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Title: Draft BS EN 50065-4-7 Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz. Part 4-7: Portable low voltage decoupling filters - Safety requirements.

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- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

April 2021

ICS

Will supersede EN 50065-4-7:2005 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 4-7: Portable 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 4-7: Filtres de découplage basse tension mobiles -
Exigences de sécurité

Signalübertragung auf elektrischen Niederspannungsnetzen
im Frequenzbereich 3 kHz bis 148,5 kHz Teil 4-7:
Bewegliche 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

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98

99 European foreword

100 This document (prEN 50065-4-7:2021) has been prepared by WG 12 “Filters” of CLC/TC 205A “Mains
101 communicating systems”.

102 This document is currently submitted to the Enquiry.

103 The following dates are proposed:

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

104 This document will supersede EN 50065-4-7:2005 and all of its amendments and corrigenda (if any).

105 prEN 50065-4-7:2021 includes the following significant technical changes with respect to
106 EN 50065-4-7:2005:

107 The main changes introduced in this document are in Clauses 10, 14, 16, 22, 25, 30 and in the addition of
108 an Annex ZZ.

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

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

113 Structure of EN 50065 series:

114 EN 50065 Signalling on low voltage electrical installations in the frequency range 3 kHz to
115 148,5 kHz

116 EN 50065-1 Part 1: General requirements, frequency bands and electromagnetic disturbances

117 EN 50065-2-1 Part 2-1: Immunity requirements for mains communications equipment and systems
118 operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in residential, commercial
119 and light industrial environments

120 EN 50065-2-2 Part 2-2: Immunity requirements for mains communications equipment and systems
121 operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in industrial environments

122 EN 50065-2-3 Part 2-3: Immunity requirements for mains communications equipment and systems
123 operating in the range of frequencies 3 kHz to 95 kHz and intended for use by electricity suppliers and
124 distributors

125 EN 50065-4-1 Part 4-1: Low voltage decoupling filters - Generic specification

126 EN 50065-4-2 Part 4-2: Low voltage decoupling filters - Safety requirements

127 EN 50065-4-3 Part 4-3: Low voltage decoupling filters - Incoming filter

prEN 50065-4-7:2021 (E)

- 128 EN 50065-4-4 Part 4-4: Low voltage decoupling filters - Impedance filter
- 129 EN 50065-4-5 Part 4-5: Low voltage decoupling filters - Segmentation filter
- 130 EN 50065-4-6 Part 4-6: Low voltage decoupling filters - Phase coupler
- 131 EN 50065-4-7 Part 4-7: Portable low voltage decoupling filters - Safety requirements
- 132 EN 50065-7 Part 7: Equipment impedance

133 **Introduction**

134 When certifying or making declaration of conformity to the Low Voltage Directive 2014/35/EU in order to
135 CE mark the device it is important to state that the CE marking is only valid for the filter parts of the
136 product. The plug parts and socket-outlets parts are not covered by the Low Voltage Directive and are
137 therefore expected to comply with the relevant national standards.

1 Scope

This document applies to the filter part of portable devices for household and similar uses (hereafter referred to as portable decoupling filters) consisting of the filter part, a plug or an appliance inlet or a provision for connection by terminals or with a non-rewirable cord and a socket-outlet or an appliance outlet. They are intended for single-phase circuits for nominal currents not exceeding 16 A and for nominal voltages not exceeding 250 V a.c.

The filtering functions are described in EN 50065-4-1.

This document does not cover phase couplers.

Portable decoupling filters are not used as part of the fixed installation, where EN 50065-4-2 applies.

Plugs and socket-outlets connected to the filter part and plugs and socket-outlets integrated with the filter part are expected to comply with the relevant national standard(s).

Appliance inlets and appliance outlets connected to the filter part are expected to comply with the relevant parts of the EN 60320 series. Appliance inlets and appliance outlets integrated with the filter parts are not covered by this document.

This document can be used for portable mains communication devices when no other product standard exists.

This document can be used for other portable mains filters other than those described in EN 50065-4-1 when no other product standard exists.

Filters including batteries are not covered by this document.

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.

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 60065:2002, *Audio/video, information and communication technology equipment - Part 1: Safety requirements (IEC 60065:2001, mod)*

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 60068-2-32, *Basic environmental testing procedures - Part 2: Tests - Test Ed: Free fall (IEC 60068-2-32)*

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 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials (IEC 60112)*

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

EN 60320 (series), *Appliance couplers for household and similar general purposes (IEC 60320)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

