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**Električna varnost v nizkonapetostnih razdelilnih sistemih za izmenične napetosti do 1 000 kV in enosmerne napetosti do 1 500 kV - Oprema za preskušanje, merjenje ali nadzorovanje zaščitnih ukrepov - 16. del: Oprema za preskušanje učinkovitosti zaščitnih ukrepov električne opreme oziroma medicinske električne opreme**

Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 16: Equipment for testing the effectiveness of the protective measures of electrical equipment and/or medical electrical equipment

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Sécurité électrique dans les réseaux de distribution basse tension de 1 000 V c.a. et 1 500 V c.c. - Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection - Partie 16: Équipement pour les essais de bon fonctionnement des mesures de protection de l'équipement électrique et/ou de l'équipement médical électrique

**Ta slovenski standard je istoveten z: prEN IEC 61557-16:2022**

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**ICS:**

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
29.080.01	Električna izolacija na splošno	Electrical insulation in general
29.240.01	Omrežja za prenos in distribucijo električne energije na splošno	Power transmission and distribution networks in general

**oSIST prEN IEC 61557-16:2022**

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85/831/CDV

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SECRETARIAT: China	SECRETARY: Ms Guiju HAN
OF INTEREST TO THE FOLLOWING COMMITTEES: SC 62A, TC 66	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 checked="" type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
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TITLE:

**Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c - Equipment for testing, measuring or monitoring of protective measures - Part 16: Equipment for testing the effectiveness of the protective measures of electrical equipment and/or medical electrical equipment**

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NOTE FROM TC/SC OFFICERS:

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## iTeh STANDARD PREVIEW (standards.iteh.ai)

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP TO 1 000 V AC AND 1 500 V DC – EQUIPMENT FOR TESTING, MEASURING OR MONITORING OF PROTECTIVE MEASURES –****Part 16: Equipment for testing the effectiveness of the protective measures of electrical equipment and/or medical electrical equipment**

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International Standard IEC 61557-16 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

- a) splitting of uncertainty requirements for medical and non-medical electrical equipment in 4.2.1
- b) addition of a definition of ranges with defined uncertainty in 4.1.2 up to 4.1.7
- c) addition of an optional measuring device (MD) for non-medical devices in 4.2.1.
- d) addition of a limitation of the maximum intrinsic uncertainty for medical applications at leakage current in 4.2.1

- 109 e) change of 4.2.3 from test sockets to sockets for service purposes;  
 110 f) addition of a warning in the operating instructions;  
 111 g) integration of former 6.3 into 6.2;  
 112 h) update of Table 1;  
 113 i) alignment of the structure with that of the whole IEC 61557 series.

114

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

FDIS	Report on voting

116

117 Full information on the voting for the approval of this standard can be found in the report on  
 118 voting indicated in the above table.

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

120 This part of IEC 61557 shall be used in conjunction with IEC 61557-1.

121 A list of all parts in the IEC 61557 series, published under the general title *Electrical safety in*  
 122 *low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing,*  
 123 *measuring or monitoring of protective measures*, can be found on the IEC website.

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

- 127 • reconfirmed,
- 128 • withdrawn,
- 129 • replaced by a revised edition, or
- 130 • amended.

131

132

133

## INTRODUCTION

134 This part of IEC 61557 defines performance requirements of measuring equipment intended for  
135 testing the effectiveness of the protective measures of electrical equipment and/or medical  
136 electrical equipment (in accordance with IEC 62353). It is the intention of this standard to  
137 achieve comparable measuring results, additional safety for the testing person, and non-  
138 damaging electrical stress for the unit under test.

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140 **ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP**  
141 **TO 1 000 V AC AND 1 500 V DC– EQUIPMENT FOR TESTING,**  
142 **MEASURING OR MONITORING OF PROTECTIVE MEASURES –**  
143

144 **Part 16: Equipment for testing the effectiveness of the protective**  
145 **measures of electrical equipment and/or medical electrical equipment**  
146  
147  
148

149 **1 Scope**

150 This part 16 of the IEC 61557 series specifies the requirements applicable to the performance  
151 for test and measurement equipment in order to determine the effectiveness of the protective  
152 measures for electrical equipment and/or medical electrical equipment described in IEC 62353.

153 **2 Normative references**

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

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

159 IEC 60601-1:2005, *Medical electrical equipment - Part 1: General requirements for basic*  
160 *safety and essential performance*

161 IEC 60601-1:2005/AMD1:2012

162 IEC 60601-1:2005/AMD2:2020  
<https://standards.iteh.ai/catalog/standards/sist/6fb48900-d286-4db2-8541-e34aaa309595/osist-pren-iec-61557-16-2022>

163 IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement*  
164 *techniques – Power frequency magnetic field immunity test*

165 IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and*  
166 *laboratory use – Part 1: General requirements*

167 IEC 61010-031, *Safety requirements for electrical equipment for measurement, control and*  
168 *laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical*  
169 *measurement and test*

170 IEC 61010-2-030, *Safety requirements for electrical equipment for measurement, control, and*  
171 *laboratory use – Part 2-030: Particular requirements for testing and measuring circuits*

