



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 60309-1:2019**  
**01-oktober-2019**

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**Vtiči, fiksne ali prenosne vtičnice in vtičnice za industrijsko rabo - 1. del: Splošne zahteve**

Plugs, fixed or portable socket- outlets and appliance inlets for industrial purposes - Part 1: General requirements

Stecker, Steckdosen und Kupplungen für industrielle Anwendungen - Teil 1: Allgemeine Anforderungen

Prises de courant pour usages industriels - Partie 1: Règles générales

**Ta slovenski standard je istoveten z: prEN IEC 60309-1:2019**

**ICS:**

29.120.30      Vtiči, vtičnice, spojke      Plugs, socket-outlets, couplers

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23H/456/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: <b>IEC 60309-1 ED5</b>	
DATE OF CIRCULATION: <b>2019-08-09</b>	CLOSING DATE FOR VOTING: <b>2019-11-01</b>
SUPERSEDES DOCUMENTS: <b>23H/431/CD,23H/452/CC</b>	

IEC SC 23H : PLUGS, SOCKET-OUTLETS AND COUPLERS FOR INDUSTRIAL AND SIMILAR APPLICATIONS, AND FOR ELECTRIC VEHICLES	
SECRETARIAT: France	SECRETARY: Mr Bertrand Doignon
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p><b>Attention IEC-CENELEC parallel voting</b></p> <p>The attention of IEC National Committees members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

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

TITLE:

**Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes - Part 1: General requirements**

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

Pursuant to a decision taken during the last plenary meeting of SC 23H in Busan in 2018, the term "connector" will be no longer used in IEC 60309 series. As a consequence, 60309 series is renamed "PLUGS, FIXED OR PORTABLE SOCKET-OUTLETS AND APPLIANCE INLETS FOR INDUSTRIAL PURPOSES". This decision has no impact on the French title.

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PLUGS, FIXED OR PORTABLE SOCKET-OUTLETS AND  
APPLIANCE INLETS FOR INDUSTRIAL PURPOSES –****Part 1: General requirements**

## FOREWORD

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International Standard IEC 60309-1 has been prepared by subcommittee SC 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories.

This fifth edition cancels and replaces the fourth edition published in 1999, Amendment 1:[2005] and Amendment 2:[2012]. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) addition of classification, requirements and tests for accessories with shutters;
- b) Additional marking to indicate neutral terminal and/or earthing terminal;

150 The text of this International Standard is based on the following documents:

FDIS	Report on voting
23H/---/FDIS	23H/---/RVD

151

152 Full information on the voting for the approval of this International Standard can be found in  
153 the report on voting indicated in the above table.

154 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

155 The committee has decided that the contents of this document will remain unchanged until the  
156 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to  
157 the specific document. At this date, the document will be

- 158 • reconfirmed,
- 159 • withdrawn,
- 160 • replaced by a revised edition, or
- 161 • amended.

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## INTRODUCTION

164 A list of all the parts in the IEC 60309 series, under the general title *Plugs, fixed or portable*  
165 *socket-outlets, and appliance inlets*, can be found on the IEC website.

166 Subsequent parts of IEC 60309 deal with the requirements of particular types of accessories.  
167 The clauses of these particular requirements supplement or modify the corresponding clauses  
168 in Part 1.

169 In this standard, the following print types are used:

- 170 – requirements proper: in roman type;
- 171 – *test specifications: in italic type;*
- 172 – notes: in smaller roman type.

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# PLUGS, FIXED OR PORTABLE SOCKET-OUTLETS AND APPLIANCE INLETS FOR INDUSTRIAL PURPOSES –

## Part 1: General requirements

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### 1 Scope

181 This international standard applies to plugs, fixed or portable socket outlets and appliance  
182 inlets hereinafter referred to as accessories, with a rated operating voltage not exceeding  
183 1 000 V DC or 1000 V AC not exceeding 500 Hz and a rated current not exceeding 800 A,  
184 primarily intended for industrial use, either indoors or outdoors.

185 These accessories are intended to be installed by instructed persons (IEV 195-04-02) or  
186 skilled persons (IEV 195-04-01) only.

