



**NSAI**  
Standards

Irish Standard  
I.S. EN 50600-2-3:2019

# Information technology - Data centre facilities and infrastructures - Part 2-3: Environmental control

**I.S. EN 50600-2-3:2019**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 50600-2-3:2019

*Published:*

2019-06-07

*This document was published under the authority of the NSAI and comes into effect on:*

2019-06-25

ICS number:

35.020

35.110

35.160

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN 50600-2-3:2019 is the adopted Irish version of the European Document EN 50600-2-3:2019, Information technology - Data centre facilities and infrastructures - Part 2-3: Environmental control

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

EUROPEAN STANDARD

**EN 50600-2-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2019

ICS 35.020; 35.110; 35.160

Supersedes EN 50600-2-3:2014

English Version

## Information technology - Data centre facilities and infrastructures - Part 2-3: Environmental control

Technologie de l'information - Installation et infrastructures  
des centres de traitement de données - Partie 2-3: Contrôle  
environnemental

Informationstechnik - Einrichtungen und Infrastrukturen von  
Rechenzentren - Teil 2-3: Regelung der  
Umgebungsbedingungen

This European Standard was approved by CENELEC on 2019-04-29. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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**

## Contents

<b>European foreword.....</b>	<b>4</b>
<b>Introduction.....</b>	<b>5</b>
<b>1 Scope.....</b>	<b>8</b>
<b>2 Normative references.....</b>	<b>8</b>
<b>3 Terms, definitions and abbreviations .....</b>	<b>9</b>
3.1 Terms and definitions .....	9
3.2 Abbreviations .....	10
<b>4 Conformance .....</b>	<b>11</b>
<b>5 Environmental control within data centres .....</b>	<b>11</b>
5.1 General .....	11
5.1.1 Design input.....	11
5.1.2 Functional Elements .....	11
5.1.3 Requirements .....	12
5.1.4 Recommendations.....	13
5.2 Environmental control of data centre spaces .....	13
5.2.1 Building entrance facilities .....	13
5.2.2 Personnel entrance(s) .....	13
5.2.3 Docking/loading bay(s) .....	13
5.2.4 Generator space(s) including fuel storage .....	13
5.2.5 Transformer space(s) .....	13
5.2.6 Electrical distribution space(s).....	14
5.2.7 Telecommunication spaces(s).....	14
5.2.8 Main Distributor spaces(s).....	14
5.2.9 Computer room space(s) and associated testing space(s).....	14
5.2.10 Electrical space(s) .....	15
5.2.11 Mechanical space(s).....	15
5.2.12 Control room space(s) .....	15
5.2.13 Office space(s).....	15
5.2.14 Storage and holding space(s).....	15
5.2.15 Accommodation of UPS equipment.....	16
<b>6 Availability .....</b>	<b>16</b>
6.1 General .....	16
6.2 Availability Class design options .....	16
6.2.1 General .....	16
6.2.2 Computer room and telecom space(s) .....	17
6.2.3 UPS space.....	23
6.3 Environmental control system capacity planning with respect to expansion.....	24

6.4	Environmental control system capacity planning with respect to resilience .....	24
<b>7</b>	<b>Physical security .....</b>	<b>24</b>
7.1	General .....	24
7.2	Protection against unauthorized access .....	24
<b>8</b>	<b>Energy efficiency enablement .....</b>	<b>24</b>
8.1	General .....	24
8.2	Measurement of temperature .....	25
8.2.1	External temperature .....	25
8.2.2	Computer room temperature .....	25
8.3	Measurement of relative humidity .....	26
8.3.1	External relative humidity .....	26
8.3.2	Computer room relative humidity .....	26
8.4	Measurement of air pressure .....	26
8.5	Coolant flow rates .....	26
8.6	Heat removal .....	26
8.7	Outside air .....	26
<b>Annex A (informative) Overview of the requirements for environmental conditions .....</b>		<b>27</b>
<b>Bibliography .....</b>		<b>29</b>

EN 50600-2-3:2019 (E)

## European foreword

This document (EN 50600-2-3:2019) has been prepared by CLC/TC 215 “Electrotechnical aspects of telecommunication equipment”.

The following dates are fixed:

- latest date by which this document has to be (dop) 2020-04-29  
implemented at national level by publication of  
an identical national standard or by  
endorsement
- latest date by which the national standards (dow) 2022-04-29  
conflicting with this document have to be  
withdrawn

This document supersedes EN 50600-2-3:2014.

The following technical changes have been made:

- a) Clause 5 on environmental control revised, e.g. requirements in 5.2 for environmental control in various data centre spaces;
- b) availability requirements in Clause 6 revised and aligned with EN 50600-1:2019 and EN 50600-2-3:2019, in particular, enhanced Class 4 removed;
- c) measurement requirements for granularity levels in Clause 8 revised;
- d) Annex A and B removed;
- e) new informative Annex A added to summarize requirements for environmental conditions;
- f) minor technical and editorial improvements to the whole document.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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



## Introduction

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

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

The implementation of data centres varies in terms of:

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

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

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

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

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

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

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

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

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

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

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

EN 50600-2-3:2019 (E)

