



SLOVENSKI STANDARD
SIST EN 60204-1:2018/oprA1:2021
01-januar-2021

Varnost strojev - Električna oprema strojev - 1. del: Splošne zahteve

Safety of machinery - Electrical equipment of machines - Part 1: General requirements

Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen

Sécurité des machines - Équipement électrique des machines - Partie 1: Exigences générales

STANDARD PREVIEW
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ICS:

13.110	Varnost strojev	Safety of machinery
29.020	Elektrotehnika na splošno	Electrical engineering in general

SIST EN 60204-1:2018/oprA1:2021 **en,fr,de**

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44/884/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

IEC 60204-1/AMD1 ED6

DATE OF CIRCULATION:

2020-11-27

CLOSING DATE FOR VOTING:

2021-02-19

SUPERSEDES DOCUMENTS:

44/873A/CD, 44/880A/CC

IEC TC 44 : SAFETY OF MACHINERY - ELECTROTECHNICAL ASPECTS	
SECRETARIAT: United Kingdom	SECRETARY: Mrs Nyomee Hla-Shwe Tun
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 checked="" type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p>Attention IEC-CENELEC parallel voting SIST EN 60204-1:2018/oprA1:2021</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:

Amendment 1 - Safety of machinery - Electrical equipment of machines - Part 1: General requirements

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

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FOREWORD

This amendment has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

The text of this amendment is based on the following documents:

FDIS

Report on voting

44/XX/FDIS

44/XX/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date¹ indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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<https://standards.iteh.ai/catalog/standards/sist/90338221-4be2-42a2-b756-338b8c8b34a1/sist-en-60204-1-2018-opra1-2021>

20 **Foreword**21 *Replace the 7th item under the 8th paragraph with:*

22 6.3.3 b): The use of residual current protective devices with a rated residual operating current which
 23 is coordinated with the earth electrode resistance is mandatory in TT systems as a means
 24 for fault protection by automatic disconnection of supply (Italy).

25
 26 *Rename existing Note to Note 1 and add new Note 2*

27 Note 2 Annex H provides examples of measures to reduce the effects of electromagnetic influences.

28
29 **2 Normative References**30 *Delete existing reference to IEC 60034-1*31 *Replace the existing reference IEC 60364-4-41 with:*

32 IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection*
 33 *against electric shock*
 34 IEC 60364-4-41:2005/AMD1:2017

35 *Replace the existing reference IEC 60364-5-52 with:*

36 IEC 60364-5-52:2009, *Low-voltage electrical installations – Part 5-52: Selection and erection of*
 37 *electrical equipment – Wiring systems*
 38 IEC 60364-5-52:2009/COR1:2011

39 *Replace the existing reference IEC 60364-5-53 with:*

40 IEC 60364-5-53:2019, *Electrical installations of buildings – Part 5-53: Selection and erection of*
 41 *electrical equipment – Isolation, switching and control*

42 *Add reference to IEC 60364-6 as follows:* [SIST EN 60204-1:2018/oprA1:2021](https://standards.iteh.ai/catalog/standards/sist/90338221-4be2-42a2-b756-338b8c8b34a1/sist-en-60204-1-2018-oprA1-2021)
[338b8c8b34a1/sist-en-60204-1-2018-oprA1-2021](https://standards.iteh.ai/catalog/standards/sist/90338221-4be2-42a2-b756-338b8c8b34a1/sist-en-60204-1-2018-oprA1-2021)

43 IEC 60364-6:2016, *Low-voltage electrical installations – Part 6: Verification*
 44 IEC 60364-6:2016/COR1:2017

45 *Replace the existing reference IEC 60445 with:*

46 IEC 60445:2017, *Basic and safety principles for man-machine interface, marking and identification –*
 47 *Identification of equipment terminals, conductor terminations and conductors*
 48 IEC 60445:2017/COR1:2017

49 *Replace the existing reference IEC 60947-5-1 with:*

50 IEC 60947-5-1:2016, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and*
 51 *switching elements – Electromechanical control circuit devices*

52 *Replace the existing reference IEC 61558-1 with:*

53 IEC 61558-1:2017, *Safety of power transformers, power supplies, reactors and similar products – Part*
 54 *1: General requirements and tests*

55 *Replace the existing reference ISO 7010 with:*

56 ISO 7010:2019, *Graphical symbols – Safety colours and safety signs – Registered safety signs*
 57 ISO 7010:2019/AMD1:2020

58 *Replace the existing reference ISO 13850 with:*

59

60

61

3.1 Terms and definitions

62

Replace existing source reference for term 3.1.16 “direct opening action” with:

63

[SOURCE: IEC 60947-5-1:2016, K.2.2]

64

Replace the existing source reference for term 3.1.21 “emergency stop device” with:

65

[SOURCE: ISO 13850:2015, 3.3, modified – The note has been added.]

