
Signalizacija po nizkonapetostnih električnih napeljavah v frekvenčnem območju od 3 kHz do 148,5 kHz - 4-2. del: Nizkonapetostni ločilni filtri - Varnostne zahteve

Signalling on low voltage electrical installations in the frequency range 3 kHz to 148,5 kHz Part 4-2: Low voltage decoupling filters - Safety requirements

Signalübertragung auf elektrischen Niederspannungsnetzen im Frequenzbereich 3 kHz bis 148,5 kHz Teil 4-2: Niederspannungs-Entkopplungsfilter - Sicherheitsanforderungen

Transmission de signaux sur les réseaux électriques basse tension dans la bande de fréquences de 3 kHz à 148,5 kHz - Partie 4-2: Filtres de découplage basse tension - Exigences de sécurité

<https://standards.iteh.ai/catalog/standards/sist/56d1ff8b-c91c-44ff-9d31-973f20203fa2/osist-pren-50065-4-2-2021>

Ta slovenski standard je istoveten z: prEN 50065-4-2

ICS:

31.160	Električni filtri	Electric filters
33.040.30	Komutacijski in signalizacijski sistem	Switching and signalling systems

oSIST prEN 50065-4-2:2021

en,fr

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 50065-4-2:2021](https://standards.iteh.ai/catalog/standards/sist/56d1ff8b-c91c-44ff-9d31-973f20203fa2/osist-pren-50065-4-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/56d1ff8b-c91c-44ff-9d31-973f20203fa2/osist-pren-50065-4-2-2021>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 50065-4-2

April 2021

ICS

Will supersede EN 50065-4-2:2001 and all of its amendments and corrigenda (if any)

English Version

Signalling on low voltage electrical installations in the frequency range 3 kHz to 148,5 kHz Part 4-2: Low voltage decoupling filters - Safety requirements

Transmission de signaux sur les réseaux électriques basse tension dans la bande de fréquences de 3 kHz à 148,5 kHz
- Partie 4-2: Filtres de découplage basse tension - Exigences de sécurité

Signalübertragung auf elektrischen Niederspannungsnetzen im Frequenzbereich 3 kHz bis 148,5 kHz Teil 4-2: Niederspannungs-Entkopplungsfilter - Sicherheitsanforderungen

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2021-07-16.

It has been drawn up by CLC/TC 219.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CENELEC 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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

prEN 50065-4-2:2021 (E)

Contents

European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 General requirements.....	6
5 General notes on tests	6
6 Rating.....	6
7 Classification	7
8 Marking	8
9 Dimensions.....	9
10 Protection against electric shock	10
11 Provision for protective earthing.....	10
12 Terminals.....	10
13 Construction	11
14 Resistance to ageing, to harmful ingress of water and to humidity	13
15 Insulation resistance and dielectric strength	13
16 Temperature rise.....	15
17 Mechanical strength	15
18 Resistance to heat	16
19 Screws, current-carrying parts and connections.....	16
20 Creepage distances, clearances and distances through sealing compound	18
21 Resistance to abnormal heat, to fire and to tracking.....	21
22 Resistance to rusting	22
23 Components.....	22
24 Abnormal conditions	23
25 Protection against short-circuit	25
26 Resistance to transients	25
Annex ZZ (informative) Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered.....	26
Bibliography.....	27

European foreword

This document (prEN 50065-4-2:2021) has been prepared by WG 12 “Filters” of CLC/TC 205A “Mains communicating systems”.

This document is currently submitted to the Enquiry.

The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

This document will supersede EN 50065-4-2:2001 and all of its amendments and corrigenda (if any).

This document has been prepared under a mandate given to GENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

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 4-7: Portable low voltage decoupling filters – Safety requirements

Part 7: Equipment impedance

prEN 50065-4-2:2021 (E)**1 Scope**

This document applies to decoupling filters in a low voltage mains communication system intended for utility networks or household and similar fixed-electrical installations including residential, commercial and light industrial buildings.

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.

