
Električna varnost v nizkonapetostnih razdelilnih sistemih za izmenične napetosti do 1 kV in enosmerne napetosti do 1,5 kV - Oprema za preskušanje, merjenje ali nadzorovanje zaščitnih ukrepov - 10. del: Kombinirana merilna oprema

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 10: Combined measuring equipment

STANDARD PREVIEW
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Sécurité électrique dans les réseaux de distribution basse tension au plus égale à 1 000 V c.a. et 1 500 V c.c. - Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection - Partie 10: Appareils combinés de mesure

Ta slovenski standard je istoveten z: prEN IEC 61557-10:2023

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

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SECRETARIAT: China	SECRETARY: Ms Guiju HAN
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 64,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	
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<p>Attention IEC-CENELEC parallel voting</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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TITLE:

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 10: Combined measuring equipment

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

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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 10: Combined measuring equipment**

FOREWORD

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IEC 61557-10 has been prepared by IEC technical committee: TC85: MEASURING EQUIPMENT FOR ELECTRICAL AND ELECTROMAGNETIC QUANTITIES. It is an International Standard.

This third edition cancels and replaces the second edition published in 2013. This edition constitutes a technical revision.

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

- a) ...;
- b)

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

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

54
55 Full information on the voting for its approval can be found in the report on voting indicated in
56 the above table.

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

58 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
59 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
60 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
61 described in greater detail at www.iec.ch/standardsdev/publications.

62 This International Standard is to be used in conjunction with IEC 61557-1.

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

66 The committee has decided that the contents of this document will remain unchanged until the
67 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
68 specific document. At this date, the document will be

- 69 • reconfirmed,
- 70 • withdrawn,
- 71 • replaced by a revised edition, or
- 72 • amended.

73 The National Committees are requested to note that for this publication the stability date
74 is **2028**.

75 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED
76 AT THE PUBLICATION STAGE.

77
78 **Electrical safety in low voltage distribution systems up to 1 000 V AC and**
79 **1 500 V DC – equipment for testing, measuring or monitoring of protective**
80 **measures –**

81
82 **Part 10: Combined measuring equipment**
83
84
85

86 **1 Scope**

87 This part of IEC 61557 specifies the requirements for measuring equipment that combines
88 several measuring functions or methods of testing, measuring or monitoring, that are in
89 accordance with the respective parts of IEC 61557, into one piece of apparatus.

90 Measuring equipment which combines measuring functions or methods of testing, measuring
91 or monitoring covered by the respective parts of IEC 61557 with those not covered by the
92 respective parts of IEC 61557 is also within the scope of this standard.

93 **2 Normative references**

94 The following documents, in whole or in part, are normatively referenced in this document and
95 are indispensable for its application. For dated references, only the edition cited applies. For
96 undated references, the latest edition of the referenced document (including any amendments)
97 applies.

98 IEC 61557-1, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500*
99 *V DC - Equipment for testing, measuring or monitoring of protective measures - Part 1: General*
100 *requirements*

101 IEC 61557-2, *Electrical safety in low voltage distribution systems up to 1000 V AC and 1 500 V*
102 *DC - Equipment for testing, measuring or monitoring of protective measures - Part 2: Insulation*
103 *resistance*

104 IEC 61557-3, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500*
105 *V DC - Equipment for testing, measuring or monitoring of protective measures - Part 3: Loop*
106 *impedance*

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

110 IEC 61557-5, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500*
111 *V DC - Equipment for testing, measuring or monitoring of protective measures - Part 5:*
112 *Resistance to earth*

113 IEC 61557-6, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500*
114 *V DC - Equipment for testing, measuring or monitoring of protective measures - Part 6:*
115 *Effectiveness of residual current devices (RCD) in TT, TN and IT systems*

116 IEC 61557-7, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500*
117 *V DC - Equipment for testing, measuring or monitoring of protective measures - Part 7: Phase*
118 *sequence*

120 IEC 61010-2-030:2017, *Safety requirements for electrical equipment for measurement, control,*
121 *and laboratory use - Part 2-030: Particular requirements for equipment having testing or*
122 *measuring circuits*

123 **3 Terms and definitions**

124 For the purposes of this document, the terms and definitions given in IEC 61557-1, IEC 61557-
125 2, IEC 61557-3, IEC 61557-4, IEC 61557-5, IEC 61557-6, IEC 61557-7, and the following apply.

126 **3.1** 127 **combined measuring equipment**

128 device that combines, into one piece of apparatus, several measuring functions or methods of
129 testing, measuring or monitoring, some or all of which are in accordance with other parts of IEC
130 61557

131 **3.2** 132 **extraneous overvoltage**

133 voltage applied to the measurement terminals of the combined measuring equipment to test the
134 overvoltage withstand capability

135 **4 Requirements**

136 **4.1 General**

137 In addition to the requirements of Clause 4 of IEC 61557-1 and all respective parts, the
138 requirements of Clause 4 shall apply.