172 IEC 61010-2-032, *Safety requirements for electrical equipment for measurement, control and*  
173 *laboratory use – Part 2-032: Particular requirements for hand-held and hand-manipulated*  
174 *current sensors for electrical test and measurement*

175 IEC 61326-1, *Electrical equipment for measurement, control and laboratory use – EMC*  
176 *requirements – Part 1: General requirements*

177 IEC 61326-2-2, *Electrical equipment for measurement, control and laboratory use – EMC*  
178 *requirements – Part 2-2: Particular requirements – Test configurations, operational conditions*  
179 *and performance criteria for portable test, measuring and monitoring equipment used in low-*  
180 *voltage distribution systems*

181 IEC 61557-1:2019, *Electrical safety in low voltage distribution systems up to 1 000 V AC. and*  
 182 *1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 1:*  
 183 *General requirements*

184 IEC 61557-2:2019, *Electrical safety in low voltage distribution systems up to 1 000 V AC and*  
 185 *1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 2:*  
 186 *Insulation resistance*

187 IEC 61557-4:2019, *Electrical safety in low voltage distribution systems up to 1 000 V AC and*  
 188 *1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 4:*  
 189 *Resistance of earth connection and equipotential bonding*

190 IEC 61557-10, *Electrical safety in low voltage distribution systems up to 1 000 V AC and*  
 191 *1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 10:*  
 192 *Combined measuring equipment for testing, measuring or monitoring of protective measures*

193 IEC 61557-13:20xx, *Electrical safety in low voltage distribution systems up to 1 000 V AC and*  
 194 *1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 13:*  
 195 *Hand-held and hand-manipulated current clamps and sensors for measurement of leakage*  
 196 *currents in electrical distribution systems*

197 IEC 62353:2014, *Medical electrical equipment – Recurrent test and test after repair of medical*  
 198 *electrical equipment*

### 199 **3 Terms and definitions**

200 For the purposes of this document, the terms and definitions given in IEC 61557-1:2019,  
 201 IEC 61557-2:2019, IEC 61557-4:2019, IEC 61557-10:2013 and IEC 61557-13:2011, if  
 202 applicable, and the following apply: <https://standards.iteh.ai/catalog/standards/sist/6fb48900-d286-4db2-8541->

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

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

#### 207 **3.1**

##### 208 **test socket outlet**

209 socket outlet on the test equipment for the unit under test, separated from the active parts of  
 210 the mains circuit by double insulation

#### 211 **3.2**

##### 212 **mains socket outlet**

213 socket outlet on the test equipment used to supply mains to the equipment under test

#### 214 **3.3**

##### 215 **combined test-mains socket outlet**

216 socket outlet on the test equipment that can be switched to either test-condition and/or supply  
 217 condition

#### 218 **3.4**

##### 219 **service socket**

220 socket outlet on the test equipment to supply mains to further test equipment or additional  
 221 equipment

222 **3.5**  
223 **test terminal**  
224 terminal used independently, in parallel or in combination, with the test socket

225 **3.6**  
226 **measuring circuit MD**  
227 electric circuit with defined components and defined frequency characteristic

228 **3.7**  
229 **peak factor**  
230 ratio of the maximum absolute value of an alternating quantity to its RMS value

231 [SOURCE: IEC 60050-103:2009, 103-06-15]

232 **3.8**  
233 **medical electrical equipment**  
234 **ME equipment**  
235 electrical equipment having an applied part or transferring energy to or from the patient or  
236 detecting such energy transfer to or from the patient and which is:

237 a) provided with not more than one connection to a particular supply means, and

238 b) intended by its manufacturer to be used:

239 – in the diagnosis, treatment, or monitoring of a patient, or

240 – for compensation or alleviation of disease, injury or disability

241 Note 1 to entry: ME equipment includes those accessories as defined by the manufacturer that are necessary to  
242 enable the normal use of the ME equipment.

243 Note 2 to entry: Not all electrical equipment used in medical practice falls within this definition (e.g. some *in vitro*  
244 diagnostic equipment).

245 Note 3 to entry: The implantable parts of active implantable medical devices can fall within this definition, but they  
246 are excluded from the scope of IEC 60601-1.

247 [SOURCE: IEC 60601-1:2005, 3.63]

248 **3.9**  
249 **protective earth resistance**  
250 resistance between any accessible part which has to be connected for safety purposes to the  
251 protective earth terminal and the

252 – protective conductor of the mains plug, or

253 – protective conductor of the appliance inlet, or

254 – protective conductor permanently connected to the supply mains;

255 resistance between protective connectors at each end of a detachable power supply cord

256 (SOURCE: IEC 62353: 2014, 3.34)

## 257 **4 Requirements**

### 258 **4.1 General requirements**

259 In addition to the requirements of IEC 61557-1:2019, Clause 4, the following requirements shall  
260 apply.

261 The requirements of IEC 62353:2014, Annex C shall apply for measuring equipment intended  
262 for medical electrical equipment testing.