# Informationsteknologi – Faciliteter og infrastrukturer i datacentre – Del 2-4: Infrastruktur for telekommunikationskabling

Information technology – Data centre facilities and infrastructures – Part 2-4: Telecommunications cabling infrastructure

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DS projekt: M360416
ICS: 35.020; 35.110; 35.160

**Første del af denne publikations betegnelse er:**
**DS/EN, hvilket betyder, at det er en europæisk standard, der har status som dansk standard.**

**Denne publikations overensstemmelse er:**
**IDT med: EN 50600-2-4:2023**

**DS-publikationen er på engelsk.**

**Denne publikation erstatter: DS/EN 50600-2-4:2015**

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EUROPEAN STANDARD EN 50600-2-4

NORME EUROPÉENNE

EUROPÄISCHE NORM March 2023

ICS 35.110; 35.020; 35.160 Supersedes EN 50600-2-4:2015

English Version

# Information technology - Data centre facilities and infrastructures - Part 2-4: Telecommunications cabling infrastructure

Technologies de l'information - Installation et infrastructures de centres de traitement de données - Partie 2-4: Infrastructure du câblage dédié aux télécommunications

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 2-4: Infrastruktur der Telekommunikationsverkabelung

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EUROPEAN COMMITTEE FOR ELECTROTECHNICAL STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION ELECTROTECHNIQUE
EUROPÄISCHES KOMITEE FÜR ELEKTROTECHNISCHE NORMUNG

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# Contents

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# European foreword

This document (EN 50600-2-4:2023) 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) 2024-03-20
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-03-20

This document supersedes EN 50600-2-4:2015.

The following major modifications have been made compared to EN 50600-2-4:2015:

a) the document structure has been completely revised;

b) the availability classes have been revised;

c) a clause on physical security has been added (Clause 7);

d) Annex C summarizing the requirements and recommendations of the document has been added;

e) Annex D with examples for cabling infrastructures including the location of active equipment has been added;

f) Annex E with an availability description has been added;

g) Annex F with specific requirements for colocation data centres has been added.

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 Standardizaton Request given to CENELEC by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

# 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 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 carbon 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 document, the EN 50600 series is designed as a framework of standards, technical specifications and technical reports covering the design, the operation and management, the key performance indicators for energy efficient operation of the data centre as well as a data centre maturity model.

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/TS 50600-5 series defines the data centre maturity model requirements and recommendations.

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 documents 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 document, the EN 50600-2 series comprises the following documents:

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

— CLC/TS 50600-2-10, *Information technology – Data centre facilities and infrastructures – Part 2-10: Earthquake risk and impact analysis*

— 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 documents within the EN 50600 series is shown in Figure 1.