187 The list of preferred ratings is not intended to exclude other ratings.

188 This document applies to accessories for use when the ambient temperature is normally  
189 within the range of  $-25\text{ °C}$  to  $+40\text{ °C}$ .

190 These accessories are intended to be connected to cables of copper or copper alloy only.

191 This document applies to accessories with screwless type terminals or insulation piercing  
192 terminals, with a rated current up to and including 32 A for series I and 30 A for series II.

193 The use of these accessories on building sites and for agricultural, commercial and domestic  
194 applications is not precluded.

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195 Fixed socket-outlets or appliance inlets incorporated in or fixed to electrical equipment are  
196 within the scope of this standard. This standard also applies to accessories intended to be  
197 used in extra-low voltage installations.

198 This document does not apply to accessories primarily intended for domestic and similar  
199 general purposes.

200 This document does not cover single-pole accessories

201 In locations where special conditions prevail, for example on board ship or where explosions  
202 are liable to occur, additional requirements may be necessary.

### 2 Normative references

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

208 IEC 60050, *International Electrotechnical Vocabulary (IEV)*

209 IEC 60068-2-14, Environmental testing – Part 2-14: Tests – Test N: Change of temperature

210 IEC 60083, *Plugs and socket-outlets for domestic and similar general use standardized in*  
211 *member countries of IEC*

212 IEC 60112, *Method for determining the comparative and the proof tracking indices of solid*  
213 *insulating materials under moist conditions*

- 214 IEC 60227, (all parts) *Polyvinyl chloride insulated cables of rated voltages up to and including*  
215 *450/750 V*
- 216 IEC 60228, *Conductors of insulated cables*
- 217 IEC 60245-4, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4:*  
218 *Cords and flexible cables*
- 219 IEC 60269-1, *Low-voltage fuses – Part 1: General requirements*
- 220 IEC 60269-2, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by*  
221 *authorized persons (fuses mainly for industrial application) – Sections I to III*
- 222 IEC 60309-4, *Plugs, socket-outlets and couplers for industrial purposes – Part 4: fixed and*  
223 *portable switched socket-outlets with or without interlock*
- 224 IEC 60320, (all parts) *Appliance couplers for household and similar general purposes*
- 225 IEC 60529, *Degrees of protection provided by enclosures (IP code)*
- 226 IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1:*  
227 *Principles, requirements and tests*
- 228 IEC 60664-3, *Insulation coordination for equipment within low-voltage systems – Part 3: Use*  
229 *of coating, potting or moulding for protection against pollution*
- 230 IEC 60695-2-11, *Fire hazard testing –Part 2-11: Glowing/hot-wire based test methods – Glow-*  
231 *wire flammability test method for end-products (GWEPT)*
- 232 IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test*
- 233 IEC 60947-3, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors,*  
234 *switch-disconnectors and fuse-combination units*
- 235 ISO 2081, *Metallic and other inorganic coatings – Electroplated coatings of zinc with*  
236 *supplementary treatments on iron or steel*
- 237 ISO 2093, *Electroplated coatings of tin – Specification and test methods*
- 238 ISO 1456, *Metallic and other inorganic coatings – Electrodeposited coatings of nickel, nickel*  
239 *plus chromium, copper plus nickel and of copper plus nickel plus chromium*

### 240 **3 Terms and definitions**

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

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

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

246 Where the terms voltage and current are used, they imply the DC or the AC root mean square  
247 (RMS) values.

248 The application of accessories is shown in Figure 1.

#### 249 **3.1**

##### 250 **fixed socket outlet**

251 part intended to be installed with the fixed wiring or incorporated in equipment.

