



SLOVENSKI STANDARD

oSIST prEN 50600-2-1:2020

01-julij-2020

**Informacijska tehnologija - Naprave in infrastruktura podatkovnih centrov - 2-1.
del: Konstrukcija stavbe**

Information technology - Data centre facilities and infrastructures - Part 2-1: Building construction

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 2-1: Gebäudekonstruktion

Technologie de l'information - Installations et infrastructures de centres de traitement de données - Partie 2-1: Construction des bâtiments

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Ta slovenski standard je istoveten z: prEN 50600-2-1

ICS:

35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general
35.110	Omreževanje	Networking
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

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en,fr

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 50600-2-1

May 2020

ICS 35.020; 35.110; 91.140.50

Will supersede EN 50600-2-1:2014 and all of its
amendments and corrigenda (if any)

English Version

Information technology - Data centre facilities and infrastructures - Part 2-1: Building construction

Technologie de l'information - Installations et infrastructures
de centres de traitement de données - Partie 2-1:
Construction des bâtiments

Informationstechnik - Einrichtungen und Infrastrukturen von
Rechenzentren - Teil 2-1: Gebäudekonstruktion

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2020-08-07.

It has been drawn up by CLC/TC 215.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC in three official versions (English, French, German).

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

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Project: 65129

Ref. No. prEN 50600-2-1 E

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1 Contents

2	European foreword	4
3	Introduction	5
4	1 Scope	7
5	2 Normative references	7
6	3 Terms, definitions and abbreviations	8
7	3.1 Terms and definitions	8
8	3.2 Abbreviations.....	8
9	4 Conformance	9
10	5 Location	9
11	5.1 Assessment of location.....	9
12	5.2 Geographical location	9
13	5.3 Environmental risk analysis	10
14	5.4 Utility provision	11
15	6 Site configuration	11
16	6.1 General.....	11
17	6.2 Site selection	11
18	6.3 Assessment of existing premises.....	12
19	6.4 Utilities.....	12
20	7 Outside spaces	13
21	7.1 Access routes.....	13
22	7.2 Parking.....	13
23	7.3 Temporary facilities.....	14
24	7.4 Fuel storage facilities and infrastructure.....	14
25	7.5 Underground facilities	15
26	7.6 Perimeter design and Protection Class Boundaries	15
27	8 Building construction	17
28	8.1 Load-bearing structure.....	17
29	8.2 Building materials and finishes.....	17
30	8.3 Electromagnetic Interference	18
31	8.4 Protection Class Boundaries.....	18
32	8.5 Foundations.....	19
33	8.6 Exterior walls	19
34	8.7 Interior walls and barriers.....	20
35	8.8 Roofs.....	21
36	8.9 Water drainage	21
37	8.10 Floors	21
38	8.11 Raised access floors.....	22
39	8.12 Ceilings.....	23
40	8.13 Corridors and doors.....	23

41	8.14	Transportation lifts	23
42	9	Design of data centre spaces	24
43	9.1	Accommodation	24
44	9.2	Control room space	24
45	9.3	Computer room space	25
46	9.4	Electrical space	25
47	9.5	Mechanical space	25
48	9.6	Telecommunications space	25
49	9.7	Spaces for firefighting systems	25
50	9.8	Storage space	26
51	9.9	Testing and holding spaces	26
52	9.10	Docking bay	26
53	9.11	General office space	26
54	10	Construction of data centre spaces	27
55	10.1	Protection against flooding	27
56	10.2	Access to data centre spaces	27
57	10.3	Vapour density	27
58	11	Fire compartments and fire barriers	27
59	11.1	Fire compartments	27
60	11.2	Fire barriers	28
61	11.3	Protection Class boundaries	29
62	Annex A (informative)	Building materials	30
63	Bibliography	ksist-fpren-50600-2-1-2021	32
64	Figures	https://standards.iteh.ai/catalog/standards/sist/89c828f9-9012-4445-8c1b-04732346d61d/ksist-fpren-50600-2-1-2021	
65	Figure 1	— Schematic relationship between the EN 50600 series standards	6
66	Figure 2	— Examples of free-standing barriers and minimum effective height	16
67	Tables		
68	Table 1	— Heights and topping requirements for free-standing barriers	15
69	Table 2	— Load capacity guidance for building structures	22
70			

71 **European foreword**

72 This document (prEN 50600-2-1:2020) has been prepared by CLC/TC 215 “Electrotechnical aspects of
73 telecommunication equipment”.