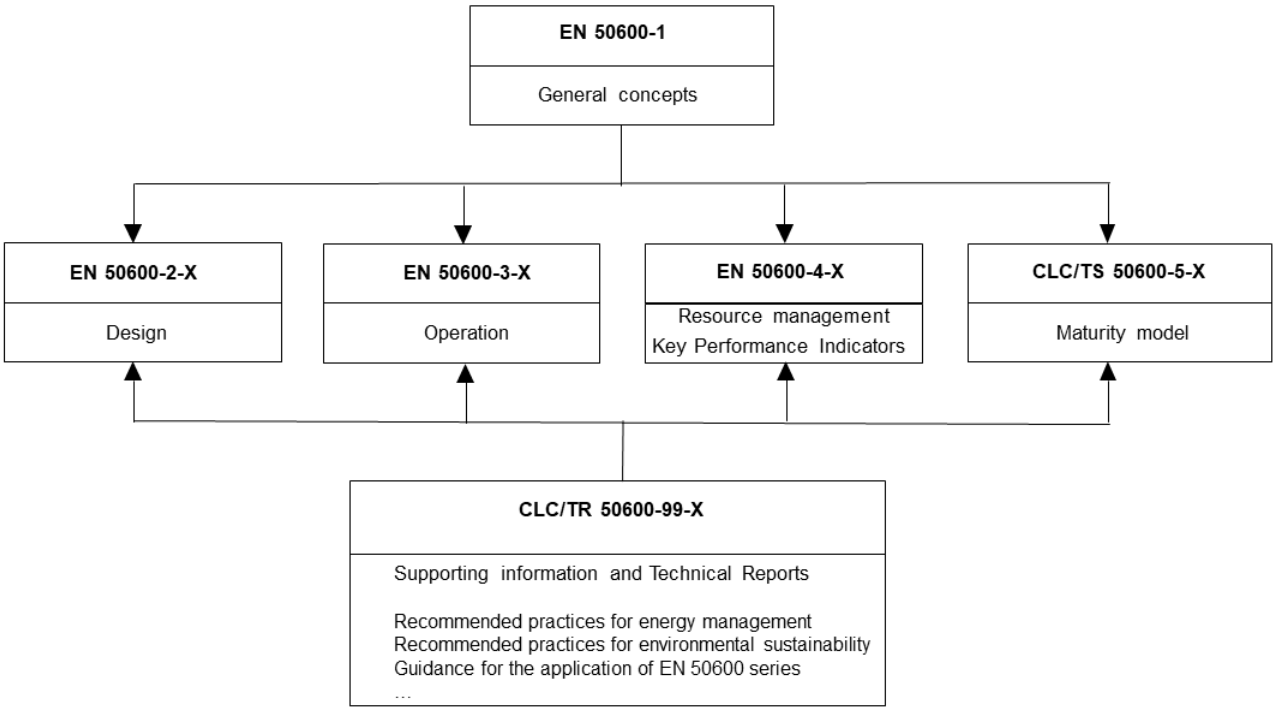


**Figure 1 — Schematic relationship between the EN 50600 series of documents**

EN 50600-2-X documents 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 document addresses the specific requirements for the telecommunications cabling infrastructure in data centres used for the purpose of IT networking and building services (in accordance with the requirements of EN 50600-1).

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

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

Figure 2 shows the schematic and contextual relationships of the EN 50600-2-4 with other cabling and cabling installation related European standards.

