



**NSAI**  
Standards

Irish Standard  
I.S. EN 50600-2-2:2014

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

**I.S. EN 50600-2-2:2014**

*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 50600-2-2:2014

*Published:*

2014-03-21

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

2014-04-01

ICS number:

35.020

35.110

91.140.50

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

EUROPEAN STANDARD

**EN 50600-2-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2014

---

ICS 35.020; 35.110; 91.140.50

English version

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

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

This European Standard was approved by CENELEC on 2014-01-06. 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**CENELEC**

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels**

---

## Contents

<b>Foreword .....</b>	<b>4</b>
<b>Introduction.....</b>	<b>5</b>
<b>1 Scope.....</b>	<b>7</b>
<b>2 Normative references.....</b>	<b>7</b>
<b>3 Terms, definitions and abbreviations .....</b>	<b>8</b>
<b>3.1 Terms and definitions .....</b>	<b>8</b>
<b>3.2 Abbreviations .....</b>	<b>11</b>
<b>4 Conformance .....</b>	<b>12</b>
<b>5 Power supply and distribution within data centres.....</b>	<b>12</b>
<b>5.1 General.....</b>	<b>12</b>
<b>5.2 Dimensioning of power distribution systems.....</b>	<b>15</b>
<b>6 Availability .....</b>	<b>15</b>
<b>6.1 General requirements.....</b>	<b>15</b>
<b>6.2 Power supply .....</b>	<b>16</b>
<b>6.3 Power distribution .....</b>	<b>24</b>
<b>6.4 Incorporation of LVDC distribution .....</b>	<b>28</b>
<b>6.5 Additional considerations.....</b>	<b>28</b>
<b>6.6 Emergency Power Off (EPO) .....</b>	<b>28</b>
<b>7 Physical security .....</b>	<b>29</b>
<b>7.1 General.....</b>	<b>29</b>
<b>7.2 Access .....</b>	<b>29</b>
<b>7.3 Internal environmental events.....</b>	<b>29</b>
<b>7.4 External environmental events .....</b>	<b>30</b>
<b>8 Energy efficiency enablement and power distribution .....</b>	<b>30</b>
<b>8.1 General.....</b>	<b>30</b>
<b>8.2 Granularity Level 1 .....</b>	<b>31</b>
<b>8.3 Granularity Level 2 .....</b>	<b>31</b>
<b>8.4 Granularity Level 3 .....</b>	<b>31</b>
<b>8.5 Cabling infrastructure to support energy efficiency enablement.....</b>	<b>32</b>
<b>Annex A (informative) Example implementations of power distribution .....</b>	<b>33</b>
<b>A.1 Symbology.....</b>	<b>33</b>

<b>A.2 Example implementations .....</b>	<b>33</b>
<b>Bibliography.....</b>	<b>36</b>

## Figures

<b>Figure 1 — Schematic relationship between the EN 50600 standards .....</b>	<b>6</b>
<b>Figure 2 — Power supply functional elements .....</b>	<b>13</b>
<b>Figure 3 —Secondary and tertiary power distribution systems .....</b>	<b>14</b>
<b>Figure 4 — Example of single path solution for power supply .....</b>	<b>21</b>
<b>Figure 5 — Example of “single path resilient” solution for power supply .....</b>	<b>22</b>
<b>Figure 6 — Example of “multi-path resilience with concurrent repair/operate” solution for power supply .....</b>	<b>22</b>
<b>Figure 7 — Example of fault tolerant design solution for power supply.....</b>	<b>23</b>
<b>Figure 8 — Example of single path solution for power distribution .....</b>	<b>27</b>
<b>Figure 9 — Example of “single path resilient” solution for power distribution.....</b>	<b>27</b>
<b>Figure 10 — Example of “multi-path resilience with concurrent repair/operate” solution for power distribution .....</b>	<b>27</b>
<b>Figure 11 — Example of fault tolerant design solution for power distribution.....</b>	<b>28</b>
<b>Figure 12 — Possible measurement points.....</b>	<b>30</b>
<b>Figure A.1 — Example for a Class 1/Class 2 power distribution.....</b>	<b>34</b>
<b>Figure A.2 — Example for a Class 3/Class 4 power distribution.....</b>	<b>35</b>

## Tables

<b>Table 1 — Functional elements of power distribution.....</b>	<b>13</b>
-----------------------------------------------------------------	-----------

## **Foreword**

This document (EN 50600-2-2:2014) 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) 2015-01-06
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-01-06

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] 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 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 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 and physical security. Effective management and operational information is required to monitor achievement of the defined needs and objectives.

