



**NSAI**  
Standards

Irish Standard  
I.S. EN 62056-7-3:2017

# Electricity metering data exchange - The DLMS/COSEM suite - Part 7-3: Wired and wireless M-Bus communication profiles for local and neighbourhood networks

**I.S. EN 62056-7-3:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 62056-7-3:2017

*Published:*

2017-06-09

*This document was published under the authority of the NSAI and comes into effect on:*

2017-06-27

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN 62056-7-3:2017 is the adopted Irish version of the European Document EN 62056-7-3:2017, Electricity metering data exchange - The DLMS/COSEM suite - Part 7-3: Wired and wireless M-Bus communication profiles for local and neighbourhood networks

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

EUROPEAN STANDARD

**EN 62056-7-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2017

ICS 17.220.20; 35.100.01; 91.140.50

English Version

**Electricity metering data exchange - The DLMS/COSEM suite -  
Part 7-3: Wired and wireless M-Bus communication profiles for  
local and neighbourhood networks  
(IEC 62056-7-3:2017)**

Échange des données de comptage de l'électricité - La  
suite DLMS/COSEM - Partie 7-3: Profils de communication  
M-Bus filaires et sans fil pour les réseaux locaux et de  
voisinage  
(IEC 62056-7-3:2017)

Datenkommunikation der elektrischen Energiemessung -  
DLMS/COSEM - Teil 7-3: Kommunikationsprofile für  
drahtgebundenen und funkbasierten M-Bus für lokale und  
Areal-Netze  
(IEC 62056-7-3:2017)

This European Standard was approved by CENELEC on 2017-04-11. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

**EN 62056-7-3:2017****European foreword**

The text of document 13/1729/FDIS, future edition 1 of IEC 62056-7-3, prepared by IEC/TC 13 "Electrical energy measurement and control" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62056-7-3:2017.

The following dates are fixed:

- latest date by which the document has to be (dop) 2018-01-11  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2020-04-11  
standards conflicting with the  
document have to be withdrawn

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

**Endorsement notice**

The text of the International Standard IEC 62056-7-3:2017 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 60870-5-1:1990 | NOTE | Harmonized as EN 60870-5-1:1993 (not modified). |
| IEC 62056-1-0      | NOTE | Harmonized as EN 62056-1-0.                     |
| IEC 62056-7-5      | NOTE | Harmonized as EN 62056-7-5.                     |

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

| <u>Publication</u>          | <u>Year</u> | <u>Title</u>   | <u>EN/HD</u>               | <u>Year</u> |
|-----------------------------|-------------|--|----------------------------|-------------|
| -                           | -           | Communication systems for meters -<br>Part 1: Data exchange  | EN 13757-1                 | -           |
| -                           | -           | Communication systems for meters and<br>remote reading of meters -<br>Part 2: Physical and link layer  | EN 13757-2                 | 2004        |
| -                           | -           | Communication systems for meters and<br>remote reading of meters -<br>Part 3: Dedicated application layer  | EN 13757-3                 | 2013        |
| -                           | -           | Communication systems for meters and<br>remote reading of meters -<br>Part 4: Wireless meter readout (Radio<br>meter reading for operation in SRD bands) | EN 13757-4                 | 2013        |
| IEC 62056-5-3               | 2016        | Electricity metering data exchange -<br>The DLMS/COSEM suite -<br>Part 5-3: DLMS/COSEM application layer   | EN 62056-5-3               | 2016        |
| IEC 62056-6-1               | 2015        | Electricity metering data exchange -<br>The DLMS/COSEM suite -<br>Part 6-1: Object Identification System<br>(OBIS)                                       | EN 62056-6-1               | 2016        |
| IEC 62056-6-2               | 2016        | Electricity metering data exchange -<br>The DLMS/COSEM suite -<br>Part 6-2: COSEM interface classes  | EN 62056-6-2               | 2016        |
| IEC 62056-6-2 <sup>1)</sup> | -           | Electricity metering data exchange -<br>The DLMS/COSEM suite -<br>Part 6-2: COSEM interface classes  | EN 62056-6-2 <sup>1)</sup> | -           |

---

<sup>1)</sup> At draft stage.