- 177 EN IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles,*
178 *requirements and tests (IEC 60664-1)*
- 179 EN 60664-3:2017, *Insulation coordination for equipment within low-voltage systems - Part 3: Use of*
180 *coating, potting or moulding for protection against pollution (IEC 60664-3:2016)*
- 181 EN 60695-2-11, *Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire*
182 *flammability test method for end-products (GWEPT) (IEC 60695-2-11)*
- 183 EN 60695-10-2, *Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test method*
184 *(IEC 60695-10-2)*
- 185 EN 60721-3-3, *Classification of environmental conditions - Part 3: Classification of groups of*
186 *environmental parameters and their severities - Section 3: Stationary use at weatherprotected locations*
187 *(IEC 60721-3-3)*
- 188 EN 60947-1:2007, *Low-voltage switchgear and controlgear - Part 1: General rules (IEC 60947-1:2007)*
- 189 EN 60999-1:2000, *Connecting devices - Electrical copper conductors - Safety requirements for screw-*
190 *type and screwless-type clamping units - Part 1: General requirements and particular requirements for*
191 *clamping units for conductors from 0,2 mm² up to 35 mm² (included) (IEC 60999-1:1999)*
- 192 EN 61000-4-4, *Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques -*
193 *Electrical fast transient/burst immunity test (IEC 61000-4-4)*
- 194 EN 132400, *Sectional Specification: Fixed capacitors for electromagnetic interference suppression and*
195 *connection to the supply mains (Assessment level D)*
- 196 HD 21 series, *Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation*
197 *(IEC 60227, mod)*
- 198 HD 22 series, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation*
199 *(IEC 60245, mod)*
- 200 IEC 60417, *Graphical symbols for use on equipment*
- 201 ISO 2081, *Metallic and other inorganic coatings — Electroplated coatings of zinc with supplementary*
202 *treatments on iron or steel*
- 203 ISO 1456, *Metallic and other inorganic coatings — Electrodeposited coatings of nickel, nickel plus*
204 *chromium, copper plus nickel and of copper plus nickel plus chromium*
- 205 ISO 2093, *Electroplated coatings of tin — Specification and test methods*

206 3 Definitions

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

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

209 — ISO Online browsing platform: available at <https://www.iso.org/obp>

210 — IEC Electropedia: available at <http://www.electropedia.org/>

211 NOTE 1 Where the terms “voltage” and “current” are used, they imply r.m.s. values, unless otherwise specified.

212 NOTE 2 Throughout this document, the word “earthing” is used for “protective earthing”.

213 NOTE 3 The term “accessory” is used as a general term covering plugs and portable socket-outlets. The use of
214 the accessories is shown in IEC 60884-1:2002, Figure 1a.

215 **3.1 Definitions (from IEC 60884-1) relating to plugs and socket-outlets**

216 **3.1.1**

217 **plug**

218 accessory having pins designed to engage with the contacts of a socket-outlet, also incorporating means
219 for the electrical connection and mechanical retention of flexible cables or cords

220 **3.1.2**

221 **socket-outlet**

222 accessory having socket-contacts designed to engage with the pins of a plug and having terminals for the
223 connection of cable

224 **3.1.3**

225 **portable socket-outlet**

226 socket-outlet intended to be connected to, or integral with, flexible cables or cords, and which can easily
227 be moved from one place to another while connected to the supply

228 **3.1.4**

229 **multiple socket-outlet**

230 combination of two or more socket-outlets

231 **3.1.5**

232 **rewirable plug**

233 accessory so constructed that the flexible cable or cord can be replaced

234 **3.1.6**

235 **non-rewirable plug**

236 **non-rewirable portable socket-outlet**

237 accessory so constructed that it forms a complete unit with the flexible cable or cord after connection and
238 assembly by the manufacturer of the accessory

239 Note 1 to entry: See also IEC 60884-1:2002, 14.1.

240 **3.1.7**

241 **moulded-on accessory**

242 non-rewirable accessory, the manufacture of which is completed by insulating material moulded around
243 pre-assembled component parts and the terminations of the flexible cable or cord

244 **3.1.8**

245 **cord extension set**

246 assembly consisting of one flexible cable or cord fitted with one plug and one portable socket-outlet

247 **3.1.9**

248 **terminal**

249 insulated or non-insulated connecting device intended for reusable electrical connection of the external
250 conductors

251 **3.1.10**

252 **termination**

253 insulated or non-insulated connecting device intended for non-reusable electrical connection of the
254 external conductors

255 **3.1.11**

256 **clamping unit of a terminal**

257 part or parts of a terminal necessary for the mechanical clamping and the electrical connection of the
258 conductor(s)

259 **3.1.12**
 260 **adaptor**
 261 accessory constructed as an integral unit incorporating both plug pins and socket contacts

262 [SOURCE: IEC 60884-2-5]

263 **3.2 Definitions related to decoupling filters**

264 **3.2.1**
 265 **decoupling filter**
 266 device installed in an electrical network or installation in order to make possible reliable data transmission
 267 over the low voltage mains network

268 **3.2.2**
 269 **intermediate adaptor**
 270 adaptor which has a decoupling filter incorporated

271 **3.2.3**
 272 **fault condition**
 273 abnormal condition which could occur during normal operation

