



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 60358-1:2025**  
**01-april-2025**

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**Sklopni kondenzatorji in kondenzatorski delilniki - 1. del: Splošna pravila**

Coupling capacitors and capacitor dividers - Part 1: General rules

Kopplungskondensatoren und kapazitive Teiler - Teil 1: Allgemeine Bestimmungen

Condensateurs de couplage et diviseurs capacitifs - Partie 1: Règles générales

**Ta slovenski standard je istoveten z: prEN IEC 60358-1:2025**

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31.060.70 Močnostni kondenzatorji Power capacitors

**oSIST prEN IEC 60358-1:2025**

**en**





# 33/718/CDV

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TITLE:

**Coupling capacitors and capacitor dividers - Part 1: General rules**

PROPOSED STABILITY DATE: 2028

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## 163 INTERNATIONAL ELECTROTECHNICAL COMMISSION

164

165

166 **COUPLING CAPACITORS AND CAPACITOR DIVIDERS –**

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168

**Part 1: General rules**

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**FOREWORD**

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 172 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international  
 173 co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and  
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203 International Standard IEC 60358-1 has been prepared by IEC Technical Committee 33: Power  
 204 capacitors and their applications.

205 This standard cancels and replaces the first edition of IEC 60358-1:2012, and constitutes a  
 206 technical revision.

207 This second edition of IEC 60358-1 includes the following significant technical changes with  
 208 respect to the first edition:

209 – new terms and definitions are presented in clause 3.

210 – new definitions in clause 4, clause 5

211 – gas-insulated capacitors and capacitor dividers are integrated in clause 6.

212 – new tests in routine, type, special and design test sections are introduced, see clause 7

213 – new clause 8, clause 9 and clause 10

214 – new Annex D, Annex E, Annex F, Annex G and Annex H



215 The text of this standard is based on the following documents:

FDIS	Report on voting
33/xxx/FDIS	33/xxx/RVD

216  
217 Full information on the voting for the approval of this standard can be found in the report on  
218 voting indicated in the above table.

219 The language used for the development of this International Standard is English

220 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance  
221 with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at  
222 [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in  
223 greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

224 The updated list of standards issued by IEC TC 33 is available at the website: <https://www.iec.ch>

225 IEC 60358-1, Coupling capacitors and capacitor dividers – Part 1: General rules

226 IEC 60358-2, Coupling capacitors and capacitor dividers – Part 2: AC or DC single-phase  
227 coupling capacitor connected between line and ground for power line carrier-  
228 frequency (PLC) application

229 IEC 60358-3, Coupling capacitors and capacitor dividers – Part 3: AC or DC single-phase  
230 coupling capacitor for harmonic-filters applications

231 IEC 60358-4, Coupling capacitors and capacitor dividers – Part 4: DC or AC single-phase  
232 capacitor dividers

233 The committee has decided that the contents of this publication will remain unchanged until the  
234 stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to  
235 the specific publication. At this date, the publication will be

236 • reconfirmed,

237 • withdrawn, <http://standards.iteh.ai/catalog/standards/sist/55e95d21-9cf1-46f9-ac8d-ebcfbdd4df5b/osist-pren-iec-60358-1-2025>

238 • replaced by a revised edition, or

239 • amended.

240

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241

242

## INTRODUCTION

243 This document is the first revision of the standard IEC 60358-1, defining general rules for  
244 coupling capacitors and capacitor dividers.

245 The main modifications of this revision are listed below:

246 • terms and definitions:

247 – new terms and definitions are presented in clause 3;

248 • normal and special environmental conditions:

249 – new definitions in clause 4 are introduced;

250 • ratings:

251 – addition of HV insulation levels above 800 kV;

252 – new definition on rated voltage  $U_r$  for AC and DC applications;

253 – clause 5, new definitions for DC application are integrated;

254 – new standard values of rated voltages are defined;

255 • design and construction:

256 – clarification of the altitude correction for external insulation and dielectric tests;

257 – external insulation requirements for DC application;

258 – gas-insulated capacitors and capacitor dividers are integrated in clause 6;

259 – new test with its requirements on capacitor element ageing is defined;

260 • type tests:

261 – temperature rise test: more accurate definition of the test duration;

262 – lightning impulse test: new test procedure (15 impulses) for  $U_m \geq 300$  kV;

263 – mechanical test: moved from special test to type test;

264 – new enclosure tightness test for gas-insulated capacitors and dividers;

265 • routine tests:

