
Signalizacija po nizkonapetostnih električnih napeljavah v frekvenčnem območju od 3 kHz do 148,5 kHz - 4-7. del: Prenosni nizkonapetostni ločilni filtri - Varnostne zahteve

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

Signalübertragung auf elektrischen Niederspannungsnetzen im Frequenzbereich 3 kHz bis 148,5 kHz Teil 4-7: Bewegliche 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 4-7: Filtres de découplage basse tension mobiles - Exigences de sécurité

Ta slovenski standard je istoveten z: prEN 50065-4-7

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

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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 -
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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.

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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 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)

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

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- 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

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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.

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prEN 50065-4-7:2021 (E)**138 1 Scope**

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

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

145 This document does not cover phase couplers.

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

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

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

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

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

156 Filters including batteries are not covered by this document.

157 2 Normative references (standards.iteh.ai)

158 The following documents are referred to in the text in such a way that some or all of their content
 159 constitutes requirements of this document. For dated references, only the edition cited applies. For
 160 undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

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

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

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

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

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

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

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

176 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)*
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<https://standards.iteh.ai/catalog/standards/sist/9fdb8fc6-2370-4d3d-be9f->
- 198 HD 22 series, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation*
199 *(IEC 60245, mod)*
<https://standards.iteh.ai/catalog/standards/sist/9fdb8fc6-2370-4d3d-be9f->
- 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”.

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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.

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302 **3.3.5**
 303 **functional insulation**
 304 insulation between live parts which is necessary only for the proper functioning of the filter part

305 **3.3.6**
 306 **solid insulation**
 307 insulation material interposed between two conductive parts

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

310 4 General requirements

311 The portable filter devices including its accessories shall be so designed and constructed that, in normal
 312 use, their performance is reliable and without danger to the user or the surroundings.

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

314 5 General notes on tests**315 5.1 General**

316 Tests according to this document are type tests.

317 **5.2** The samples are tested as delivered and under normal conditions of use, having regard to the
 318 classification of the filter device and to the manufacturer's installation instructions.

319 **5.3** Unless otherwise specified, the tests are carried out in the order of the clauses at an ambient
 320 temperature of $20\text{ °C} \pm 5\text{ °C}$.

321 **5.4** The required number of samples with filter portion shall be 9.

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

325 Three samples are subjected to all the relevant tests, except the test of Clauses 27 and 28 where three
 326 other samples are used, and the tests of Clauses 29 and 30 where another three samples are used.

327 **5.5** Equipment is deemed not to comply with this document if any sample does not pass any of the
 328 listed tests.

329 6 Rating

330 **6.1** Rated value of nominal voltages are 230 V.

331 **6.2** Rated values of nominal currents are 10 A, 13 A and 16 A.

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

334 **6.3** Rated cross-sectional areas of conductors are $0,75\text{ mm}^2$, $1,0\text{ mm}^2$ and $1,5\text{ mm}^2$.

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

337 7 Classification of filter devices

338 7.1 According to protection against direct contact and external influences

339 The degrees of protection are based on EN 60529.

340 7.2 According to the degree of protection against ingress of water

341 The degrees of protection are based on EN 60529.

342 7.3 According to the type of connection

343 7.3.1 General

344 See Figure 1.

345 7.3.2 Intermediate adaptor

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

347 7.3.3 Cord extension sets

348 **7.3.3.1** The filter portion of which incorporates the plug at one end and one non-rewirable cord with
349 one portable (single or multiple) socket-outlet at the other end.

350 **7.3.3.2** The filter portion with one non-rewirable cable in both ends with one plug and one socket-
351 outlet

352 **7.3.3.3** The filter portion of which incorporates one portable (single or multiple) socket-outlet at one
353 end and a non-rewirable cord with one plug at the other end.

354 **7.3.4** Filter plugs <https://standards.iteh.ai/catalog/standards/sist/9fdb8fc6-2370-4d3d-be9f-342810cc4f66/osist-pren-50065-4-7-2021>

355 **7.3.4.1** Filter incorporating one plug and a set of terminals

356 **7.3.4.2** The filter portion plug for appliances: Filter incorporating the plug and equipped with one non-
357 rewirable cord with or without one appliance coupler

358 7.3.5 In-line filters

359 **7.3.5.1** Filter equipped, on the supply side, with one non-rewirable cord with one plug and, on the
360 output side, with a set of terminals

361 **7.3.5.2** Filter for appliances equipped, on the supply side, with one non-rewirable cord and one non-
362 rewirable plug, and, on the output side, with one non-rewirable cord

363 **7.3.5.3** Filter for appliances equipped, on the supply side, with one non-rewirable cord and one non-
364 rewirable plug, and, on the output side, with one non-rewirable cord with a appliance connector

365 **7.3.5.4** The filter portion of which is equipped on both sides with terminals

366 **7.3.5.5** The filter portion of which is equipped on both sides with one non-rewirable cord and with or
367 without on one side with an appliance inlet and on the other side with an appliance outlet