



IEC 62056-3-1

Edition 2.0 2021-07  
REDLINE VERSION

# INTERNATIONAL STANDARD



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**Electricity metering data exchange – The DLMS/COSEM suite –  
Part 3-1: Use of local area networks on twisted pair with carrier signalling**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 17.220.20; 35.110; 91.140.50

ISBN 978-2-8322-5174-4

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICITY METERING DATA EXCHANGE –  
THE DLMS/COSEM SUITE –****Part 3-1: Use of local area networks on twisted pair  
with carrier signalling**

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**This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62056-3-1:2013. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.**

International Standard IEC 62056-3-1 has been prepared by IEC technical committee 13: Electrical energy measurement and control.

This second edition cancels and replaces the first edition of IEC 62056-3-1, issued in 2013, and constitutes a technical revision.

The main technical changes with regard to the previous edition are as follows:

- addition of a profile which makes use of the IEC 62056 DLMS/COSEM Application layer and COSEM object model;
- review of the data link layer which is split into two parts:
  - a pure Data Link layer;
  - a "Support Manager" entity managing the communication media;
- ability to negotiate the communication speed, bringing baud rate up to 9 600 bauds.

The text of this International Standard is based on the following documents:

CDV	Report on voting
13/1794/CDV	13/1823/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts of IEC 62056 series, published under the general title *Electricity metering data exchange – The DLMS/COSEM suite*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](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.

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

### Part 3-1: Use of local area networks on twisted pair with carrier signalling

#### 1 Scope

This part of IEC 62056 describes ~~three profiles for~~ two sets of profiles: the first set of profiles allows a bidirectional communication between a client and a server. This set of profiles is made of three profiles allowing local bus data exchange with stations either energized or not. For non-energized stations, the bus supplies energy for data exchange. Three different profiles are supported:

- base profile: this three-layer profile provides remote communication services;  
NOTE 1 This first profile was published in IEC 61142:1993 and became known as the Euridis standard.
- profile with DLMS: this profile allows using DLMS services as specified in IEC 61334-4-41;  
NOTE 2 This second profile was published in IEC 62056-31:1999.
- profile with DLMS/COSEM: this profile allows using the DLMS/COSEM Application layer and the COSEM object model as specified in IEC 62056-5-3 and in IEC 62056-6-2 respectively.

The three profiles use the same physical layer and they are fully compatible, meaning that devices implementing any of these profiles can be operated on the same bus. The transmission medium is twisted pair using carrier signalling and it is known as the Euridis Bus.

The second set of profiles allows unidirectional communication between a given Energy Metering device and a Customer Energy Management System. This second set is made up of three profiles.

Subclause 4.2.1 to Clause 8 included specify the bidirectional communication using twisted pair signalling and Clause 9 to 9.5 the unidirectional communication using twisted pair signalling.

#### 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 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 62056-51:1998, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 51: Application layer protocols*

IEC 62056-5-3:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

IEC 62056-6-2:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*



ISO/IEC 8482:1993, *Information technology – Telecommunications and information exchange between systems – Twisted pair multipoint interconnections*

EIA 485, *Standard for Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems*

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Electricity metering data exchange – The DLMS/COSEM suite –  
Part 3-1: Use of local area networks on twisted pair with carrier signalling**

**Échange des données de comptage de l'électricité – La suite DLMS/COSEM –  
Partie 3-1: Utilisation des réseaux locaux sur paire torsadée avec signal de  
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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

### **Part 3-1: Use of local area networks on twisted pair with carrier signalling**

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This second edition cancels and replaces the first edition of IEC 62056-3-1, issued in 2013, and constitutes a technical revision.

The main technical changes with regard to the previous edition are as follows:

- addition of a profile which makes use of the IEC 62056 DLMS/COSEM Application layer and COSEM object model;
- review of the data link layer which is split into two parts:
  - a pure Data Link layer;
  - a "Support Manager" entity managing the communication media;
- ability to negotiate the communication speed, bringing baud rate up to 9 600 bauds.

The text of this International Standard is based on the following documents:

CDV	Report on voting
13/1794/CDV	13/1823/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts of IEC 62056 series, published under the general title *Electricity metering data exchange – The DLMS/COSEM suite*, can be found on the IEC website.

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

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- replaced by a revised edition, or
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# ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

## Part 3-1: Use of local area networks on twisted pair with carrier signalling

### 1 Scope

This part of IEC 62056 describes two sets of profiles: the first set of profiles allows a bidirectional communication between a client and a server. This set of profiles is made of three profiles allowing local bus data exchange with stations either energized or not. For non-energized stations, the bus supplies energy for data exchange. Three different profiles are supported:

- base profile: this three-layer profile provides remote communication services;  
NOTE 1 This first profile was published in IEC 61142:1993 and became known as the Euridis standard.
- profile with DLMS: this profile allows using DLMS services as specified in IEC 61334-4-41;  
NOTE 2 This second profile was published in IEC 62056-31:1999.
- profile with DLMS/COSEM: this profile allows using the DLMS/COSEM Application layer and the COSEM object model as specified in IEC 62056-5-3 and in IEC 62056-6-2 respectively.

The three profiles use the same physical layer and they are fully compatible, meaning that devices implementing any of these profiles can be operated on the same bus. The transmission medium is twisted pair using carrier signalling and it is known as the Euridis Bus.

