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Information technology – Data centre facilities and infrastructures
Part 2-2: Power supply and distribution

Informationstechnik –
Einrichtungen und Infrastrukturen von Rechenzentren –
Teil 2-2: Stromversorgung und Stromverteilung

Technologie de l'information –
Installation et infrastructures de centres de traitement de données –
Partie 2-2: Alimentation en énergie et distribution de l'énergie

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National Foreword

This European Standard EN 50600-2-2:2019 has the status of an Austrian electrotechnical standard in accordance with the Austrian Electrical Engineering Act 1992.

The legal status of this Austrian electrotechnical standard is stated in the respective ordinance under the Electrical Engineering Act.

European Standards (EN) are implemented as Austrian electrotechnical standards according to the CENELEC Internal Regulations by publication of an identical text and by adding OVE to the EN number.

According to the foreword of the EN the latest date by which the national (electrotechnical) standards conflicting with the EN have to be withdrawn is 2022-04-29 (dow, date of withdrawal). Until this deadline the following standard may be applied:

ÖVE/ÖNORM EN 50600-2-2:2014-10-01,
OVE EN 50600-2-2/AC:2017-01-01.

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EUROPEAN STANDARD **EN 50600-2-2**

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EUROPÄISCHE NORM

June 2019

ICS 35.020; 35.110; 91.140.50

Supersedes EN 50600-2-2:2014

English Version

Information technology - Data centre facilities and infrastructures - Part 2-2: Power supply and distribution

Technologie de l'information - Installation et infrastructures de centres de traitement de données

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 2-2: Stromversorgung

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.

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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

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European foreword

This document (EN 50600-2-2:2019) 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 implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-04-29
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-04-29

This document will supersede EN 50600-2-2:2014.

The following changes have been made:

a) title modified to emphasize distinction between power supply and power distribution requirements;

b) Clause 5 updated, in particular subclauses 5.1 regarding the power supply to the data centre and 5.2 on the power distribution within the data centre;

c) availability requirements in Clause 6 revised and aligned with EN 50600-1:2018 and EN 50600-2-3:2018;

d) physical security requirements revised, mainly regarding the power distribution in the data centre (see 7.3.2);

e) granularity level requirements amended (see 8.2 to 8.4);

f) Annex A removed;

g) 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.

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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, ICT 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, EN 50600-2 series comprises the following standards:

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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 and technical reports within the EN 50600 series is shown in Figure 1.

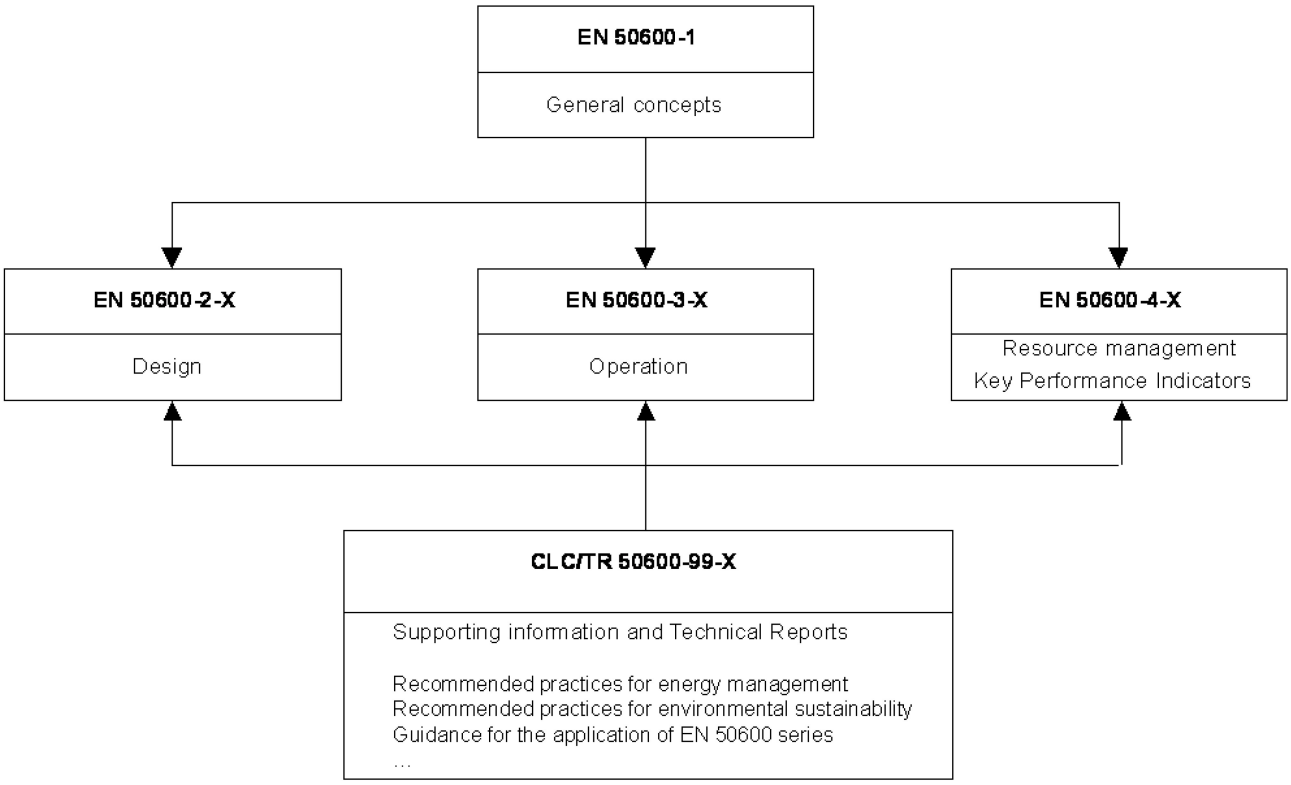


Figure 1 — Schematic relationship between the EN 50600 standard

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 facilities and infrastructures for power supplies to, and power distribution within, data centres together with the interfaces for monitoring the performance of those facilities and infrastructures in line with EN 50600-3 series and EN 50600-4 series standards (in accordance with the requirements of EN 50600-1). The line diagrams used in certain Figures are not intended to replace the more familiar electrical circuit diagrams associated with power supply and distribution systems which are included where relevant.

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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.

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1 Scope

This document addresses power supplies to, and power distribution within, data centres based upon the criteria and classifications for “availability”, “physical security” and “energy efficiency enablement” within EN 50600-1.

This document specifies requirements and recommendations for the following:

a) power supplies to data centres;

b) power distribution systems to all equipment within data centres;

c) telecommunications infrastructure bonding;

d) lightning protection;

e) devices for the measurement of the power consumption and power quality characteristics at points along the power distribution system and their integration within management tools.

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 can be of assistance in meeting these standards and regulations.

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

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 13160 (all parts), *Leak detection systems*

EN 50160:2010, *Voltage characteristics of electricity supplied by public electricity networks*

EN 50174-2, *Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings*

EN 50174-3, *Information technology - Cabling installation - Part 3: Installation planning and practices outside buildings*

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

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

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

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

EN 60076-11, *Power transformers - Part 11: Dry-type transformers*

EN 60947 (all parts), *Low-voltage switchgear and controlgear (IEC 60947, all parts)*

EN 61000-2-4:2002, *Electromagnetic compatibility (EMC) - Part 2-4: Environment - Compatibility levels in industrial plants for low-frequency conducted disturbances*

EN 61439 (all parts), Low-voltage switchgear and controlgear assemblies (IEC 61439, all parts*)*

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