HD 214 S2, *Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions (IEC 60112)*

HD 625.1, *Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests (IEC 60664-1)*

EN 50065-4-1, *Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 4-1: Low voltage decoupling filters - Generic specification*

EN 60065, *Audio, video and similar electronic apparatus - Safety requirements (IEC 60065)*

EN 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30)*

EN 60068-2-75, *Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests (IEC 60068-2-75)*

EN 60068-2-78, *Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state (IEC 60068-2-78)*

EN 60127 (series), *Miniature fuses (IEC 60127 series)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60695-2-1/X:1996, *Fire hazard testing - Part 2: Test methods (IEC 60695-2-1/X:1994)*

EN 60695-10-2, *Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test method (IEC 60695-10-2)*

EN 60721-3-3, *Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weatherprotected locations (IEC 60721-3-3)*

EN 60947-1:2007, *Low-voltage switchgear and controlgear - Part 1: General rules (IEC 60947-1:2007)*

EN 60999-1:2000, *Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included) (IEC 60999-1:1999)*

EN 61000-4-4, *Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4)*

EN 132400, *Sectional Specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (Assessment level D)*

IEC 60999-2, *Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 2: Particular requirements for clamping units for conductors above 35 mm² up to 300 mm² (included)*

ISO 1456, *Metallic and other inorganic coatings — Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium*

ISO 2081, *Metallic and other inorganic coatings — Electroplated coatings of zinc with supplementary treatments on iron or steel*

ISO 2093, *Electroplated coatings of tin — Specification and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

NOTE Where the term's voltage and current are used, they imply r.m.s. values, unless otherwise specified.

3.1 decoupling filter

device installed in an electrical network or installation in order to make possible reliable data transmission over the low voltage mains network

3.2 phase coupler

type of decoupling filter which transmits a signal within a specified frequency range from one phase to another in a multi-phase installation

3.3 fault condition

abnormal condition which could occur during normal operation

3.4 enclosed equipment

equipment which is mounted and/or applied without an additional enclosure

3.5 unenclosed equipment

equipment intended to be built into an enclosure which completely covers the equipment

3.6 partly enclosed equipment

equipment intended to be built into an appropriate enclosure which only covers the unenclosed part of the equipment

Note 1 to entry: Flush-mounted equipment intended to be located in a box is an example of such equipment.

3.7 terminal

conductive part of one pole, composed of one or more clamping unit(s) and insulation if necessary

prEN 50065-4-2:2021 (E)**3.8****screw-type terminal**

clamping unit for the connection and subsequent disconnection of one conductor or the interconnection and subsequent disconnection of two or more conductors, the connection being made, directly or indirectly, by means of screws or nuts of any kind

3.9**screwless-type terminal**

clamping unit for the connection and subsequent disconnection of one conductor or the interconnection and subsequent disconnection of two or more conductors, the connection being made, directly or indirectly, by means other than screws

3.10**nominal voltage**

voltage assigned to the equipment by the manufacturer

3.11**nominal current**

nominal maximum operating current assigned to the equipment by the manufacturer

3.12**conditional short-circuit current**

value of the AC component of a prospective current, which the equipment protected by a suitable short-circuit protective device (hereafter referred to as SCPD) in series can withstand under specified conditions of use and behaviour

iTeh STANDARD PREVIEW

4 General requirements (standards.iteh.ai)

Equipment and its enclosures shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or the surroundings.

In general, compliance is checked by carrying out all the tests specified, where applicable.

5 General notes on tests**5.1 General**

Tests according to this document are type tests.

5.2 The samples are tested as delivered and under normal conditions of use, having regard to the classification of the equipment and to the manufacturer's installation instructions.

5.3 Unless otherwise specified, the tests are carried out in the order of the clauses at an ambient temperature of $20\text{ °C} \pm 5\text{ °C}$.

5.4 The required number of samples shall be 9.

Three samples are subjected to all the relevant tests, except the test of Clauses 23 and 24 where three other samples are used, and the tests of Clauses 25 and 26 where another three samples are used.

5.5 Equipment is deemed not to comply with this document if any sample does not pass any of the listed tests.

6 Rating

6.1 Standard values of nominal voltages are AC 230 V and AC 400 V.

If a different nominal voltage is applied this value shall not be less than 220 V.

6.2 Standard values of nominal currents are 10 A, 16 A, 20 A, 25 A, 32 A, 40 A, 50 A, 63 A, 80 A, 90A, 100 A and 125 A.

6.3 Standard cross-sectional areas of conductors are 1,5 mm², 2,5 mm², 4 mm², 6 mm², 10 mm², 16 mm², 25 mm², 35 mm² and 50 mm²

Compliance with the requirements of 6.1 to 6.3 is checked by inspection of the marking.

7 Classification

7.1 Equipment is classified as follows:

7.1.1 According to protection against direct contact and external influences:

- enclosed equipment (minimum IP2X) for separate mounting;
- unenclosed equipment for mounting in an adequate enclosure.

NOTE 1 The degrees of protection are based on EN 60529.

NOTE 2 For unenclosed equipment, the protection against electric shock is given by the enclosure in which the equipment is intended to be mounted. For enclosed equipment, the protection against electric shock is provided by compliance with the requirements of Clause 10.