274 **3.2.4**
 275 **screw-type terminal**
 276 clamping unit for the connection and subsequent disconnection of one conductor or the interconnection
 277 and subsequent disconnection of two or more conductors, the connection being made, directly or
 278 indirectly, by means of screws or nuts of any kind

279 **3.2.5**
 280 **nominal voltage**
 281 voltage assigned to the filter device by the manufacturer

282 **3.2.6**
 283 **nominal current**
 284 nominal maximum operating current assigned to the filter device by the manufacturer

285 **3.3 Definitions from (EN 61140 and EN IEC 60664-1) related to insulation**

286 **3.3.1**
 287 **basic insulation**
 288 insulation applied to live parts to provide basic protection against electric shock

289 **3.3.2**
 290 **supplementary insulation**
 291 independent insulation applied in addition to the basic insulation in order to provide protection against
 292 electric shock in the event of a failure of the basic insulation (fault protection)

293 **3.3.3**
 294 **double insulation**
 295 insulation comprising both basic insulation and supplementary insulation

296 **3.3.4**
 297 **reinforced insulation**
 298 single insulation system applied to live parts which provides a degree of protection against electric shock
 299 equivalent to double insulation

300 Note 1 to entry: The term “insulation system” does not imply that the insulation should be one homogeneous piece.
 301 It may comprise several layers which cannot be tested separately as supplementary or basic insulation.

3.3.5

functional insulation

insulation between live parts which is necessary only for the proper functioning of the filter part

3.3.6

solid insulation

insulation material interposed between two conductive parts

Note 1 to entry: In the case of a printed board assembly with a coating, solid insulation consists of the printed board itself as well as the coating. In other cases, solid insulation consists of the encapsulating material.

4 General requirements

The portable filter devices including its accessories 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 filter device 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 with filter portion shall be 9.

The number of samples with plug or socket-outlet parts shall be in accordance with the national standard(s). The number of samples with appliance coupler parts shall be in accordance with the EN 60320 series

Three samples are subjected to all the relevant tests, except the test of Clauses 27 and 28 where three other samples are used, and the tests of Clauses 29 and 30 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 Rated value of nominal voltages are 230 V.

6.2 Rated values of nominal currents are 10 A, 13 A and 16 A.

For a filter accessory, the rated current of the socket-outlet part shall not be higher than the rated value of the nominal current for the filter part and the plug part.

6.3 Rated cross-sectional areas of conductors are 0,75 mm², 1,0 mm² and 1,5 mm².

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

7 Classification of filter devices

7.1 According to protection against direct contact and external influences

The degrees of protection are based on EN 60529.

7.2 According to the degree of protection against ingress of water

The degrees of protection are based on EN 60529.

7.3 According to the type of connection

7.3.1 General

See Figure 1.

7.3.2 Intermediate adaptor

Filter incorporating one plug and one (multiple) socket-outlet.

7.3.3 Cord extension sets

7.3.3.1 The filter portion of which incorporates the plug at one end and one non-rewirable cord with one portable (single or multiple) socket-outlet at the other end.

7.3.3.2 The filter portion with one non-rewirable cable in both ends with one plug and one socket-outlet

7.3.3.3 The filter portion of which incorporates one portable (single or multiple) socket-outlet at one end and a non-rewirable cord with one plug at the other end.

7.3.4 Filter plugs

7.3.4.1 Filter incorporating one plug and a set of terminals

7.3.4.2 The filter portion plug for appliances: Filter incorporating the plug and equipped with one non-rewirable cord with or without one appliance coupler

7.3.5 In-line filters

7.3.5.1 Filter equipped, on the supply side, with one non-rewirable cord with one plug and, on the output side, with a set of terminals

7.3.5.2 Filter for appliances equipped, on the supply side, with one non-rewirable cord and one non-rewirable plug, and, on the output side, with one non-rewirable cord

7.3.5.3 Filter for appliances equipped, on the supply side, with one non-rewirable cord and one non-rewirable plug, and, on the output side, with one non-rewirable cord with a appliance connector

7.3.5.4 The filter portion of which is equipped on both sides with terminals

7.3.5.5 The filter portion of which is equipped on both sides with one non-rewirable cord and with or without on one side with an appliance inlet and on the other side with an appliance outlet

7.4 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

7.5 According to the rated impulse withstand voltage

The rated impulse withstand voltages are based on EN IEC 60664-1:

- 2 500 V according to overvoltage category II, for filter parts with normal reliability;
- 4 000 V according to overvoltage category III; for filter parts with high reliability.

8 Marking

8.1 Plug and socket outlet parts

For plug and socket outlet parts, marking shall be in accordance with the relevant national standards.

8.2 Filter parts

As a minimum the filter parts shall be marked on the outside as follows:

- 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.

8.3 Symbols

Symbols for marking shall be used as follows:

Amperes	A
Volt	V
Alternating current	~
Neutral	N
Protective earth	
Degree of protection, when relevant	IPXX

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