEM transport layers for IPv4 networks**

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DLMS<sup>1</sup> User Association

Geneva / Switzerland

[www.dlms.ch](http://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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<sup>1</sup> 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*<sup>3</sup>

IEC 62056-62, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 62: Interface classes*<sup>3</sup>

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.