

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 62056-46:2003 sisaldab Euroopa standardi EN 62056-46:2002 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 05.02.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 62056-46:2003 consists of the English text of the European standard EN 62056-46:2002.</p> <p>This document is endorsed on 05.02.2003 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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**Electricity metering -
Data exchange for meter reading, tariff and load control
Part 46: Data link layer using HDLC protocol
(IEC 62056-46:2002)**

Equipements de mesure
de l'énergie électrique -
Echange des données pour la lecture
des compteurs, le contrôle des tarifs
et de la charge
Partie 46: Couche liaison utilisant
le protocole HDLC
(CEI 62056-46:2002)

Messung der elektrischen Energie -
Zählerstandsübertragung,
Tarif- und Laststeuerung
Teil 46: Anwendung des HDLC-Protokolls
in der Verbindungsschicht
(IEC 62056-46:2002)

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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 13/1267/FDIS, future edition 1 of IEC 62056-46, 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 62056-46 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with the EN have to be withdrawn (dow) 2005-05-01

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 62056-46 / EN 62056-46 is based.

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

Endorsement notice

The text of the International Standard IEC 62056-46:2002 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 61334-4-41	NOTE	Harmonized as EN 61334-4-41:1996 (not modified).
IEC 61334-6	NOTE	Harmonized as EN 61334-6:2000 (not modified).

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.

<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 62056-42	2002	Electricity metering - Data exchange for meter reading, tariff and load control Part 42: Physical layer services and procedures for connection- oriented asynchronous data exchange	EN 62056-42	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
IEC 62056-62	2002	Part 62: Interface classes	EN 62056-62	2002
ISO/IEC 8802-2	1998	Information technology – Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements Part 2: Logical link control	-	-
ISO/IEC 13239	2000	Information technology - Telecommunications and information exchange between systems - High-level data link control (HDLC) procedures	-	-

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**Electricity metering –
Data exchange for meter reading,
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**Part 46:
Data link layer using HDLC protocol**

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CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms, definitions and abbreviations	7
4 Overview	8
4.1 The LLC sub-layer	8
4.2 The MAC sub-layer	8
4.3 Specification method	8
5 The LLC sub-layer	9
5.1 The role of the LLC sub-layer	9
5.2 Service specification for the LLC sub-layer	9
5.2.1 Setting up the Data Link Connection	10
5.2.2 Disconnecting the Data Link Connection	13
5.2.3 Data communication	16
5.3 Protocol specification for the LLC sub-layer	20
5.3.1 Overview	20
5.3.2 LLC protocol data unit (LPDU) structure	20
5.3.3 State transition tables for the LLC sub-layer	21
6 The MAC sub-layer	22
6.1 HDLC selections	22
6.2 Service specification for the MAC sub-layer	22
6.2.1 Setting up the MAC connection	22
6.2.2 Disconnecting the MAC connection	26
6.2.3 Data communication	30
6.3 Physical layer services used by the MAC sub-layer	32
6.3.1 Overview	32
6.3.2 Setting up a physical link	33
6.3.3 Disconnecting the physical link	33
6.3.4 Data communication	33
6.4 Protocol specification for the MAC sub-layer	33
6.4.1 The MAC PDU and the HDLC frame	33
6.4.2 MAC addressing	35
6.4.3 Command and response frames	39
6.4.4 Elements of the procedures	42
6.4.5 State transition diagram for the server MAC sub-layer	57
Annex A (informative) FCS calculation	59
Annex B (informative) Data model and protocol	62
Annex C (informative) Data link layer management services	63

