



**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

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

[SIST EN 50600-2-1:2021](https://standards.sist.net/sist/pr-en/50600-2-1/2021)

**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

**oSIST prEN 50600-2-1:2020**

**en,fr**



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).  
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

© 2020 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Project: 65129

Ref. No. prEN 50600-2-1 E



# 1 Contents

2	<b>European foreword</b> .....	<b>4</b>
3	<b>Introduction</b> .....	<b>5</b>
4	<b>1 Scope</b> .....	<b>7</b>
5	<b>2 Normative references</b> .....	<b>7</b>
6	<b>3 Terms, definitions and abbreviations</b> .....	<b>8</b>
7	3.1 Terms and definitions .....	8
8	3.2 Abbreviations.....	8
9	<b>4 Conformance</b> .....	<b>9</b>
10	<b>5 Location</b> .....	<b>9</b>
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	<b>6 Site configuration</b> .....	<b>11</b>
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	<b>7 Outside spaces</b> .....	<b>13</b>
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	<b>8 Building construction</b> .....	<b>17</b>
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	<b>9</b>	<b>Design of data centre spaces .....</b>	<b>24</b>
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	<b>10</b>	<b>Construction of data centre spaces .....</b>	<b>27</b>
55	10.1	Protection against flooding .....	27
56	10.2	Access to data centre spaces .....	27
57	10.3	Vapour density .....	27
58	<b>11</b>	<b>Fire compartments and fire barriers .....</b>	<b>27</b>
59	11.1	Fire compartments .....	27
60	11.2	Fire barriers .....	28
61	11.3	Protection Class boundaries .....	29
62	<b>Annex A</b> (informative)	<b>Building materials .....</b>	<b>30</b>
63	<b>Bibliography .....</b>		<b>32</b>
64	<b>Figures</b>		
65	<b>Figure 1</b>	<b>— Schematic relationship between the EN 50600 series standards .....</b>	<b>6</b>
66	<b>Figure 2</b>	<b>— Examples of free-standing barriers and minimum effective height .....</b>	<b>16</b>
67	<b>Tables</b>		
68	<b>Table 1</b>	<b>— Heights and topping requirements for free-standing barriers .....</b>	<b>15</b>
69	<b>Table 2</b>	<b>— Load capacity guidance for building structures .....</b>	<b>22</b>
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”;
- 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.

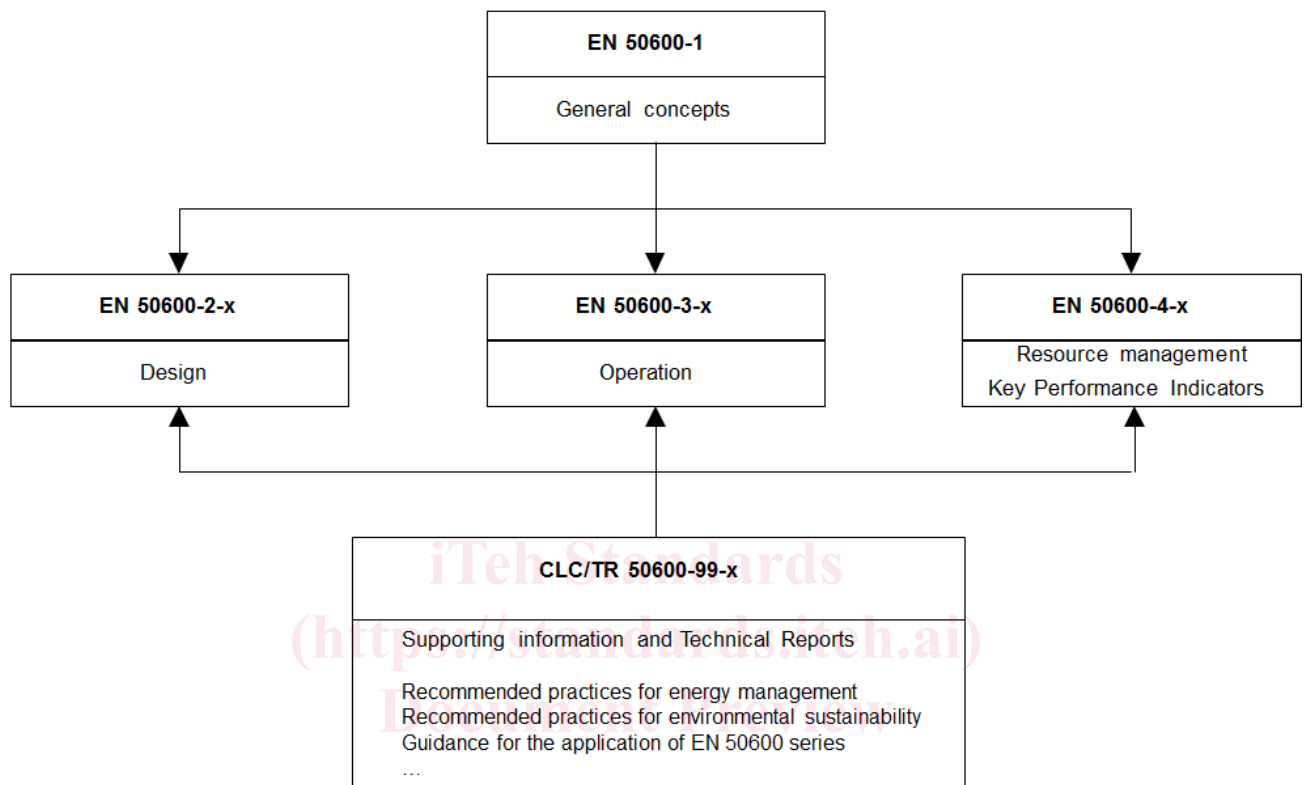
134 At the time of publication of this document, the EN 50600-2 series comprises the following standards:

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