266 – tightness tests for gas-insulated equipment;

267 – gas dew point measurements;

268 – new flowchart of routine tests presented in Figure 3;

269 • special tests:

270 – determination of temperature coefficient of the capacitor element;

271 – new enclosure tightness test on low and hot temperature;

272 – information about internal arc tests;

273 – information about multiple chopped impulse tests;

274 – new test on impedance measurements depending on frequency;

275 – new test on thermal stability;

276 – new test on corrosion;

277 – new flowchart of type tests presented in Figure 4;

278 • design tests (new clause):

279 – ageing tests of capacitor elements;

280 • commissioning tests (new clause):

281 – new installation inspection;

282 – gas dew point test moved from special test to commissioning tests;

- 283 • rules for transport, storage, erection, operation and maintenance:  
284 – new mandatory rules for user and manufacturer;  
285 – new conditions for transportation and storage;
- 286 • new annexes:  
287 – Annex D (informative): provide information about superimposed impulse voltages;  
288 – Annex E (informative): provide information on test setups for superimposed impulse  
289 voltage tests;  
290 – Annex F (informative): is introduced on high-frequency characteristic measurements;  
291 – Annex G (informative): provide information about composite AC/DC voltages;  
292 – Annex H (informative): present a summary of all voltages used in DC application;  
293

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## COUPLING CAPACITORS AND CAPACITOR DIVIDERS –

### Part 1: General rules

#### 300 1 Scope

301 This part of IEC 60358 applies to:

- 302 • Capacitors and capacitor dividers, with rated voltage > 1 000 V, connected line to ground
- 303 with the low voltage terminal either permanently earthed or connected to devices, for
- 304 applications listed hereunder and other similar uses.

305 This standard serves as basic standard for the coupling capacitors and capacitor dividers. The

306 different parts of this standard will present the supplementary specifications and tests, for

307 example IEC 60358-2, IEC 60358-3 or IEC 60358-4.

308 NOTE Diagrams of coupling capacitor and capacitor divider to which this standard applies are given in Figures A.1

309 and A.2.

#### 310 2 Normative references

311 The following documents, in whole or in part, are normatively referenced in this document and

312 are indispensable for its application. For dated references, only the edition cited applies. For

313 undated references, the latest edition of the referenced document (including any amendments)

314 applies.

