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## System för kommunikation på elnätet – Del 1: Planering av analoga och digitala bärfrekvenssystem på högspänningsnät

*Power line communication systems for power utility applications –  
Part 1: Planning of analogue and digital power line carrier systems operating over HV electricity grids*

Som svensk standard gäller europastandarden EN IEC 62488-1:2025. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62488-1:2025.

### Nationellt förord

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English Version

Power line communication systems for power utility applications  
- Part 1: Planning of analogue and digital power line carrier  
systems operating over HV electricity grids  
(IEC 62488-1:2025)

Systèmes de communication sur lignes d'énergie pour les applications des compagnies d'électricité - Partie 1: Conception des systèmes à courants porteurs de lignes d'énergie analogiques et numériques fonctionnant sur des réseaux d'électricité HT (IEC 62488-1:2025)

Systeme zur Kommunikation über Hochspannungsleitungen für Anwendungen der elektrischen Energieversorgung - Teil 1: Planung von Systemen zur analogen und digitalen Nachrichtenübertragung über Hochspannungsleitungen (IEC 62488-1:2025)

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## **European foreword**

The text of document 57/2773/FDIS, future edition 2 of IEC 62488-1, prepared by TC 57 "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62488-1:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-09-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-09-30 document have to be withdrawn

This document supersedes EN 62488-1:2013 and all of its amendments and corrigenda (if any).

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## **Endorsement notice**

The text of the International Standard IEC 62488-1:2025 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 standard indicated:

IEC 62488-2	NOTE	Approved as EN 62488-2
IEC 62488-3	NOTE	Approved as EN IEC 62488-3
IEC 60358-1:2012	NOTE	Approved as EN 60358-1:2012 (not modified)
IEC 60358 series	NOTE	Approved as EN IEC 60358 series
IEC 62443 series	NOTE	Approved as EN IEC 62443 series
IEC 62351 series	NOTE	Approved as EN IEC 62351 series
IEC 62351-8:2020	NOTE	Approved as EN IEC 62351-8:2020 (not modified)
IEC 60870-5-101	NOTE	Approved as EN 60870-5-101
IEC 60834-1	NOTE	Approved as EN 60834-1
IEC 60870-5-104	NOTE	Approved as EN 60870-5-104

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**Power line communication systems for power utility applications -  
Part 1: Planning of analogue and digital power line carrier systems operating  
over HV electricity grids**

**Systèmes de communication sur lignes d'énergie pour les applications des  
compagnies d'électricité -  
Partie 1: Conception des systèmes à courants porteurs de lignes d'énergie  
analogiques et numériques fonctionnant sur des réseaux d'électricité HT**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Power line communication systems for power utility applications -  
Part 1: Planning of analogue and digital power line carrier  
systems operating over HV electricity grids**

FOREWORD

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IEC 62488-1 has been prepared by IEC technical committee 57: Power systems management and associated information exchange. It is an International Standard.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Complete revision of this edition with respect to the previous edition with the main focus on planning of analogue and digital power line carrier systems operating over HV power networks;
- b) A general structure of a bidirectional point-to-multipoint APLC, DPLC or ADPLC link has been introduced;
- c) Introduction of a new approach for global frequency planning.

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

Draft	Report on voting
57/2773/FDIS	57/2794/RVD

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/publications](http://www.iec.ch/publications).

A list of all parts of IEC 62488 series, under the general title *Power line communication systems for power utility applications*, 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, or
- revised.

## INTRODUCTION

The complexity and extensive size of present-day electricity generation, transmission and distribution systems are such that it is possible to control them only by means of an associated and often equally large and complex telecommunication system having a high order of reliability.

The simultaneous use of the power distribution network for both energy transmission and data communication is unique and reduces the costs of installing two services over one transmission path. This communication technology is called generically power line carrier (PLC) communications.

Therefore, by using either analogue power line carrier communication (APLC) or digital power line carrier communication (DPLC) or a combination of both types of system (ADPLC), seamless efficient communication can be maintained throughout the power network.

The development of digital techniques for communications in the HV electrical power networks is now very widespread along with other applications in electronics. This is especially relevant for the electrical distribution network where many of the PLC devices use analogue to digital converters together with digital signal processing techniques enabling higher flexibility and HW efficiency.

The development of the technical report "*Planning of power line carrier systems*" was first produced by the International Electrotechnical Commission through publication IEC 60663 [1]<sup>1</sup> in 1980 entitled *Planning of (single sideband) power line carrier systems*. In 1993, the International Electrotechnical Commission produced IEC 60495 [2], "*Single sideband power-line carrier terminals*". In the intervening years, electronic systems and the associated communications systems for electronic devices evolved and developed considerably. The introduction of digital communication techniques improved the quality of transmission and reception PLC signals within electronic devices, enabling them to provide more detailed quality analysis and control of the data being communicated throughout the electricity distribution network, from control centre to service provider.

Both of these standards, IEC 60663 and IEC 60495, are being updated and replaced by the following: IEC 60663 is replaced by IEC 62488-1 and IEC 60495 is replaced by IEC 62488-2 [3] and IEC 62488-3 [4] covering respectively analogue, digital and hybrid analogue-digital power line carrier terminals.

These documents apply to power line carrier (PLC) terminals used to transmit information over HV power networks. Both analogue and digital modulation systems will be considered.

The IEC 62488 series consists of the following parts under the general title: *Power line communication systems for power utility applications*:

- Part 1: *Planning of analogue and digital power line carrier systems operating over HV power networks*;
- Part 2: *Analogue power line carrier terminals or APLC*;
- Part 3: *Digital power line carrier (DPLC) terminals and hybrid ADPLC terminals*.

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<sup>1</sup> Numbers in square brackets refer to the Bibliography.

## **1 Scope**

This part of IEC 62488 applies to the planning of analogue (APLC), digital (DPLC) and hybrid analogue-digital (ADPLC) power line carrier communication systems operating over HV electric power networks. The object of this document is to establish the planning of the services and performance parameters for the operational requirements to transmit and receive data efficiently and reliably.

Such analogue and digital power line carrier systems are used by the different electricity supply industries and integrated into their communication infrastructure using common communication technologies such as radio links, fibre optic and satellite networks.

## **2 Normative references**

There are no normative references in this document.