74 This document is currently submitted to the Enquiry.

75 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

76 This document will supersede EN 50600-2-1:2014 and all of its amendments and corrigenda (if any).

77 This document includes the following significant technical changes with respect to EN 50600-2-1:2014:

- 78 a) the document has been completely revised and restructured;
- 79 b) the interrelationship between this document and EN 50600-2-5 concerning constructional prerequisites for
80 the implementation of security concepts and desired security systems has been more clearly presented;
- 81 c) Clause 6 “Site configuration” has been split and relevant subclauses have been moved into a new Clause 7
82 “Outside spaces”;
<https://standards.iteh.ai/catalog/standards/sist/89c828f9-9012-4445-8c1b-04732346d61d/ksist-fpren-50600-2-1-2021>
- 83 d) Clause 7 “Building construction” has been completely reworked to present all requirements and
84 recommendations in a single Clause 8;
- 85 e) Clause 8 “Data centre spaces and access routes” has been revised to focus on the design of data centre
86 spaces (now Clause 9);
- 87 f) a new Clause 10 “Construction of data centre spaces” has been added;
- 88 g) Clause 9 “Fire compartments, fire barriers and fire suppression systems” has been revised (now
89 Clause 11);
- 90 h) Annex A on additional requirements and recommendations has been removed;
- 91 i) Annex B on physical protection against external hazards has been revised as Annex A “Building materials”;
- 92 j) Clauses 1 to 4 have been amended accordingly.

93 This document has been prepared under a mandate given to CENELEC by the European Commission and the
94 European Free Trade Association.

95 Introduction

96 The unrestricted access to internet-based information demanded by the information society has led to an
97 exponential growth of both internet traffic and the volume of stored/retrieved data. Data centres are housing
98 and supporting the information technology and network telecommunications equipment for data processing,
99 data storage and data transport. They are required both by network operators (delivering those services to
100 customer premises) and by enterprises within those customer premises.

101 Data centres usually need to provide modular, scalable and flexible facilities and infrastructures to easily
102 accommodate the rapidly changing requirements of the market. In addition, energy consumption of data centres
103 has become critical both from an environmental point of view (reduction of environmental footprint) and with
104 respect to economical considerations (cost of energy) for the data centre operator.

105 The implementation of data centres varies in terms of:

- 106 a) purpose (enterprise, co-location, co-hosting or network operator facilities);
- 107 b) security level;
- 108 c) physical size;
- 109 d) accommodation (mobile, temporary and permanent constructions).

110 The needs of data centres also vary in terms of availability of service, the provision of security and the objectives
111 for energy efficiency. These needs and objectives influence the design of data centres in terms of building
112 construction, power distribution, environmental control, telecommunications cabling and physical security as
113 well as the operation of the data centre. Effective management and operational information is imperative in
114 order to monitor achievement of the defined needs and objectives.

115 Recognizing the substantial resource consumption, particularly of energy, of larger data centres, it is also
116 important to provide tools for the assessment of that consumption both in terms of overall value and of source
117 mix and to provide Key Performance Indicators (KPIs) to evaluate trends and drive performance improvements.

118 At the time of publication of this document, the EN 50600 series is designed as a framework of standards and
119 technical reports covering the design, the operation and management as well as the key performance indicators
120 for energy efficient operation of the data centre.

121 The EN 50600-2 series defines the requirements for the data centre design.

122 The EN 50600-3 series defines the requirements for the operation and the management of the data centre.

123 The EN 50600-4 series defines the key performance indicators for the data centre.

124 The CLC/TR 50600-99-X Technical Reports cover recommended practices and guidance for specific topics
125 around data centre operation and design.

126 This series of European Standards specifies requirements and recommendations to support the various parties
127 involved in the design, planning, procurement, integration, installation, operation and maintenance of facilities
128 and infrastructures within data centres. These parties include:

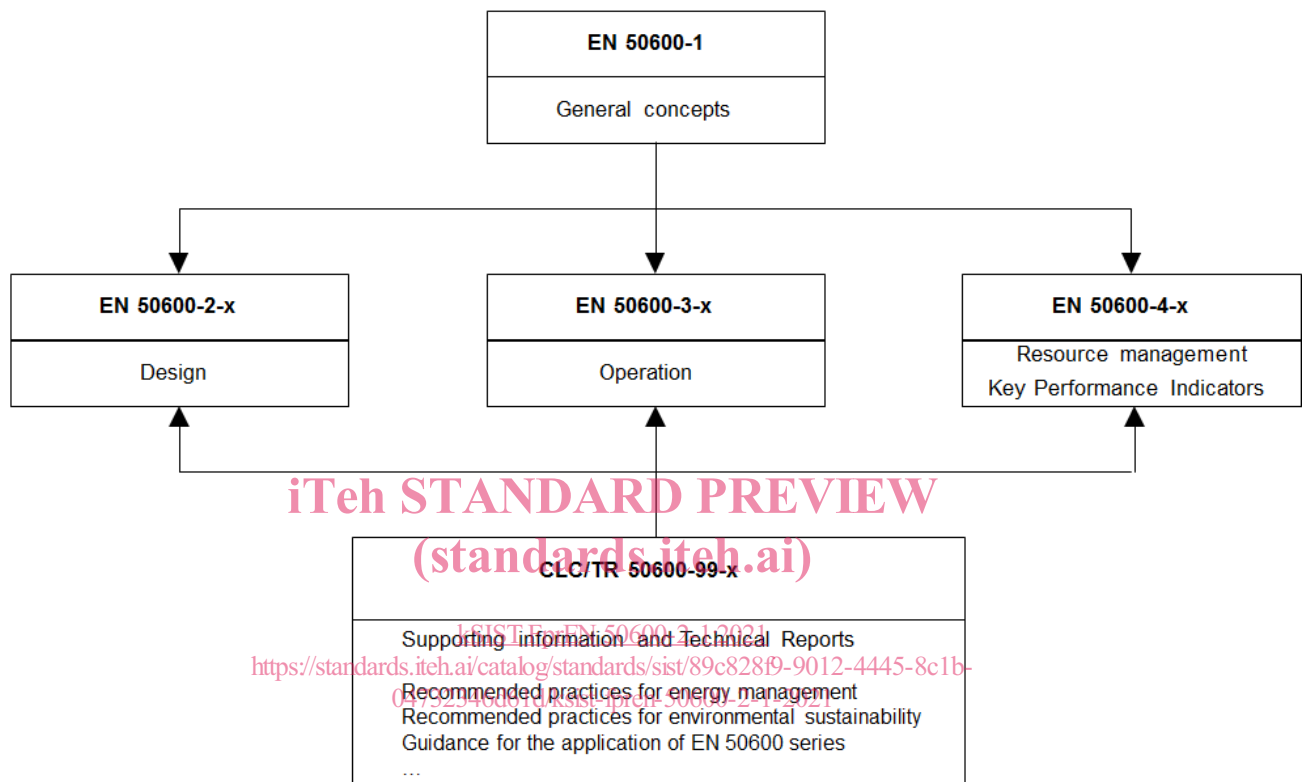
- 129 1) owners, operators, facility managers, ICT managers, project managers, main contractors;
- 130 2) consulting engineers, architects, building designers and builders, system and installation designers,
131 auditors, test and commissioning agents;
- 132 3) facility and infrastructure integrators, suppliers of equipment;
- 133 4) installers, maintainers.

134 At the time of publication of this document, the EN 50600-2 series comprises the following standards:

135 *EN 50600-2-1*: Information technology — Data centre facilities and infrastructures — Part 2-1: Building
136 construction;

prEN 50600-2-1:2020 (E)

- 137 *EN 50600-2-2*: Information technology — Data centre facilities and infrastructures — Part 2-2: Power supply
138 and distribution;
- 139 *EN 50600-2-3*: Information technology — Data centre facilities and infrastructures — Part 2-3: Environmental
140 control;
- 141 *EN 50600-2-4*: Information technology — Data centre facilities and infrastructures — Part 2-4:
142 Telecommunications cabling infrastructure;
- 143 *EN 50600-2-5*: Information technology — Data centre facilities and infrastructures — Part 2-5: Security
144 systems.
- 145 The inter-relationship of the standards and technical reports within the EN 50600 series is shown in Figure 1.



146

147

Figure 1 — Schematic relationship between the EN 50600 series standards

148 EN 50600-2-X standards specify requirements and recommendations for particular facilities and infrastructures
149 to support the relevant classification for “availability”, “physical security” and “energy efficiency enablement”
150 selected from EN 50600-1.

151 EN 50600-3-X documents specify requirements and recommendations for data centre operations, processes
152 and management.

153 EN 50600-4-X documents specify requirements and recommendations for key performance indicators (KPIs)
154 used to assess and improve the resource usage efficiency and effectiveness, respectively, of a data centre.

155 This document addresses the building design of data centres; it addresses security issues from a constructional
156 point of view, whereas EN 50600-2-5 specifies the security system requirements of those facilities and
157 infrastructures (in accordance with the requirements of EN 50600-1).

158 This document is intended for use by and collaboration between architects, building designers and builders,
159 system and installation designers.

160 This series does not address the selection of information technology and network telecommunications
161 equipment, software and associated configuration issues.

162 1 Scope

163 This document addresses the construction of buildings and other structures which provide accommodation for
164 data centres based upon the criteria and classification for “physical security” within EN 50600-1 in support of
165 availability.

166 This document specifies requirements and recommendations for the following:

- 167 a) location and site selection (taking in to account natural environment and adjacencies);
- 168 b) protection from environmental risks;
- 169 c) site configuration;
- 170 d) building construction;
- 171 e) building configuration;
- 172 f) provision of access;
- 173 g) intrusion protection;
- 174 h) physical fire protection;
- 175 i) protection against damage from water;
- 176 j) quality construction measures.