Figure 1 – Data Link (LLC) services for setting up the Data Link Connection	10
Figure 2 – Data Link (LLC) services for disconnecting the Data Link Connection	13
Figure 3 – Data link layer data communication services	17
Figure 4 – The ISO/IEC 8802-2 LLC protocol data unit format.....	20
Figure 5 – The used LLC protocol data unit format.....	20
Figure 6 – MAC sub-layer services for setting up the MAC (DL) connection at the client and server sides	23
Figure 7 – MAC sub-layer services for disconnecting the MAC (DL) connection at the client and server sides	26
Figure 8 – MAC sub-layer data communication services	30
Figure 9 – Physical layer services used by the MAC sub-layer.....	33
Figure 10 – MAC sub-layer frame format (HDLC frame format type 3).....	34
Figure 11 – Multiple frames.....	34
Figure 12 – The frame format field.....	34
Figure 13 – MSC for long MSDU transfer in a transparent manner	51
Figure 14 – Example configuration to illustrate broadcasting.....	52
Figure 15 – Sending out a pending UI frame with a response data	53
Figure 16 – Sending out a pending UI frame with a response to a RR frame	54
Figure 17 – Sending out a pending UI frame on receipt of an empty UI frame	54
Figure 18 – State transition diagram for the server MAC sub-layer.....	58
Figure B.1 – The three-step approach of COSEM	62
Figure C.1 – Layer management services	63
Table 1 – State transition table of the client side LLC sub-layer	21
Table 2 – State transition table of the server side LLC sub-layer.....	21
Table 3 – Table of reserved client addresses	37
Table 4 – Table of reserved server addresses.....	37
Table 5 – Handling inopportune address lengths.....	39
Table 6 – Command and response frames	39
Table 7 – Control field format.....	40
Table 8 – Example for parameter negotiation values with the SNRM/UA frames	47
Table 9 – Summary of MAC Addresses for the example	52
Table 10 – Broadcast UI frame handling	52

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 46: Data link layer using HDLC protocol

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.
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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:

DLMS¹ User Association
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International Standard IEC 62056-46 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
13/1267/FDIS	13/1273/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 3.

¹ Device Language Message Specification.

Annexes A, B and C 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.

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

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

Part 46: Data link layer using HDLC protocol

1 Scope

This part of IEC 62056 specifies the data link layer for connection-oriented, HDLC-based, asynchronous communication profile.

In order to ensure a coherent data link layer service specification for both connection-oriented and connectionless operation modes, the data link layer is divided into two sub-layers: the Logical Link Control (LLC) sub-layer and the Medium Access Control (MAC) sub-layer.

This specification supports the following communication environments:

- point-to-point and point-to-multipoint configurations;
- dedicated and switched data transmission facilities;
- half-duplex and full-duplex connections;
- asynchronous start/stop transmission, with 1 start bit, 8 data bits, no parity, 1 stop bit.

Two special procedures are also defined:

- transferring of separately received Service User layer PDU parts from the server to the client in a transparent manner. The server side Service user layer can give its PDU to the data link layer in fragments and the data link layer can hide this fragmentation from the client;
- event reporting, by sending UI frames from the secondary station to the primary station.

Annex B 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/TR 62051:1999, *Electricity metering –Glossary of terms*

IEC 62056-42, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 42: Physical layer services and procedures for connection oriented asynchronous data exchange* ¹⁾

¹⁾ To be published.

IEC 62056-53, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 53 – COSEM Application layer*¹⁾

IEC 62056-61, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 61 – OBIS Object Identification System*¹⁾

IEC 62056-62, *Data exchange for meter reading, tariff and load control – Part 62: Interface Classes*¹⁾

ISO/IEC 8802-2:1998, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 2: Logical link control*

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 found in IEC 60050-300 and IEC/TR 62051 apply.

3.2 Abbreviations

APDU	Application layer Protocol Data Unit
COSEM	COmpanion Specification for Energy Metering
DISC	DISConnect (an HDLC frame type)
DL	Data Link
DM	Disconnected Mode (an HDLC frame type)
DPDU	Data link Protocol Data Unit
DSAP	Data link Service Access Point
DSDU	Data link Service Data Unit
FCS	Frame Check Sequence
FRMR	FRaMe Reject (an HDLC frame type)
HCS	Header Check Sequence
HDLC	High-level Data Link Control
I	Information (an HDLC frame type)
LLC	Logical Link Control (Sub-layer)
LSAP	LLC sub-layer Service Access Point
LPDU	LLC Protocol Data Unit
LSB	Least Significant Bit
LSDU	LLC Service Data Unit
MAC	Medium Access Control (sub-layer)
MSAP	MAC sub-layer Service Access Point (here it is equal to the HDLC address)
MSB	Most Significant Bit
MSDU	MAC Service Data Unit
NDM	Normal Disconnected Mode
NRM	Normal Response Mode
N(R)	Receive sequence Number

¹⁾ To be published.