315 IEC 60038, *IEC standard voltages*

316 IEC 60050-321:1986, *International Electrotechnical Vocabulary – Chapter 321: Instrument*

317 *transformers*

318 IEC 60050-436:1990, *International Electrotechnical Vocabulary – Chapter 436: Power*

319 *capacitors*

320 IEC 60050-601:1985, *International Electrotechnical Vocabulary – Chapter 601: Generation,*

321 *transmission and distribution of electricity – General*

322 IEC 60050-604:1987, *International Electrotechnical Vocabulary – Chapter 604: Generation,*

323 *transmission and distribution of electricity – Operation*

324 IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

325 IEC 60068-2-17, *Basic environmental testing procedures – Part 2-17: Tests – Test Q: Sealing*

326 IEC 60071-1, *Insulation co-ordination – Part 1: Definitions, principles and rules*

327 IEC 60071-2, *Insulation co-ordination – Part 2: Application guidelines*

328 IEC 60071-11, *Insulation co-ordination – Part 11: Definitions, principles and rules for HVDC*

329 *system*

330 IEC 60085, *Electrical insulation – Thermal evaluation and designation*

331 IEC 60270, *High-voltage test techniques – Partial discharge measurements*

332 IEC 60296, *Fluids for electrotechnical applications – Mineral insulating oils for electrical*

333 *equipment*

334 IEC 60376, *Specification of technical grade sulphur hexafluoride (SF<sub>6</sub>) and complementary*

335 *gases to be used in its mixtures for use in electrical equipment*

- 336 IEC 60480, *Specifications for the re-use of sulphur hexafluoride (SF<sub>6</sub>) and its mixtures in*  
337 *electrical equipment*
- 338 IEC 60721 (all parts), *Classification of environmental conditions*
- 339 IEC guide 109-2003, *Environmental aspects – Inclusion in electrotechnical product standards*
- 340 IEC TS 60815-1:2008, *Selection and dimensioning of high-voltage insulators intended for use*  
341 *in polluted conditions – Part 1: Definitions, information and general principles*
- 342 IEC TS 60815-2:2008, *Selection and dimensioning of high-voltage insulators intended for use*  
343 *in polluted conditions – Part 2: Ceramic and glass insulators for a.c. systems*
- 344 IEC TS 60815-3:2008, *Selection and dimensioning of high-voltage insulators intended for use*  
345 *in polluted conditions – Part 3: Polymer insulators for a.c. systems*
- 346 IEC 60867, *Insulating liquids – Specifications for unused liquids based on synthetic aromatic*  
347 *hydrocarbons*
- 348 IEC 61099, *Insulating liquids – Specifications for unused synthetic organic esters for electrical*  
349 *purposes*
- 350 IEC 61462, *Composite hollow insulators – Pressurized and unpressurized insulators for use in*  
351 *electrical equipment with rated voltage greater than 1 000 V – Definitions, test methods and*  
352 *acceptance criteria and design recommendations*
- 353 IEC 62217:2012, *Polymeric HV insulators for indoor and outdoor use – General definitions, test*  
354 *methods and acceptance criteria*
- 355 IEC 62271-4:2022, *High-voltage switchgear and controlgear – Part 4: Handling procedures for*  
356 *gases for insulation and/or switching*
- 357 IEC 62770, *Fluids for electrotechnical applications – Unused natural esters for transformers*  
358 *and similar electrical equipment*
- 359 IEC 63012, *Insulating liquids – Unused modified or blended esters for electrotechnical*  
360 *applications*
- 361 ISO 4628-3, *Paints and varnishes – Evaluation of degradation of coatings – Designation of*  
362 *quantity and size of defects, and of intensity of uniform changes in appearance – Part 3:*  
363 *Assessment of degree of rusting*
- 364 ISO 22479, *Corrosion of metals and alloys – Sulfur dioxide test in a humid atmosphere (fixed*  
365 *gas method)*
- 366 CISPR/TR 18-2, *Radio interference characteristics of overhead power lines and high-voltage*  
367 *equipment – Part 2: Methods of measurement and procedure for determining limits*

### 368 **3 Terms, definitions, symbols and abbreviated terms**

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

370 ISO and IEC maintain terminology databases for use in standardization at the following  
371 addresses:

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

374 NOTE Some of these terms and definitions are identical with or are similar to those of IEC 60050-321:1986,  
375 IEC 60050-436:1990, IEC 60050-601:1985 and IEC 60050-604:1987. These are indicated by the relevant reference  
376 in brackets.

377 **3.1 General**378 **3.1.1**379 **rated frequency of equipment**380  $f_r$ 

381 frequency for which the coupling capacitor has been designed

382 **3.1.2**383 **rated voltage**384  $U_r$ 385 AC: based on the maximum voltage  $U_m$  including superimposed harmonic and sub-harmonic  
386 voltages between phase to ground387 DC: the highest value of line to ground voltage, including harmonics and commutation  
388 overshoots, for which the equipment is designed and may be used in respect of its insulation389 **3.1.3**390 **highest voltage for equipment**391  $U_m$ 392 AC: the highest r.m.s. value of phase-to-phase voltage for which the equipment is designed and  
393 may be used in respect of its insulation394 [SOURCE: IEC 60050-614:2016, 614-03-01, modified – Symbol added, "(rms value)" deleted,  
395 "service" replaced with "operating" and "greatest" replaced with "highest"]396 **3.1.4**397 **Creepage distance voltage**398  $U_{cd}$ 

399 voltage which is needed to calculate the creepage distance based on IEC/TS 60815-4

400 **3.1.5**401 **DC system voltage**402  $U_{DC}$ 403 highest mean or average operating voltage to earth, excluding harmonics and commutation  
404 overshoots

405 [SOURCE: IEC 60071-5]

406 **3.1.6**407 **Maximum DC-system voltage**408  $U_{DCmax}$ 409 maximum DC-system voltage is almost a pure DC voltage with a magnitude dependent on  
410 voltage control and measuring tolerance excluding harmonics and commutation overshoots411 **3.1.7**412 **Rated lightning impulse withstand voltage**413  $U_{LIWV}$ highest peak value of the lightning impulse voltage which does not cause breakdown of  
insulation under specified conditions

[SOURCE: IEC60050-442:2002, 442-09-18 – modified]

414 **3.1.8**415 **Rated switching impulse withstand voltage**416  $U_{SIWV}$ highest peak value of the switching impulse voltage which does not cause breakdown of  
insulation under specified conditions

[SOURCE: IEC60050-442:2002, 442-09-18 – modified]