This page is intentionally left blank





**IEC 62056-7-3**

Edition 1.0 2017-03

# INTERNATIONAL STANDARD



---

**Electricity metering data exchange – The DLMS/COSEM suite –  
Part 7-3: Wired and wireless M-Bus communication profiles for local and  
neighbourhood networks**



**THIS PUBLICATION IS COPYRIGHT PROTECTED**

**Copyright © 2017 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

**About the IEC**

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

**About IEC publications**

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

**IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)**

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

**IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)**

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

**IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

**Electropedia - [www.electropedia.org](http://www.electropedia.org)**

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

**IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)**

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

**IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [csc@iec.ch](mailto:csc@iec.ch).



**IEC 62056-7-3**

Edition 1.0 2017-03

# INTERNATIONAL STANDARD



---

**Electricity metering data exchange – The DLMS/COSEM suite –  
Part 7-3: Wired and wireless M-Bus communication profiles for local and  
neighbourhood networks**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 17.220.20; 35.100.01; 91.140.50

ISBN 978-2-8322-4012-0

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

|  |    |
|--|----|
| FOREWORD.....  | 4  |
| INTRODUCTION.....  | 6  |
| 1 Scope.....   | 7  |
| 2 Normative references .....   | 7  |
| 3 Terms, definitions and abbreviated terms .....   | 8  |
| 3.1 Terms and definitions.....   | 8  |
| 3.2 Abbreviated terms.....   | 8  |
| 4 Targeted communication environments.....   | 9  |
| 5 Use of the communication layers for this profile.....                                  | 9  |
| 5.1 Information related to the use of the standard specifying the lower layers .....     | 9  |
| 5.2 Structure of the communication profiles .....  | 9  |
| 5.3 Lower protocol layers and their use .....  | 10 |
| 5.3.1 Physical layer .....   | 10 |
| 5.3.2 Link layer.....  | 10 |
| 5.3.3 Transport layer .....  | 11 |
| 5.4 Service mapping and adaptation layers.....   | 11 |
| 5.4.1 Overview .....   | 11 |
| 5.4.2 MBUS-DATA service primitives.....  | 12 |
| 5.4.3 MBUS-DATA protocol specification.....  | 14 |
| 5.5 Registration and connection management.....  | 16 |
| 6 Identification and addressing scheme .....   | 16 |
| 6.1 Overview .....   | 16 |
| 6.2 Link Layer Address for wired M-Bus.....  | 17 |
| 6.3 Link Layer Address for wireless M-Bus .....  | 18 |
| 6.4 Link Layer Address for M-Bus broadcast.....  | 18 |
| 6.5 Transport layer address .....  | 19 |
| 6.6 Application addressing extension – M-Bus wrapper.....                                | 21 |
| 7 Specific considerations and constraints for using certain services within profile..... | 22 |
| 7.1 Overview .....   | 22 |
| 7.2 Application association establishment and release: ACSE services.....                | 22 |
| 7.3 xDLMS services .....   | 23 |
| 7.3.1 Request – response type services .....   | 23 |
| 7.3.2 Unsolicited services.....  | 23 |
| 7.3.3 Broadcast messages .....   | 23 |
| 7.4 Security mechanisms.....   | 24 |
| 7.5 Transporting long application messages .....   | 24 |
| 7.6 Media access, bandwidth and timing considerations .....                              | 24 |
| 8 Communication configuration and management.....  | 24 |
| Annex A (informative) M-Bus frame structures, addressing schemes and examples.....       | 25 |
| A.1 General.....   | 25 |
| A.2 None, short or long M-Bus data header.....   | 26 |
| A.2.1 Wired M-Bus.....   | 26 |
| A.2.2 Wireless M-Bus .....   | 27 |
| A.3 Encoding example: Data-Notification carrying daily billing data .....                | 30 |
| A.3.1 Overview .....   | 30 |
| A.3.2 Example: Daily billing data.....   | 31 |