66

67

4.4.2 Electromagnetic Compatibility

68

Delete 2nd paragraph and related bulleted list.

69

Rename existing Note to Note 1 and add new Note 2

70

Note 2 Annex H provides examples of measures to reduce the effects of electromagnetic influences.

71

72

4.4.5 Altitude

73

Replace the text of the 2nd paragraph before the hyphenated list with:

74

For equipment to be used at higher altitudes, it is necessary to take into account changes in parameters for example, the reduction of:

75

76

Add to the start of 3rd paragraph:

77

Other parameters of different components can also alter with altitude.

78

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79

6.3.1 General

<https://standards.iteh.ai/catalog/standards/sist/90338221-4be2-42a2-b756-338b8c8b34a1/sist-en-60204-1-2018-opra1-2021>

80

Replace the text of Note 1 with:

81

The risk of harmful physiological effects from touch voltages depends upon a number of factors. These include but are not limited to; value of touch voltage, duration of possible exposure, environmental factors, skin condition

82

83

84

85

8.2.1 General

86

Replace the fourth bulleted item in the first paragraph with:

87

- those conductive structural parts of the machine used for protective bonding.

88

89

8.2.2 Protective Conductors

90

Move the 4th and 5th bulleted list items in the 5th paragraph to be sub list items under the 3rd bulleted list item

91

92

Delete the first list item in the 7th paragraph

93

94

9.2.3.2 Start

95

Replace the 4th Paragraph with:

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96 The provision of acoustic and/or visual warning signals before the starting of hazardous machine
 97 operation shall be considered during the risk assessment. Where the risk assessment determines that
 98 either or both are required the emission level of these warning signals shall be suitable for the intended
 99 environment.

100 **9.2.3.4.3 Emergency Switching Off**

101 *In the 1st paragraph replace "IEC 60364 5 53:2001" with "IEC 60364 5 53:2019"*

102

103 **9.2.4.1 General requirements**

104 *Replace the 2nd paragraph with:*

105 Where a safety function of a CCS relies on data transmission the transmission reliability shall be
 106 considered.

107 *Replace Note 3 with the following and delete corresponding footnote 1:*

108 NOTE 3 Further requirements for cableless control systems are described in IEC 62745.

109

110 **9.2.4.8 Emergency stop reset**

111 *Replace last paragraph with:*

112 Where the risk assessment shows that resetting of an emergency stop actuator on the portable cableless
 113 operator control station is not adequate then one or more supplementary fixed resets shall be provided.

114

115 **10.8.2 Types of emergency switching off device**

116 *Replace the second paragraph with:*

117 The devices shall have direct opening action (see Annex K of IEC 60947-5-1:2016).

118

119 **11.4 Enclosures, doors and openings**

120 *In the 8th paragraph, replace "harmful" with "detrimental".*

121

122 **12.3 Insulation**

123 *In the 1st paragraph replace "should be sought" with "shall be considered"*

124

125 **13.2.3 Identification of the neutral conductor**

126 *In the 1st paragraph replace "IEC 60445:2010" with IEC 60445:2017/COR1:2017"*

127

128 **13.5.2 Rigid metal conduit and fittings**

129 *First paragraph, 2nd sentence, replace with:*

130 Where galvanic action is possible between dissimilar metals these metal combinations shall not be used.

131

132 **16.4 Marking of enclosures of electrical equipment**

133 *Delete 2nd bullet.*

134

135 **18.1 General**136 *Add to paragraph 2:*

137 Where the sequence cannot be followed verification a) and b) shall be conducted first.

138

139 **18.2.2 Test 2 – Fault loop impedance verification and suitability of the associated**
140 **overcurrent protective device**141 *In the 1st paragraph replace “IEC 60364-4-41:2005” with “IEC 60364-4-41:2005/AMD1:2017”*

142

143 **18.2.3 Test 2 – Fault loop impedance verification and suitability of the associated**
144 **overcurrent protective device**145 *Replace the second dashed list item under item a) in paragraph 2 with:*

146 – measurement in accordance with A.1.4 for TN-systems or A.2.4 for TT-systems, and.