252 Note 1 to entry: A socket-outlet may also be incorporated in the output circuit of an isolating transformer

253 Note 2 to entry: In some countries fixed socket outlets are called "receptacles"

254 Note 3 to entry: when the term “socket-outlet” is used alone, it covers both fixed and portable socket-outlets

### 255 **3.2**

#### 256 **plug**

257 part integral with or intended to be attached directly to one flexible cable connected to the  
258 equipment or to a portable socket-outlet

259 Note 1 to entry: In French the combination of a plug and a socket-outlet is called “prise de courant”

### 260 **3.3**

#### 261 **portable socket outlet**

262 part integral with or intended to be attached to one flexible cable connected to the supply

263 Note 1 to entry: In general, a portable socket-outlets has the same contact arrangement as a fixed socket-outlet.

264 Note 2 to entry: The combination of a portable socket outlet and a plug is called a “cable coupler”.

265 Note 3 to entry: when the term “socket-outlet” is used alone, it covers both fixed and portable socket-outlets

### 266 **3.4**

#### 267 **appliance inlet**

268 part incorporated in, or fixed to, the equipment or intended to be fixed to it

269 Note 1 to entry: In general, an appliance inlet has the same contact arrangement as a plug.

270 Note 2 to entry: The combination of a portable socket outlet and an appliance inlet is called an “appliance coupler”.

### 271 **3.5**

#### 272 **Main part**

273 part of an accessory carrying the contacts

### 274 **3.6**

#### 275 **rewireable plug or portable socket-outlet**

276 an accessory so constructed that the flexible cable can be replaced

### 277 **3.7**

#### 278 **non-rewireable plug or portable socket-outlet**

279 an accessory so constructed that the flexible cable cannot be separated from the accessory  
280 without making it permanently useless

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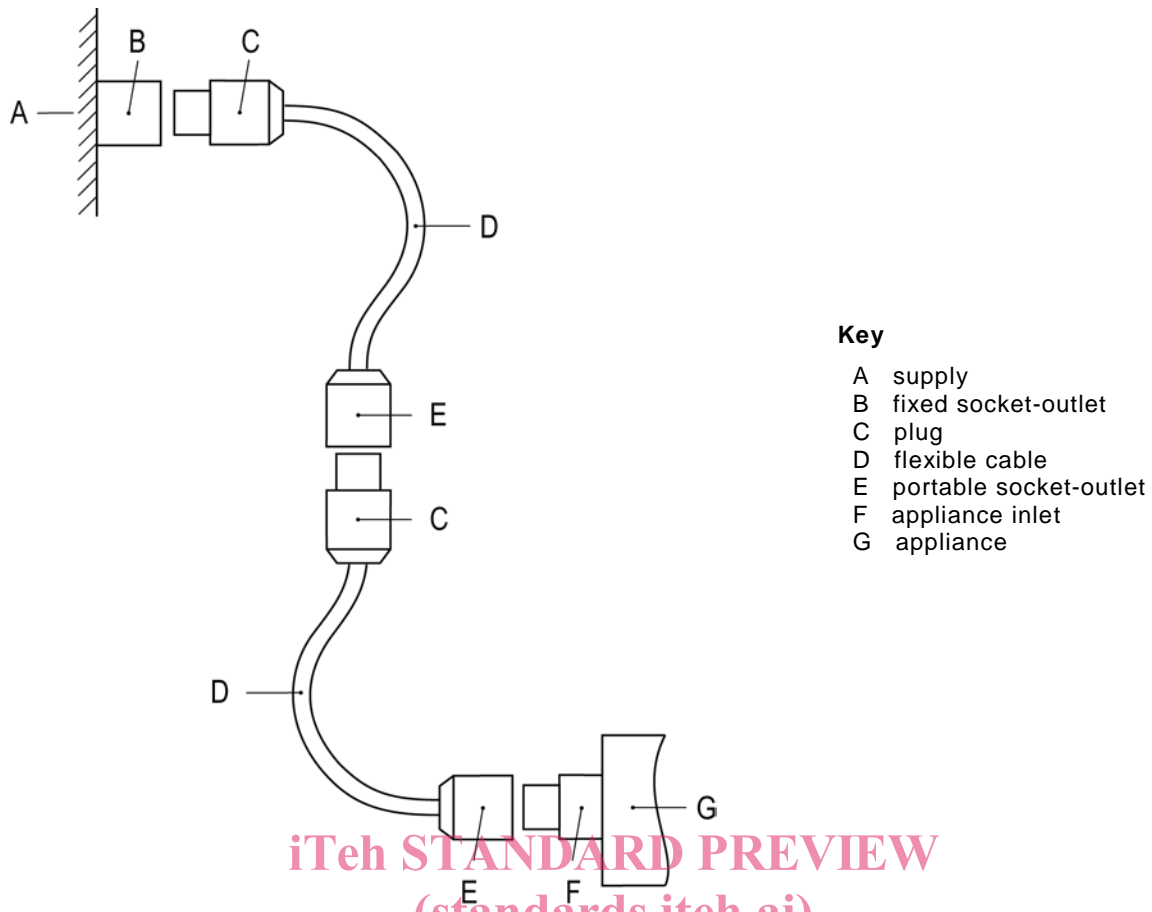