|  |    |
|--|----|
| Annex B (normative) New COSEM interface classes related to the M-Bus communication profiles .....          | 33 |
| Annex C (informative) Message sequence charts .....  | 34 |
| Bibliography.....  | 37 |
| Figure 1 – Entities and interfaces of a smart metering system using the terminology of IEC 62056-1-0 ..... | 9  |
| Figure 2 – The DLMS/COSEM wired and wireless M-Bus communication profiles .....                            | 10 |
| Figure 3 – Summary of DLMS/COSEM M-Bus-based TL services .....   | 12 |
| Figure 4 – Identification and addressing scheme in the wired M-Bus profile .....                           | 17 |
| Figure 5 – Link Layer Address for wireless M-Bus.....  | 18 |
| Figure 6 – M-Bus TPDU formats .....  | 20 |
| Figure 7 – CI <sub>TL</sub> without M-Bus data header .....  | 20 |
| Figure A.1 – M-Bus communication paths direct or cascaded.....   | 25 |
| Figure A.2 – Wired M-Bus frame structure, none M-Bus data header .....                                     | 27 |
| Figure A.3 – Wired M-Bus frame structure with long M-Bus data header .....                                 | 27 |
| Figure A.4 – Wireless M-Bus frame structure with short ELL, no M-Bus data header.....                      | 29 |
| Figure A.5 – Wireless M-Bus frame structure with long ELL, no M-Bus data header.....                       | 29 |
| Figure A.6 – Wireless M-Bus frame structure with long ELL and long M-Bus data header .....                 | 30 |
| Figure A.7 – Daily billing data without / with DLMS/COSEM security applied.....                            | 32 |
| Figure C.1 – MSC for the COSEM-OPEN service for wired M-Bus, no M-Bus header .....                         | 35 |
| Figure C.2 – MSC the GET service for wired M-Bus, no M-Bus header .....                                    | 36 |
| Table 1 – Wired M-Bus Link Layer Addresses .....   | 18 |
| Table 2 – DLMS/COSEM M-Bus-based TL CI <sub>TL</sub> values .....  | 19 |
| Table 3 – CI fields used for link management purposes .....  | 21 |
| Table 4 – Client and server SAPs .....   | 21 |
| Table 5 – Application associations and data exchange in the M-Bus-based profiles .....                     | 22 |
| Table A.1 – Example: Daily billing data .....  | 31 |

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

### **ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –**

#### **Part 7-3: Wired and wireless M-Bus communication profiles for local and neighbourhood networks**

#### **FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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 62056-5-3 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<sup>1</sup> User Association  
Zug/Switzerland  
www.dlms.com

International Standard IEC 62056-7-3 has been prepared by IEC technical committee 13: Electrical energy measurement and control.

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

| FDIS         | Report on voting |
|--------------|------------------|
| 13/1729/FDIS | 13/1731/RVD      |

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

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

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

---

1 Device Language Message Specification.

## INTRODUCTION

As defined in IEC 62056-1-0, the IEC 62056 DLMS/COSEM suite provides specific communication profile standards for communication media relevant for smart metering.

Such communication profile standards specify how the COSEM data model and the DLMS/COSEM application layer can be used on the lower, communication media-specific protocol layers.

Communication profile standards refer to communication standards that are part of the IEC 62056 DLMS/COSEM suite or to any other open communication standard.

This International Standard specifies DLMS/COSEM communication profiles for wired and wireless M-Bus networks using the lower layers specified in the EN 13757 series.

It follows the rules defined in IEC 62056-5-3, Annex A.

The DLMS/COSEM wired and wireless M-Bus communication profiles for local and neighbourhood networks may be used for smart energy data exchange with meters as well as with simple consumer displays and home automation systems.



## **ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –**

### **Part 7-3: Wired and wireless M-Bus communication profiles for local and neighbourhood networks**

#### **1 Scope**

This International Standard specifies DLMS/COSEM wired and wireless M-Bus communication profiles for local and neighbourhood networks.

Setting up and managing the M-Bus communication channels of M-Bus devices, the M-Bus network, registering slave devices and – when required – repeaters is out of the scope of this International Standard.

The scope of this communication profile standard is restricted to aspects concerning the use of communication protocols in conjunction with the COSEM data model and the DLMS/COSEM application layer. Data structures specific to a communication protocol are out of the scope of this standard. Any project-specific definitions of data structures and data contents may be provided in project-specific companion specifications.

Annex A (informative) provides information on M-Bus frame structures, addressing schemes and an encoding example.

Annex B (normative) points to COSEM interface classes to set up and manage the wired and wireless M-Bus communication channel.

Annex C (informative) provides MSCs for representative instances of communication.

#### **2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 62056-5-3:2016, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

IEC 62056-6-1:2015, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS)*

IEC 62056-6-2:2016, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

IEC 62056-6-2:—<sup>2</sup>, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

---

<sup>2</sup> Under preparation. Stage at the time of publication: IEC/CDV 62056-6-2:2016.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-