



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 50065-1:2001

Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 1: General requirements, frequency bands and

Signalübertragung auf elektrischen
Niederspannungsnetzen im
Frequenzbereich 3 kHz bis 148,5 kHz -
Teil 1: Allgemeine Anforderungen,

Transmission de signaux sur les réseaux
électriques basse tension dans la bande
de fréquences de 3 kHz à 148,5 kHz -
Partie 1: Règles générales, bandes de

07/2001



National Foreword

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English version

**Signalling on low-voltage electrical installations
in the frequency range 3 kHz to 148,5 kHz
Part 1: General requirements, frequency bands
and electromagnetic disturbances**

Transmission de signaux sur les réseaux
électriques basse-tension dans la bande
de fréquences de 3 kHz à 148,5 kHz
Partie 1: Règles générales, bandes
de fréquences et perturbations
électromagnétiques

Signalübertragung auf elektrischen
Niederspannungsnetzen im
Frequenzbereich 3 kHz bis 148,5 kHz
Teil 1: Allgemeine Anforderungen,
Frequenzbänder und elektromagnetische
Störungen

This European Standard was approved by CENELEC on 2000-08-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

This standard has been prepared by the CENELEC technical subcommittee SC 205A, Mains communication systems, of Technical Committee CENELEC TC 205, Home and Building Electronic Systems (HBES) following the quinquennial review of EN 50065-1:1991 with the incorporation of amendments A1:1992, A2:1995 and A3:1996.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50065-1 on 2000-08-01.

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) 2002-02-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2003-04-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B, C, D and E are normative and annex F is informative.

Modifications have been made to clause 5 to take account of false band-in-use detection. Common-mode signalling in the 3 – 9 kHz sub-band has been deleted. Additions have also been made to clause 6 in order to take account of three-phase signalling and an extra test for two transmitters operating simultaneously has been added in subclause 8.5. Sub-divisions of the utility and consumer bands are now referred to as sub-bands.

SC 205A has taken the advice of CENELEC BT regarding the conflict arising from the publication of EN 55015:1996 and has therefore increased the threshold and lower transmit level for the consumer band by +6 dB(μ V).

References have been updated to include CISPR 16-1 and CISPR 16-2. Other changes have been made to add clarity and bring the figures up to date.

EN 50065 consists of the following parts, under the general title: Signalling on low voltage electrical installations in the frequency range 3 kHz to 148,5 kHz

Part 1	General requirements, frequency bands and electromagnetic disturbances
Part 2-1	Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in residential, commercial and light industrial environments
Part 2-2	Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in industrial environments
Part 2-3	Immunity requirements for mains communications equipment and systems operating in the range of frequencies 3 kHz to 95 kHz and intended for use by electricity suppliers and distributors
Part 4-1	Low voltage decoupling filters – Generic specification
Part 4-2	Low voltage decoupling filters – Safety requirements
Part 4-3	Low voltage decoupling filters – Incoming filter
Part 4-4	Low voltage decoupling filters – Impedance filter
Part 4-5	Low voltage decoupling filters – Segmentation filter
Part 4-6	Low voltage decoupling filters – Phase coupler
Part 7	Equipment impedance

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1 Scope

This standard applies to electrical equipment using signals in the frequency range 3 kHz to 148,5 kHz to transmit information on low voltage electrical systems, either on the public supply system or within installations in consumers' premises.

It specifies the frequency bands allocated to the different applications, limits for the terminal output voltage in the operating band and limits for conducted and radiated disturbance. It also gives the methods of measurement.

It does not specify the signal modulation methods nor the coding methods nor functional features (except those for the prevention of mutual interference).

Environmental requirements and tests are not included.

NOTE In most countries the transmission of information is subject to regulation. Compliance with this standard does not imply permission to establish communication with locations outside the consumer's installation or with other consumers through the public supply system where this would not otherwise be allowed.

The object of the standard is to limit mutual influence between signal transmission equipment in electrical installations and between such equipment and other equipment. In addition this standard is intended to limit interference caused by signal transmission equipment to sensitive electronic equipment. However, complete freedom from such interference cannot be assured.

2 Normative references

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).

IEC 60050-161		International electrotechnical vocabulary – Chapter 161: Electromagnetic compatibility
CISPR 16-1	1993	Specification for radio disturbance and immunity measuring apparatus and methods – Part 1: Radio disturbance and immunity measuring apparatus
CISPR 16-2	1996	Specification for radio disturbance and immunity measuring apparatus and methods – Part 2: Methods of measurement of disturbances and immunity

3 Definitions

The definitions in Chapter 161 of the International Electrotechnical Vocabulary apply.

4 Frequency bands and classifications

NOTE Additional provisions may apply in the event of interference to radio communication service.

4.1 Band 3 kHz up to 95 kHz

The use of frequencies in this band shall be restricted to electricity suppliers and their licensees.

4.2 Band above 95 kHz up to 148,5 kHz

The use of frequencies in this band shall be restricted to consumer use.

Equipment for use in this frequency band is designated as either Class 122 or as Class 134 equipment. Class 122 equipment is suitable for general use, but the use of Class 134 equipment may require prior notification, or consent of, appropriate authorities.

Equipment manufactured to Class 116 of the previous edition of this standard will now meet the requirements of Class 122 and may be marked Class 116 provided that its output complies with the previous standard.

4.2.1 Sub-band above 95 kHz up to 125 kHz

The use of this sub-band does not require an access protocol.

4.2.2 Sub-band above 125 kHz up to 140 kHz

Signalling in this sub-band requires the use of the access protocol described in clause 5.

4.2.3 Sub-band above 140 kHz up to 148,5 kHz

The use of this sub-band does not require an access protocol.

5 Access protocol

5.1 Access Protocol Overview

A carrier-sense multiple-access (CSMA) protocol is used in the frequency sub-band 125 kHz to 140 kHz to allow several systems to operate on the same, or electrically connected, mains networks. These systems may use the same or different communication protocols but shall use the access protocol given in this clause.

Signals transmitted by systems operating in this sub-band are required to have a defined spectral distribution and maximum duration such that their carrier may be detected by other devices on that network. The presence of this characteristic signal on the network above a minimum level indicates that the frequency sub-band is being used. This state is termed "band-in-use". Devices with pending transmissions may not transmit whilst the band is in use and until the band has been free for a minimum period.

To provide multiple access, devices with pending transmissions are required to randomise their transmission attempts over a time interval to reduce the possibility of collisions between two or more transmissions. The most recent device to transmit is required to wait until the end of that time interval before attempting a further transmission to prevent it taking too great a share of the available transmission capacity. The maximum length of any transmission is limited for the same reason.

5.2 Band in use signalling

All devices shall use the frequency 132,5 kHz to indicate that a transmission is in progress.

To enable band-in-use to be detected, a device shall transmit its signal with a spectral distribution in accordance with annex B.