Figure 1 – Diagram showing the use of the accessories

281

282 **3.8**  
283 **interlock**

284 a device, either electrical or mechanical, which prevents the contacts of a plug from becoming  
285 live before it is in proper engagement with a fixed or portable socket-outlet, and which either  
286 prevents the plug from being withdrawn while its contacts are live or makes the contacts dead  
287 before separation

288 **3.9**  
289 **retaining device**

290 a mechanical arrangement which holds a plug or portable socket-outlet in position when it is  
291 in proper engagement, and prevents its unintentional withdrawal

292 **3.10**  
293 **rated current**

294 the current assigned to the accessory by the manufacturer

295 **3.11**  
296 **insulation voltage**

297 the voltage assigned to the accessory by the manufacturer and to which dielectric tests,  
298 clearances and creepage distances are referred

299 **3.12**  
300 **rated operating voltage**

301 the nominal voltage of the supply for which the accessory is intended to be used

302 Note 1 to entry: an accessory may have a rated operating voltage range

303 Note 2 to entry: an accessory may have more than one rated operating voltage

304 **3.13**  
 305 **basic insulation**  
 306 the insulation necessary for the proper functioning of the accessory and for basic protection  
 307 against electric shock

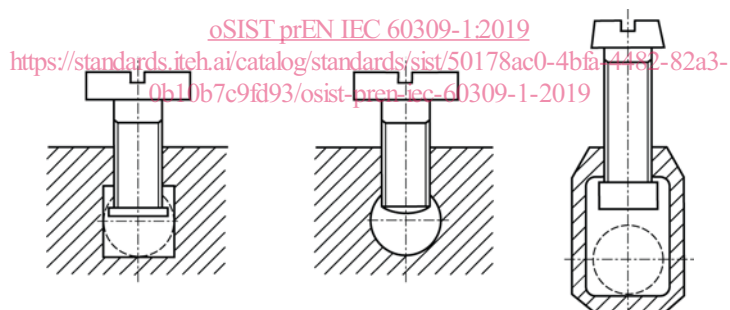
308 **3.14**  
 309 **supplementary insulation (protective insulation)**  
 310 an independent insulation provided in addition to the basic insulation, in order to ensure  
 311 protection against electric shock in the event of a failure of the basic insulation

312 **3.15**  
 313 **double insulation**  
 314 insulation comprising both basic insulation and supplementary insulation

315 **3.16**  
 316 **reinforced insulation**  
 317 an improved basic insulation with such mechanical and electrical qualities that it provides the  
 318 same degree of protection against electric shock as double insulation

319 **3.17**  
 320 **terminal**  
 321 a conductive part provided for the connection of a conductor to an accessory

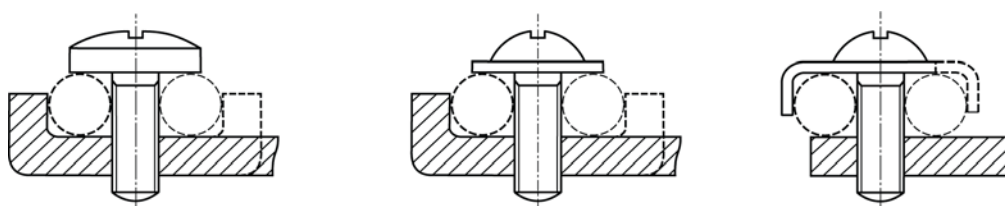
322 **3.17.1**  
 323 **pillar terminal**  
 324 a terminal in which the conductor is inserted into a hole or cavity, where it is clamped under  
 325 the shank of the screw or screws. The clamping pressure may be applied directly by the  
 326 shank of the screw or through an intermediate clamping member to which pressure is applied  
 327 by the shank of the screw (see Figure 2)