7.1.2 According to the degree of protection against ingress of water:

The degrees of protection are based on EN 60529.

7.1.3 According to the method of mounting

- surface-type equipment;
- flush-type equipment;
- panel board equipment.

7.1.4 According to environmental temperature conditions

The classifications are based on EN 60721-3-3.

- class 3K4 + 5 °C to + 40 °C for indoor locations
- class 3K5 - 5 °C to + 45 °C for unprotected indoor locations
- class 3K6 - 25 °C to + 55 °C for outdoor locations
- class 3K8H - 25 °C to + 70 °C for severe environments

7.1.5 According to the rated impulse withstand voltage

The rated impulse withstand voltages are based on HD 625.1.

- 4000 V according to overvoltage category III;
- 6000 V according to overvoltage category IV.

prEN 50065-4-2:2021 (E)**8 Marking**

8.1 As a minimum the equipment shall be marked with:

- a) nominal voltage(s) in volts ~;
- b) nominal current in amperes;
- c) manufacturer's or responsible vendor's name, trade mark or identification mark;
- d) type of decoupling filter and reference or catalogue number;
- e) symbol for temperature range, if different from class 3K4;
- f) symbol for degree of protection;
- g) symbol for degree of protection against ingress of water;
- h) marking with conditional short-circuit current and suitable SCPD shall be given in the manufacturer's catalogues.

8.2 Symbols for marking shall be used as follows:

Amperes	A
Volt	V
Alternating current	~
Degree of protection against moisture	IPX4 or IPX5

The letter "X" shall be replaced by the relevant number.

The figure for the current rating shall be placed before or above that for the nominal voltage and separated from the latter by an oblique line or a dash.

NOTE The marking for current, voltage and nature of supply can be, for instance, as follows: 16 A 230 V~ or 16/230~.

8.3 The manufacturer's or responsible vendor's name, trademark or identification mark, type reference and nominal current shall be on the main part of the equipment.

Parts such as cover plates, which are necessary for safety purposes and are intended to be sold separately, shall be marked with the manufacturer's or responsible vendor's name, trade mark or identification mark and type reference.

The symbol for degree of protection, if applicable, shall be marked on the outside of its associated enclosure so as to be easily discernible when the equipment is mounted and wired as in normal use.

Additional type references may be marked on the main part, or on the outside or the inside of the associated enclosure.

NOTE The term "main" part means the part carrying the terminals and any part integral with them; it does not include parts intended to be sold separately.

8.4 Terminals

The side name (Input side, output side) and the respective termination shall be marked, when appropriate, in such a way that they are clearly distinguished (e.g. using a different colour for each side).

These indications shall not be placed on screws or any other easily removable parts.

NOTE "Easily removable parts" are those parts, which can be removed during the normal installation of the equipment.

For example a typical marking scheme is given in Table 1.

Table 1 — Symbols for identification of the termination

Single phase		Three phase	
Point of connection	Identification	Point of connection	Identification
Line	L	1st Phase 2nd Phase 3rd Phase	L1, L2, L3
Neutral	N	Neutral	N
Earth	EN 60417 series Symbols 5019	Earth	EN 60417 series Symbols 5019

Terminals associated with any one pole shall have similar identification differing from that of the terminals associated with the other poles, unless the relationship is self-evident.

8.5 Terminals shall additionally be marked in accordance with EN 60999-1:2000, 7.4.

Compliance is checked by inspection.

8.6 Marking shall be durable and easily legible.

Compliance is checked by inspection and by the following test.

The test is made by rubbing the marking by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit.

Marking made by impression, moulding, pressing or engraving is not subjected to this test.

The petroleum spirit used should consist of a solvent hexane with a content of aromatics of maximum 0,1 % by volume, a value of 29 % for kauri-butanol, an initial boiling-point of approximately 65 °C, a dry-point of approximately 69 °C and a density of approximately 0,68 g/cm³.

The type reference may be marked with paint or ink, protected, if necessary, by varnish.

8.7 The correct installation and use of the equipment shall be indicated in an installation instruction delivered with the equipment. A phase coupler shall be delivered with a marking plate with the following text:

Phase Coupler !

Must be disconnected while working on the installation.

The marking plate shall be fastened to the panel board in which the phase coupler is installed.

The installation instruction and the text of the marking plate shall be written in the official language(s) of the country in which the equipment is to be sold.

Compliance is checked by inspection.

NOTE In the following country the marking plate is not necessary: Germany.

9 Dimensions

Equipment shall comply with the appropriate standard sheets.

Compliance is checked by inspection and by measurement.