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, facility managers, ICT managers, project managers, main contractors;
- 2) consultants, architects, building designers and builders, system and installation designers;
- 3) facility and infrastructure integrators, suppliers of equipment;
- 4) installers, maintainers.

At the time of publication of this European Standard, EN 50600 series will comprise the following standards:

EN 50600-1: *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 distribution*;

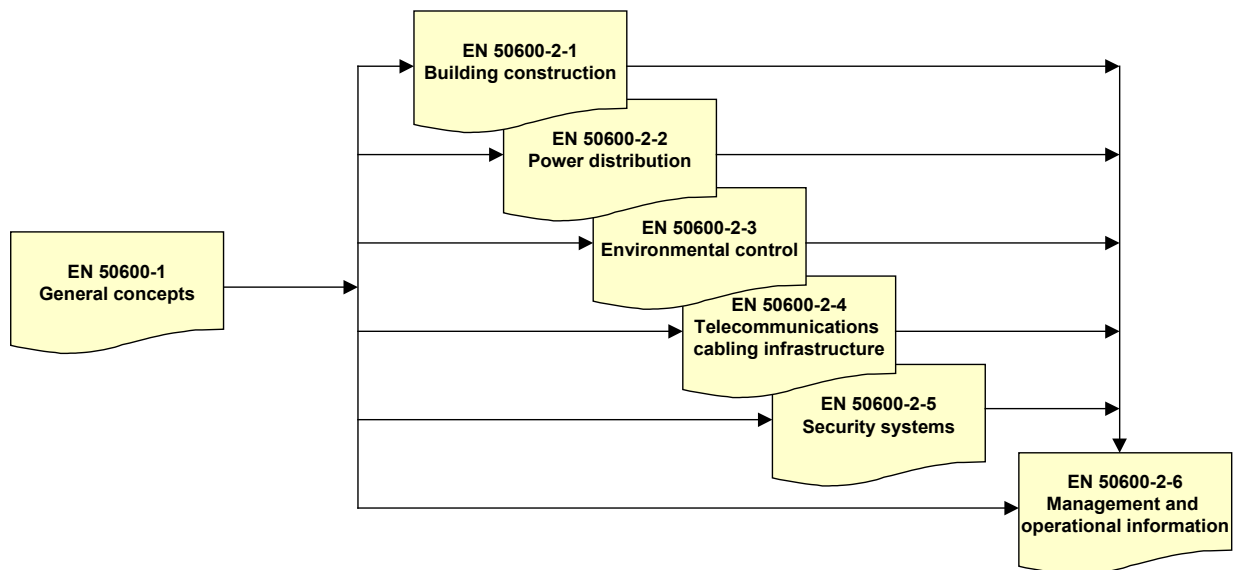
EN 50600-2-3: *Information technology — Data centre facilities and infrastructures — Part 2-3: Environmental control*;

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;*

EN 50600-2-6: *Information technology — Data centre facilities and infrastructures — Part 2-6: Management and operational information.*

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.

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 50600-2-6 (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.

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.

## 1 Scope

This European Standard 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 European Standard specifies requirements and recommendations for the following:

- a) power supplies to data centres;
- b) power distribution systems within data centres;
- c) facilities for both normal and emergency lighting;
- d) equipotential bonding and earthing;
- e) lightning protection;
- f) devices for the measurement of the power consumption 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 may 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, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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, *Application of equipotential bonding and earthing in buildings with information technology equipment*

EN 50600-1, *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 50600-2-3 <sup>1)</sup>, *Information technology – Data centre facilities and infrastructures – Part 2-3: Environmental control*

---

<sup>1)</sup> Draft for formal vote under preparation.

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
-