147

148 **18.4 Voltage tests**149 *Delete the first paragraph and add Note after the new 1st paragraph (previously 2nd paragraph) as follows:*

150 Note: Test equipment in accordance with IEC 61180 or IEC 61557-14 can be used to perform voltage testing.

151

152 **A.1.1 Test 2 – Fault loop impedance verification and suitability of the associated**
153 **overcurrent protective device**154 *Replace the first paragraph with:*155 The provisions in the Annex A are derived from IEC 60364-4-41:2005/AMD1:2017, and
156 IEC 60364-6:2016/COR1:2017. <https://standards.iteh.ai/catalog/standards/sist-en-60204-1-2018-oprA1-2021>

157

158 **A.1.2 Conditions for protection by automatic disconnection of the supply by overcurrent**
159 **protective devices**160 *Replace the 3rd paragraph with:*161 Where the value of the fault loop impedance exceeds $2U_0/3I_a$, a more precise assessment can be made
162 in accordance with the procedure described in D.6.4.3.7.3 of IEC 60364-6: 2016/COR1:2017.

163

164 **A.2.1 Connection to earth**165 *In the NOTE replace the reference “IEC 60364-4-41:2005” with “IEC 60364-4-41:2005/AMD1:2017”*

166

167 **A.2.2 Protection by residual current protective device (RCD)**168 *In NOTE 2 replace the reference “IEC 60364-5-53:2001” with “IEC 60364-5-53:2019”*

169

170 **H.2 General**171 *Add the following after the last paragraph:*

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172 In some applications, immunity and/or emission requirements of the electrical equipment can be met
173 when the following conditions are fulfilled:

174 • the incorporated devices and components comply with the EMC requirements for the intended
175 EMC environment specified in the relevant product standard (or generic standard where no product
176 standard exists), and;

177 • the electrical installation and wiring are consistent with the instructions provided by the supplier
178 of the devices and components with regard to mutual influences, (cabling, screening, earthing etc.) or
179 with this informative Annex H if such instructions are not available from the supplier.

180 Bibliography

181 *Add the following reference:*

182 IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

183 *Replace the existing reference IEC 60204-11 with:*

184 IEC 60204-11:2018, *Safety of machinery – Electrical equipment of machines – Part 11: Requirements
185 for HV equipment for voltages above 1 000 V a.c. or 1 500 V d.c. and not exceeding 36 kV*

186 *Replace the existing reference IEC 60909-0 with:*

187 IEC 60909-0:2016, *Short-circuit currents in three-phase a.c. systems – Part 0: Calculation of currents*

188 *Replace the existing reference IEC 60947-5-2 with:*

189 IEC 60947-5-2:2019, *Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and
190 switching elements – Proximity switches*

191 *Replace the existing reference IEC 61000-6-1 with:*

192 IEC 61000-6-1:2016, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards: Immunity for
193 residential, commercial and light-industrial environments*

194 *Replace the existing reference IEC 61000-6-2 with:*

195 IEC 61000-6-2:2016, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for
196 industrial environments*

197 *Replace the existing reference IEC 61000-6-4 with:*

198 IEC 61000-6-4:2018, *Electromagnetic compatibility (EMC) – Part 6: Generic standards – Section 4:
199 Emission standard for industrial environments*

200 *Replace the existing reference IEC 61946-1 with:*

201 IEC 61496-1:2020, *Safety of machinery – Electro-sensitive protective equipment – Part 1: General
202 requirements and tests*

203 *Replace the existing reference for IEC 62745 with the following and delete corresponding footnote 2:*

204 IEC 62745, *Safety of machinery – Requirements for the interfacing of cableless controllers to machinery*

205 *Replace the existing reference IEC 81346-2 with:*

206 IEC 81346-2:2019, *Industrial systems, installations and equipment and industrial products – Structuring
207 principles and reference designations – Part 2: Classification of objects and codes for classes*

208 *Replace the existing reference ISO 13851 with:*