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

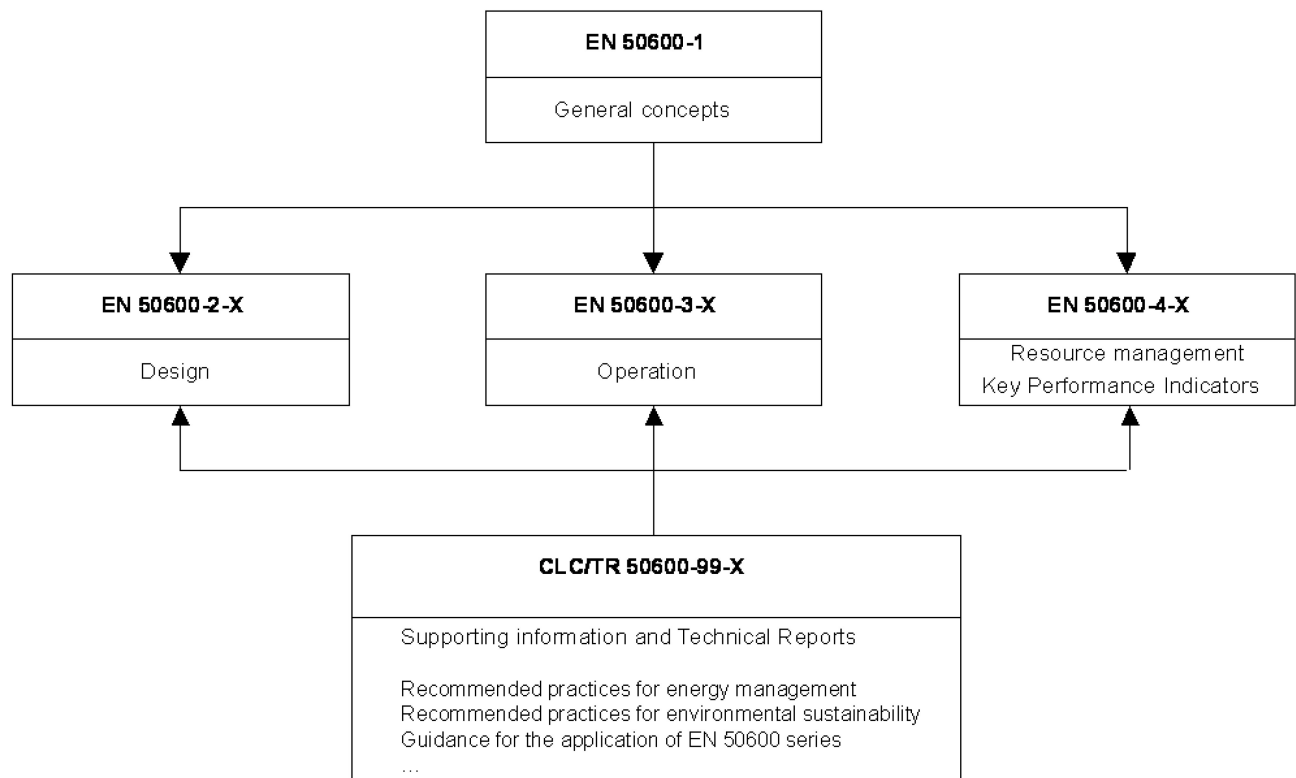
EN 50600-2-2, *Information technology — Data centre facilities and infrastructures — Part 2-2: Power supply and distribution*;

EN 50600-2-3, *Information technology — Data centre facilities and infrastructures — Part 2-3: Environmental control*;

EN 50600-2-4, *Information technology — Data centre facilities and infrastructures — Part 2-4: Telecommunications cabling infrastructure*;

EN 50600-2-5, *Information technology — Data centre facilities and infrastructures — Part 2-5: Security systems*;

The inter-relationship of the standards within the EN 50600 series is shown in Figure 1.



**Figure 1 — Schematic relationship between the EN 50600 standards**

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

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

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

This European Standard addresses the environmental control facilities and infrastructure within data centres together with the interfaces for monitoring the performance of those facilities and infrastructures in line with EN 50600-3-1 (in accordance with the requirements of EN 50600-1).

This European Standard is intended for use by and collaboration between architects, building designers and builders, system and installation designers.

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

EN 50600-2-3:2019 (E)

## 1 Scope

This document addresses environmental control within data centres based upon the criteria and classifications for “availability”, “security” and “energy efficiency enablement” within EN 50600-1.

This document specifies requirements and recommendations for the following:

- a) temperature control;
- b) fluid movement control;
- c) relative humidity control;
- d) particulate control;
- e) vibration;
- f) physical security of environmental control systems.

Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this European Standard and are covered by other standards and regulations. However, information given in this European Standard may be of assistance in meeting these standards and regulations.

## 2 Normative references

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

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

EN 50600-2-2:2019, *Information technology - Data centre facilities and infrastructures - Part 2-2: Power supply and distribution*

EN 50600-2-5, *Information technology - Data centre facilities and infrastructures - Part 2-5: Security systems*

CLC/TR 50600-99-1, *Information technology - Data centre facilities and infrastructures - Part 99-1: Recommended practices for energy management*

EN 61439-1, *Low-voltage switchgear and controlgear assemblies - Part 1: General rules*

EN 62040-3, *Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements*

EN ISO 14644-8, *Cleanrooms and associated controlled environments - Part 8: Classification of air cleanliness by chemical concentration (ACC) (ISO 14644-8)*

EN ISO 16890-1:2016, *Air filters for general ventilation - Part 1: Technical specifications, requirements and classification system based upon particulate matter efficiency (ePM) (ISO 16890-1:2016)*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-