177 Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this document and are
178 covered by other standards and regulations. However, information given in this document can be of assistance
179 in meeting these standards and regulations.

180 Conformance of data centres to the present document is covered in Clause 4.

181 2 Normative references

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

185 EN 81 (all parts), *Safety rules for the construction and installation of lifts - Special lifts for the transport of*
186 *persons and goods*

187 EN 1366-3, *Fire resistance tests for service installations - Part 3: Penetration seals*

188 EN 1627:2011, *Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance -*
189 *Requirements and classification*

190 EN 1634 (all parts), *Fire resistance and smoke control tests for door and shutter assemblies, openable windows*
191 *and elements of building hardware*

192 EN 1991-1-1, *Eurocode 1: Actions on structures - Part 1-1: General actions - Densities, self-weight, imposed*
193 *loads for buildings*

194 EN 12825:2001, *Raised access floors*

195 EN 50310, *Telecommunications bonding networks for buildings and other structures*

196 EN 50600-1:2019, *Information technology - Data centre facilities and infrastructures - Part 1: General concepts*

prEN 50600-2-1:2020 (E)

- 197 EN 50600-2-2, *Information technology - Data centre facilities and infrastructures - Part 2-2: Power supply and*
198 *distribution*
- 199 EN 50600-2-3, *Information technology - Data centre facilities and infrastructures - Part 2-3: Environmental*
200 *control*
- 201 EN 50600-2-4, *Information technology - Data centre facilities and infrastructures - Part 2-4:*
202 *Telecommunications cabling infrastructure*
- 203 EN 50600-2-5, *Information technology - Data centre facilities and infrastructures - Part 2-5: Security systems*

204 3 Terms, definitions and abbreviations**205 3.1 Terms and definitions**

206 For the purposes of this document, the terms and definitions given in EN 50600-1 and the following apply.

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

208 — ISO Online browsing platform: available at <https://www.iso.org/obp>

209 — IEC Electropedia: available at <http://www.electropedia.org/>

210 3.1.1**211 effective height of free-standing barrier**

212 h_e

213 shortest distance between any point on the top of the permanent part of the free-standing barrier (excluding
214 any toppings) and the surface of the supporting ground when measured in the plane of the barrier

215 3.1.2**216 free-standing barrier**

217 wall, fence, gate, turnstile or other similar self-supporting barrier and their associated foundations, designed to
218 prevent entry to a space of a given Protection Class

219 3.1.3**220 topping**

221 construction, added to the top of a free-standing barrier, and designed to be an effective intruder deterrent or
222 for a decorative display of security

223 3.1.4**224 modular construction**

225 construction method which uses a system of prefabricated elements and assemblies

226 3.1.5**227 pathway**

228 defined route of different media between identified points

229 Note 1 to entry: Examples of media are bus bars, cables, conduits, ducts, pipes.

230 3.1.6**231 raised access floor**

232 system consisting of completely removable and interchangeable floor panels that are supported on an
233 adjustable substructure to allow the area beneath the raised access floor panels to be used by building services

234 3.2 Abbreviations

235 For the purposes of this document, the following abbreviations apply:

AHU Air handling unit

HVAC	Heating, Ventilation, Air Conditioning
IT	Information Technology
PDU	Power distribution unit

236 4 Conformance

237 For a data centre to conform to this document:

- 238 a) its location shall have been selected following a site assessment as required in Clause 5;
- 239 b) it shall comply with the site requirements of Clause 6;
- 240 c) it shall meet the requirements of Clause 7 where the data centre spaces are outside buildings;
- 241 d) it shall meet the building construction requirements of Clause 8 where the data centre spaces are within
242 buildings;
- 243 e) it shall meet the building configuration requirements detailed in Clause 9;
- 244 f) it shall meet the requirements of physical fire protection of Clause 10.

245 5 Location

246 5.1 Assessment of location

247 5.1.1 Requirements

248 The location of a site for a data centre can be assessed either for a “green field” construction of a new data
249 centre or the evaluation of a “brown field” existing site. The location shall be assessed against the following
250 criteria:

- 251 a) geographical location (see 5.2);
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- 252 b) natural environment and adjacencies (see 5.3);
- 253 d) utility provision (see 5.4);
- 254 e) budgetary factors such as site costs and cost to bring utilities to the site.

255 5.1.2 Recommendations

256 Availability of personnel (operational personnel, security personnel) and public transport opportunities should
257 be considered.

258 5.2 Geographical location

259 5.2.1 Requirements

260 The impact of the elevation above sea level which can have a direct influence on the performance of equipment
261 shall be considered.

262 5.2.2 Recommendations

263 The choice of a location of a new data centre should consider:

- 264 a) assessment of its impact on the environment;
- 265 b) acceptance by the local community;