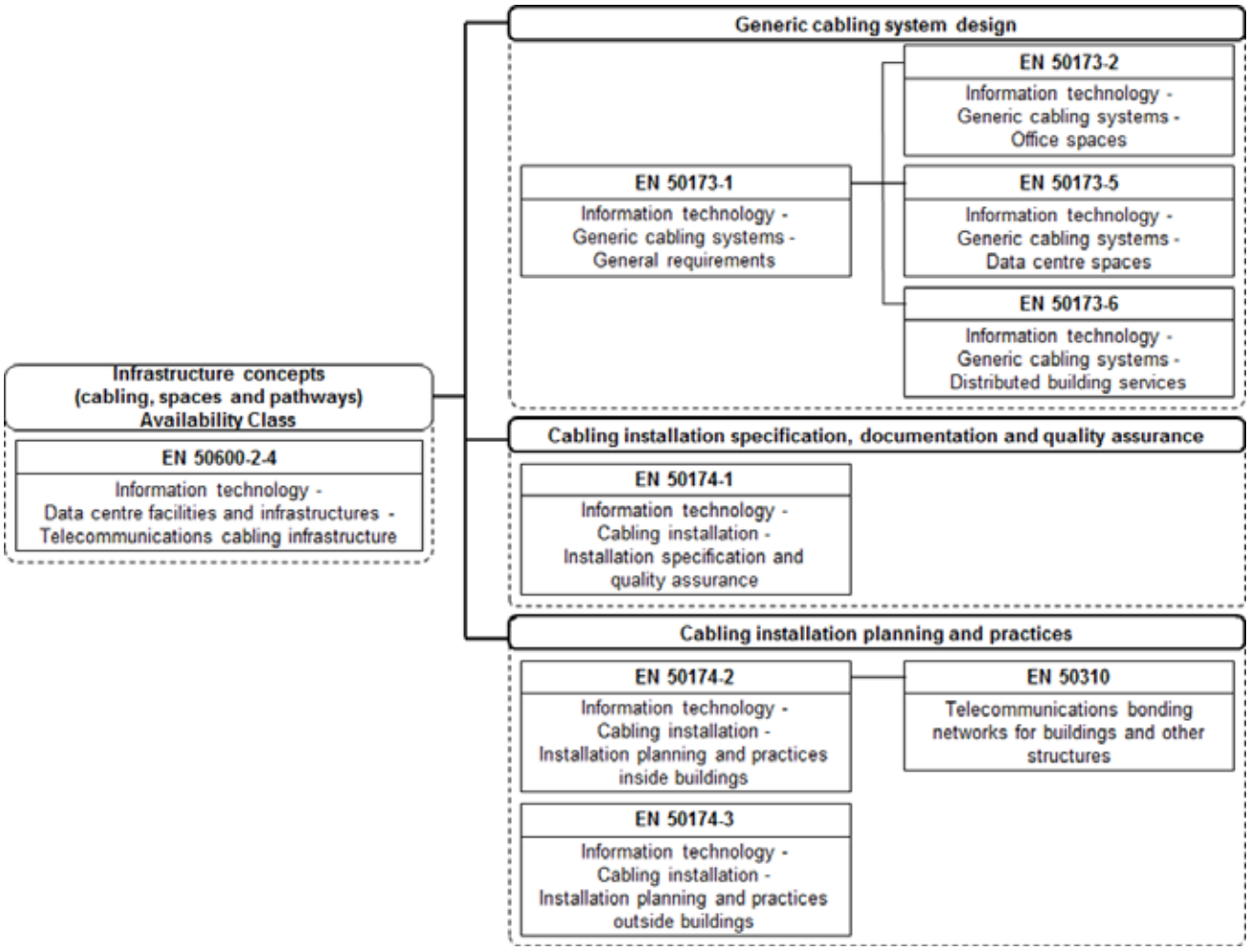


**Figure 2 — Schematic relationship between the EN 50600-2-4 and other European cabling design and installation standards**

The importance of the information technology and network telecommunications cabling infrastructure is similar to that of other infrastructures such as environmental control, power distribution and security systems. As with other utilities, interruptions to service can have a serious impact. Poor quality of service due to lack of planning, use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten an organization's effectiveness.

# Information technology – Data centre facilities and infrastructures –

# Part 2-4: Telecommunications cabling infrastructure

## 1 Scope

This document specifies design principles for information technology and network telecommunications cabling (e.g. SAN and LAN) in accordance with EN 50173-5, based upon the criteria and classifications for "availability" and "physical security" within EN 50600-1.

This document addresses the telecommunications cabling infrastructures used in data centres. It describes:

a) for design, the application of generic cabling standards in the EN 50173 series;

b) for installation specification, planning and practices and quality assurance, the application of standards in the EN 50174 series (and related standards).

In addition, this document specifies requirements and recommendations for the following:

1) general information technology cabling to support the IT operation of the data centre;

2) telecommunications cabling to monitor and control, as appropriate, power distribution, environmental control and physical security of the data centre;

3) other building automation cabling;

4) pathways, pathway systems, spaces and enclosures for the telecommunications cabling infrastructures.

Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this document and are covered by other standards and regulations. However, information given in this document can 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 50173-2, *Information technology – Generic cabling systems – Part 2: Office spaces*

EN 50173-5, *Information technology – Generic cabling systems – Part 5: Data centre spaces*

EN 50173-6, *Information technology – Generic cabling systems – Part 6: Distributed building services*

EN 50174-1:2018,[1)] *Information technology — Cabling installation — Part 1: Installation specification and quality assurance*

EN 50174-2:2018, *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*

1) As amended by EN 50174-1:2018/A1:2020.

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

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

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