328

329 **Figure 2 – Pillar terminals**

330 **3.17.2**  
 331 **screw terminal**  
 332 a terminal in which the conductor is clamped under the head of the screw. The clamping  
 333 pressure may be applied directly by the head of the screw or through an intermediate part,  
 334 such as a washer, clamping plate or anti-spread device (see Figure 3)

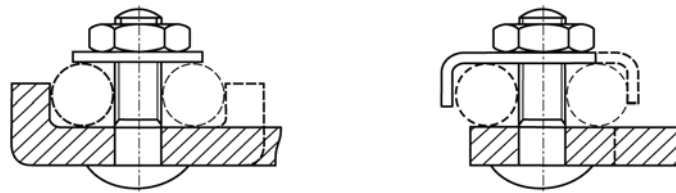


335

336 **Figure 3 – Screw terminals**

337 **3.17.3**  
338 **stud terminal**

339 a terminal in which the conductor is clamped under a nut. The clamping pressure may be  
340 applied directly by a suitably shaped nut or through an intermediate part, such as a washer,  
341 clamping plate or anti-spread device (see Figure 4)



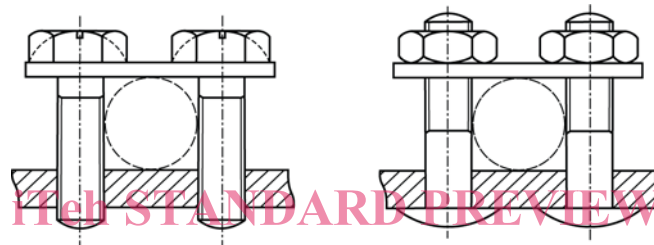
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343

**Figure 4 – Stud terminals**

344 **3.17.4**  
345 **saddle terminal**

346 a terminal in which the conductor is clamped under a saddle by means of two or more screws  
347 or nuts (see Figure 5)



348

349

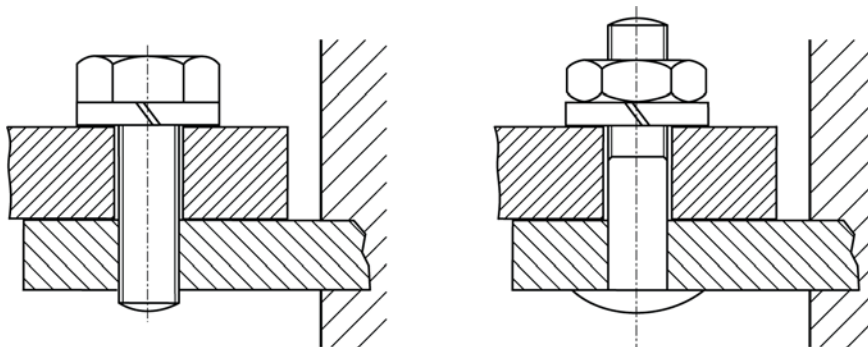
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**Figure 5 – Saddle terminals**

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350 **3.17.5**

351 **lug terminal**

352 a screw terminal or a stud terminal, designed for clamping a cable lug or bar by means of a  
353 screw or nut (see Figure 6)



354

355

**Figure 6 – Lug terminals**

356 **3.17.6**  
357 **mantle terminal**

358 a terminal in which the conductor is clamped against the base of a slot in a threaded stud by  
359 means of a nut. The conductor is clamped against the base of the slot by a suitably shaped  
360 washer under the nut, by a central peg if the nut is a cap nut, or by equally effective means  
361 for transmitting the pressure from the nut to the conductor within the slot (see Figure 7)