139 Under normal conditions and in cases of reasonably foreseeable misuse, no hazard shall arise
140 when:

- 141 - the maximum rated voltage or current of a measuring circuit terminal or
- 142 - the maximum extraneous overvoltage according to the respective parts of this document
143 (see Table 1)

144 is applied to that terminal or to any other compatible terminal, with any combination of function
145 and range settings.

146 If the measuring device bears a marking or a pictogram in accordance with 5.2, the extraneous
147 overvoltage can be reduced to 1,1 times of the maximum expected line to line voltage.

148 **4.2 Extraneous overvoltage withstand capability**

149 Terminals that are clearly not of similar types and that will not retain the connectors of the probe
150 assembly or the accessory do not need to be tested.

151 Terminals that can only be accessed by use of a tool do not need to meet the requirements of
152 this clause. The duration time shall be the longest possible indicated in the respective parts of
153 IEC 61557.

154

155

Table 1 – Extraneous overvoltage

	Part of IEC 61557					
	2 Insulation	3 Loop	4 Protective bonding	5 Earth resistance	6 RCD	7 Phase sequence
AC Extraneous overvoltage and duration time	$1,2 \times U_N$ 10 s	$1,2 \times U_O$ continuous and $1,1 \times$ line-to-line voltage 1 min	$1,2 \times U_O$ continuous	$1,2 \times U_O$ continuous	$1,2 \times U_O$ continuous and $1,1 \times$ line-to-line voltage 1 min	$1,2 \times U_O$ continuous
DC Extraneous overvoltage and duration time	$1,2 \times U_N$ 10 s	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

NOTE 1 U_O is the voltage referenced to earth (see IEC 61557-1:2019, 3.3a).

NOTE 2 U_N is the nominal output voltage (see IEC 61557-1:2019, 3.1 and IEC 61557-2:2007, 3.1)

NOTE 3 RCD is residual current device

156

4.3 Performance after application of extraneous overvoltage

158 If parts of the combined measuring equipment are defective after the extraneous overvoltage is
159 applied, the defect shall be clearly indicated. Indications and displayed values shall not lead to
160 erroneous interpretations of safe or unsafe situations or conditions. The indication shall be
161 visible to the user when the instrument is in the normal position.

162 When the extraneous overvoltage is applied, protective components or protective circuits within
163 the measuring equipment may be activated. The activation of these components or circuits in
164 equipment for measuring or testing insulation resistance in accordance with IEC 61557-2 shall
165 be clearly indicated if the operation of the equipment is impaired. The indication shall be visible
166 to the user when the instrument is in the normal position. Indications and displayed values shall
167 not lead to erroneous interpretations of safe or unsafe situations or conditions.

168 Protective components or circuits shall have sufficient voltage rating and current breaking
169 capacity for the expected overload condition.

5 Marking and operating instructions**5.1 General**

172 In addition to IEC 61557-1:2019, Clause 5, and all other respective parts, the following
173 information shall be provided on the combined measuring equipment.

174 If the requirements of 5.2 are applicable, the marking shall be clearly legible in the position of
175 normal use.

176 If a pictogram in accordance with 5.2 is used, the meaning of the pictogram shall be clearly
177 explained in the operating instructions.

5.2 Pictogram

179 When the combined measuring equipment bears the following marking or pictogram, the applied
180 extraneous overvoltage can be reduced to a voltage of $1,1$ times the maximum expected line-
181 to-line voltage:

182 a) Marking

DO NOT USE IN DISTRIBUTION SYSTEMS
WITH VOLTAGES HIGHER THAN ... V.

183

184 This marking shall be written in a language that can be easily understood by the user.

185

186 The value of the voltage shown on the marking shall be 1,1 times the maximum expected
187 line-to-line voltage.

188 b) Example of pictogram for a 500 V AC system

189



The value of the voltage shown on the marking shall be 1,1 times
the maximum expected line-to-line voltage

190

IEC 892/13

191 Combined measuring equipment bearing the marking a) or pictogram b) shall withstand the
192 specified overvoltage for 1 min without any defect. The test configuration shall be in accordance
193 with 4.2, protective devices may be activated in accordance with 4.3.

194 If the combined measuring equipment includes an insulation resistance measuring or testing
195 function, this function shall also fulfil the overvoltage requirements in accordance with
196 IEC 61557-2.

197 6 Tests

198 In addition to the tests specified in Clause 6 of the respective parts of IEC 61557, the following
199 tests shall be performed:

- 200 – the overvoltage withstand capability for the combined measuring equipment shall be type
201 tested by using an extraneous overvoltage either in accordance with 4.2;
- 202 – the technical specifications of protective devices shall be verified;
- 203 – the voltage source for the overload test shall be capable of providing the maximum expected
204 overload current, taking in account the expected short circuit currents for measurement
205 categories according to IEC 61010-2-030:2017, Table AA.1. If certified protective devices
206 are used, the test can be limited in accordance with IEC 61010-2-030:2017, 101.3;
- 207 – compliance with the requirements of Clause 5 shall be verified as a routine test.

208