The second set of profiles allows unidirectional communication between a given Energy Metering device and a Customer Energy Management System. This second set is made up of three profiles.

Subclause 4.2.1 to Clause 8 included specify the bidirectional communication using twisted pair signalling and Clause 9 to 9.5 the unidirectional communication using twisted pair signalling.

### 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 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 62056-51:1998, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 51: Application layer protocols*

IEC 62056-5-3:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

IEC 62056-6-2:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

ISO/IEC 8482:1993, *Information technology – Telecommunications and information exchange between systems – Twisted pair multipoint interconnections*

EIA 485, *Standard for Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems*

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## COMMISSION ÉLECTRONIQUE INTERNATIONALE

**ÉCHANGE DES DONNÉES DE COMPTAGE DE L'ÉLECTRICITÉ –  
LA SUITE DLMS/COSEM –****Partie 3-1: Utilisation des réseaux locaux  
sur paire torsadée avec signal de porteuse**

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La présente Norme internationale IEC 62056-3-1 a été établie par le comité d'études 13 de l'IEC: Comptage et pilotage de l'énergie électrique.

Cette deuxième édition annule et remplace la première édition de l'IEC 62056-3-1, parue en 2013. Cette édition constitue une révision technique.

Les principales modifications techniques par rapport à l'édition précédente sont les suivantes:

- Ajout d'un profil qui permet l'utilisation de la couche Application et la modélisation objet DLMS/COSEM de l'IEC 62056;



- Révision de la couche liaison de données qui est maintenant scindée en deux parties:
  - la première est intégralement une couche de liaison de données;
  - la dernière, nommée “Gestion du Support”, gère le média de communication;
- Capacité de négocier la vitesse de communication, portant la vitesse maximale jusqu'à 9 600 bauds.

Le texte de cette Norme internationale est issu des documents suivants:

CDV	Rapport de vote
13/1794/CDV	13/1823/RVC

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). Les principaux types de documents développés par l'IEC sont décrits plus en détail sous [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

Une liste de toutes les parties de la série IEC 62056, publiées sous le titre général *Échange des données de comptage de l'électricité – La suite DLMS/COSEM*, peut être consultée sur le site web de l'IEC.

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# ÉCHANGE DES DONNÉES DE COMPTAGE DE L'ÉLECTRICITÉ – LA SUITE DLMS/COSEM –

## Partie 3-1: Utilisation des réseaux locaux sur paire torsadée avec signal de porteuse

### 1 Domaine d'application

Cette partie de l'IEC 62056 décrit deux ensembles de profils: le premier ensemble permet une communication bidirectionnelle entre un client et un serveur. Cet ensemble est composé de trois profils permettant l'échange de données par bus en local avec des stations alimentées ou non en énergie. Pour les stations téléalimentées, le bus fournit l'énergie pour l'échange des données. Trois différents profils sont pris en charge:

- Profil de base: ce profil en trois couches fournit des services de télérelevé;

NOTE 1 Ce profil a été publié dans l'IEC 61142:1993 et était alors connu sous le nom de Norme Euridis.

- Profil avec DLMS: ce profil permet l'utilisation des services DLMS tels qu'ils sont spécifiés dans l'IEC 61334-4-41;

NOTE 2 Ce deuxième profil a été publié dans l'IEC 62056-31: 1999.

- Profil avec DLMS/COSEM: ce profil permet l'utilisation de la couche Application de DLMS/COSEM et le modèle objet COSEM tels qu'ils sont spécifiés respectivement dans l'IEC 62056-5-3 et dans l'IEC 62056-6-2.

Les trois profils utilisent la même couche physique et ils sont entièrement compatibles, c'est-à-dire que des dispositifs mettant en œuvre l'un de ces profils peuvent fonctionner sur le même bus. Le moyen de transmission est la paire torsadée par signal de porteuse et connue sous le nom de Bus Euridis.

Le deuxième ensemble de profils permet une communication unidirectionnelle entre un dispositif de comptage de l'énergie (*energy metering device*) donné et un système de gestion de l'énergie client (*customer energy management system*). Ce deuxième ensemble est composé de trois profils.

Le paragraphe 4.2.1 à l'Article 8 inclus spécifient la communication bidirectionnelle utilisant le signal avec paire torsadée et l'Article 9 au 9.5 spécifient la communication unidirectionnelle utilisant le signal avec paire torsadée.

### 2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris d'éventuels amendements).

IEC 61334-4-41:1996, *Automatisation de la distribution à l'aide de systèmes de communication à courants porteurs – Partie 4: Protocoles de communication de données – Section 41: Protocoles d'application – Spécification des messages de ligne de distribution*

IEC 62056-51:1998, *Comptage de l'électricité – Échange de données pour la lecture des compteurs, le contrôle des tarifs et de la charge – Partie 51: Protocoles de couche application*

IEC 62056-5-3:2017, *Échange des données de comptage de l'électricité – La suite DLMS/COSEM – Partie 5-3: Couche application DLMS/COSEM*

IEC 62056-6-2:2017, *Echange des données de comptage de l'électricité – La suite DLMS/COSEM – Partie 6-2: Classes d'interfaces COSEM*

ISO/IEC 8482:1993, *Technologies de l'information – Télécommunications et échange d'informations entre systèmes – Interconnexions multipoints par paire torsadée* (disponible en anglais seulement)

EIA 485, *Standard for Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems*