

Power line communication systems for power utility applications - Part 2: Analogue power line carrier terminals or APLC

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

**Power line communication systems for power utility applications
- Part 2: Analogue power line carrier terminals or APLC
(IEC 62488-2:2017)**

Systèmes de communication sur lignes d'énergie pour les applications des compagnies d'électricité - Partie 2 : Bornes analogiques à courant porteur en ligne (CPL)
(IEC 62488-2:2017)

Systeme zur Kommunikation über Hochspannungsleitungen für Anwendungen der elektrischen Energieversorgung - Teil 2: Anschlussgeräte für analoge Nachrichtenübertragung über Hochspannungsleitungen (APLC)
(IEC 62488-2:2017)

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European foreword

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-08-30

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60255-26:2013	NOTE	Harmonized as EN 60255-26:2013.
IEC 60255-151:2009	NOTE	Harmonized as EN 60255-151:2009.
IEC 60495:1993	NOTE	Harmonized as EN 60495:1994.
IEC 60721-3-4:1995	NOTE	Harmonized as EN 60721-3-4:1995.
IEC 60870-5-101	NOTE	Harmonized as EN 60870-5-101.
IEC 60870-5-104	NOTE	Harmonized as EN 60870-5-104.
IEC 61869-2:2012	NOTE	Harmonized as EN 61869-2:2012.
IEC 62351 (series)	NOTE	Harmonized as EN 62351 (series).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60038	-	IEC standard voltages	EN 60038	-
IEC 60068-2-1	-	Environmental testing -- Part 2-1: Tests Test A: Cold	-EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing -- Part 2-2: Tests Test B: Dry heat	-EN 60068-2-2	-
IEC 60068-2-6	-	Environmental testing -- Part 2-6: Tests Test Fc: Vibration (sinusoidal)	-EN 60068-2-6	-
IEC 60068-2-27	-	Environmental testing -- Part 2-27: Tests Test Ea and guidance: Shock	-EN 60068-2-27	-
IEC 60068-2-30	-	Environmental testing -- Part 2-30: Tests Test Db: Damp heat, cyclic (12 h + 12 h cycle)	-EN 60068-2-30	-
IEC 60068-2-31	-	Environmental testing -- Part 2-31: Tests Test Ec: Rough handling shocks, primarily for equipment-type specimens	-EN 60068-2-31	-
IEC 60255-27	2013	Measuring relays and protection equipment -- Part 27: Product safety requirements	EN 60255-27	2014
IEC 60529	-	Degrees of protection provided by- enclosures (IP Code)	-	-
IEC 60721-3-1	1997	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities -- Section 1: Storage	-EN 60721-3-1	1997
IEC 60721-3-2	1997	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities -- Section 2: Transportation	-EN 60721-3-2	1997
+ A1	1995		-	-
IEC 60721-3-3	1994	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities -- Section 3: Stationary use at weatherprotected locations	-EN 60721-3-3	1995
+ A2	1996		+ A2	1997
IEC 60834-1	-	Performance and testing of teleprotection- equipment of power systems -- Part 1: Narrow-band command systems	-	-

IEC 60950-1	-	Information technology equipment - Safety	EN 60950-1	-
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) -- Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	-
IEC 61000-4-3	-	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	-
IEC 61000-4-4	-	Electromagnetic compatibility (EMC) -- Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	-
IEC 61000-4-5	-	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	-
IEC 61000-4-6	-	Electromagnetic compatibility (EMC) -- Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	-
IEC 61000-4-8	-	Electromagnetic compatibility (EMC) -- Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	-
IEC 61000-4-11	-	Electromagnetic compatibility (EMC) -- Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	-
IEC 61000-4-16	-	Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	EN 61000-4-16	-
IEC 61000-4-17	-	Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test	EN 61000-4-17	-
IEC 61000-4-18	-	Electromagnetic compatibility (EMC) -- Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test	EN 61000-4-18	-
IEC 61000-4-20	2010	Electromagnetic compatibility (EMC) -- Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	EN 61000-4-20	2010
IEC 61000-4-29	-	Electromagnetic compatibility (EMC) -- Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests	EN 61000-4-29	-
IEC 61000-6-2	-	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN 61000-6-2	-
IEC 61000-6-4	2006	Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments	EN 61000-6-4	2007

IEC 61000-6-5	2015	Electromagnetic compatibility (EMC) - Part 6-5: Generic standards - Immunity for equipment used in power station and substation environment	EN 61000-6-5	2015
IEC 62488-1	2012	Power line communication systems for power utility applications -- Part 1: Planning of analogue and digital power line carrier systems operating over EHV/HV/MV electricity grids	EN 62488-1	2013
CISPR 14-1	2016	Electromagnetic compatibility Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission	EN 55014-1	2017
CISPR 16-1-1	2015	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus	-	-
CISPR 16-1-2	2014	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Coupling devices for conducted disturbance measurements	EN 55016-1-2	2014
CISPR 16-1-4	2010	Specification for radio disturbance and immunity measuring apparatus and methods -- Part 1-4: Radio disturbance and immunity measuring apparatus - Antennas and test sites for radiated disturbance measurements	EN 55016-1-4	2010
CISPR 16-2-1	2014	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements	EN 55016-2-1	2014
CISPR 16-2-3	2016	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements	EN 55016-2-3	2017
CISPR 22	2008	Information technology equipment - Radio-disturbance characteristics - Limits and methods of measurement	-	-

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INTRODUCTION

IEC 62488 series is a family of standards dealing with all aspects of power line communication systems operating over electricity power lines.

These international standards apply to power line carrier terminals and systems (PLC) used to transmit information over power networks including extra high, high and medium voltage (EHV/HV/MV) power lines. Both analogue and digital modulation as well as narrow and broadband systems will be included.

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 control of electrical networks and transmission and reception of data are through a combination of analogue and digital communication systems controlling devices and systems distributed throughout the electrical network.

The emergence of digital communication systems for controlling the devices of the electrical distribution network enables faster data transmission. The traditional analogue communication systems mainly due to legacy applications are still extensively used.

The ability to represent the various electrical parameters as an analogue signal and/or a digital signal ensures the quality and quantitative aspects of seamless communication to be maintained throughout the electrical power network.

Therefore, by using either analogue power line communication, digital power line communication or a combination of both types of systems, seamless efficient communication may be maintained throughout the power network.

In many countries, Power Line Carrier (PLC) channels represent a main part of the utility-owned telecommunication system. A circuit which would normally be routed via a PLC channel can also be routed via a channel using a different transmission medium, such as a point to point radio or open-wire circuit. Since, in many cases, automatic switching is used, the actual rerouting, although predetermined, is unpredictable.

It is important, therefore, that the input and output signals and criteria exchanged among all terminal used in the communications system are compatible. This compatibility is also beneficial in creating the ability to interchange and interconnect terminals from different sources.

This document has been prepared to enable compatibility between APLC links from different sources or between APLC links and other transmission medium to be achieved and to define the terminal performance required in APLC networks.

POWER LINE COMMUNICATION SYSTEMS FOR POWER UTILITY APPLICATIONS –

Part 2: Analogue power line carrier terminals or APLC

1 Scope

This part of IEC 62488 applies to Amplitude Modulation Single Sideband (AM-SSB) Analogue Power Line Carrier (APLC) Terminals and Systems used to transmit information over power lines (EHV/HV/MV).

In particular this document covers basically baseband signals with bandwidths of 4 kHz and 2,5 kHz, or multiples thereof, corresponding to the same high frequency bandwidth/s for single or multi-channel APLC terminals.

Figure 1 shows a schematic representation of the scope of the IEC 62488-2 standard within a complete power line communication system installation.

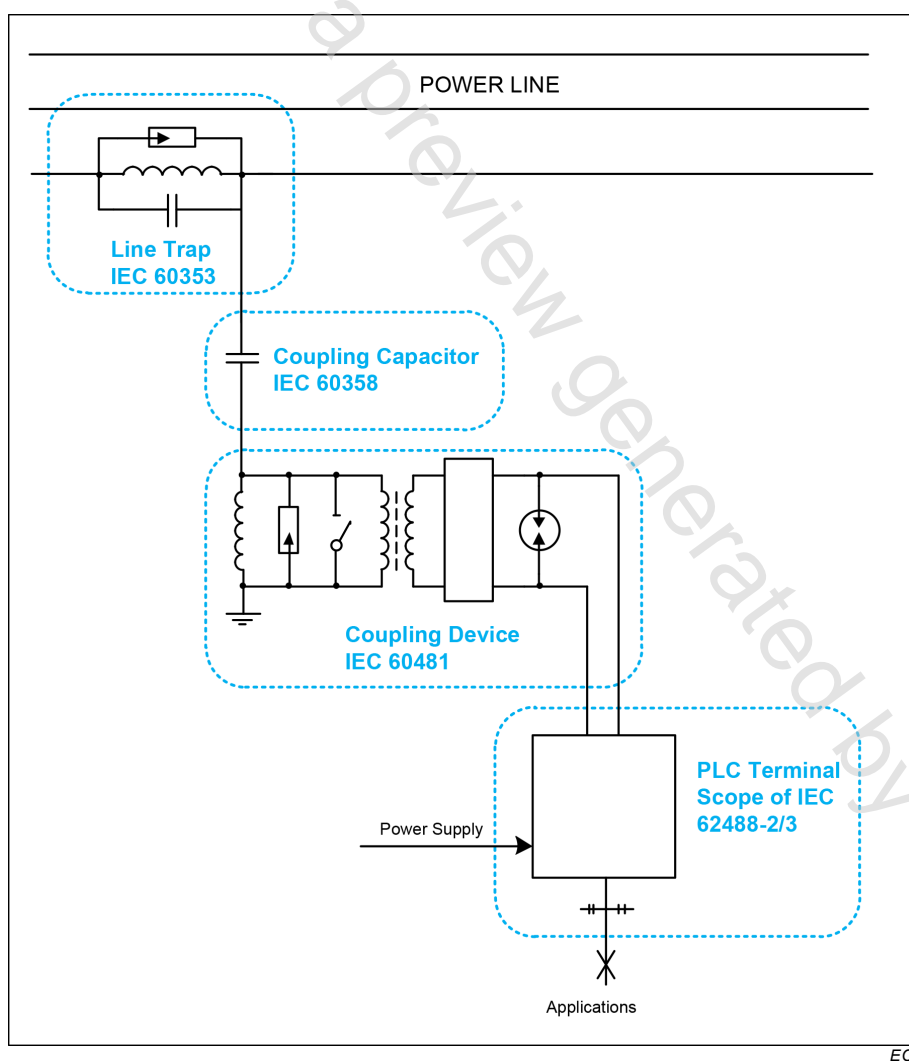


Figure 1 – Schematic representation of the scope of IEC 62488-2