



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 50174-2017

Code for design of data centers

Issued on: May 4, 2017

Implemented on: January 1, 2018

Issued by: MOHURD

Table of Contents

Foreword	6
1 General provisions	9
2 Terms and symbols	10
3 Rating classification and required features	16
4 Site selection and equipment layout	18
5 Environmental requirement	21
6 Building and structure	22
7 Air conditioning	26
8 Electrical systems	31
9 Electromagnetic shielding	37
10 Network and cabling system	39
11 Intelligent system	42
12 Water supply and drainage	45
Appendix A -- Technical requirements for data center ratings	50
Explanation of wording in this code	59
List of quoted standards	60

1.0.1 To standardize the design of the data center, ensure that the electronic

information system operates safely, stably and reliably, make the technology advanced, economically reasonable, safe and applicable, energy saving and environmental protection, it hereby formulates this code.

1.0.2 This code applies to the design of newly built, rebuilt, expanded data

centers.

1.0.3 The design of the data center shall follow the principle of coordination

between the recent construction scale and the long-term development plan.

1.0.4 In addition to complying with this code, the design of the data center shall

also comply with the relevant national standards.

2.1.1 Data center

A building site that provides an operating environment for a centralized electronic information equipment, which may be one or several buildings, or may be part of a building, including a computer room, an auxiliary area, a support area, an administrative area.

2.1.2 Computer room

A building space which is mainly used for the installation and operation of data processing equipment, including the server room, network room, storage room and other functional areas.

2.1.3 Auxiliary area

A place for installation, commissioning, maintenance, operation monitoring and management of electronic information equipment and software, including wire-incoming room, test equipment rooms, general control centers, fire and security control rooms, unpacking areas, spare parts warehouses, printing rooms, maintenance room and other areas.

2.1.10 Infrastructure

In this code, it refers to facilities that provide operational support for electronic information equipment in data centers.

2.1.11 Electronic information equipment

Equipment for collecting, processing, computing, storing, transmitting, retrieving electronic information, including servers, switches, storage devices, etc.

2.1.15 Electromagnetic interference (EMI)

A decrease in the performance of a device, equipment, or system caused by electromagnetic disturbances.

2.1.16 Electromagnetic shielding

The use of conductive material to reduce the penetration of the alternating electromagnetic field into the designated area.

2.1.17 Electromagnetic shielding enclosure

A building space which is specifically designed to attenuate and isolate the internal or external electric and magnetic fields.

2.1.18 Cut-off waveguide vent

A device which integrates the cut-off waveguide with the vent, which allows air to circulate

and attenuate electromagnetic waves in a certain frequency range.

2.1.19 Modular electromagnetic shielding enclosure

An electromagnetic shielding enclosure which, according to the design requirements, has modular structures and is assembled at construction site by the pre-formed shielding enclosure modular plate, structural member, shielding components, etc.

3.1.1 Data centers shall be divided into three levels. A, B, C. During design, it

shall, based on the usage nature of the data center, the economic or social loss or impact due to the loss of data or the interruption of network, determine the level.

3.1.5 The business recovery data center established in the same city or in

different places should be designed at the same level as the primary data center.

3.1.6 The data center's infrastructure components should be designed

according to the same level of technical requirements; or can be designed according to different levels of technical requirements. When the components are designed according to different levels, the level of the data center shall be determined according to the lowest level of the components.

3.2.1 The infrastructure of the level A data center shall be configured according

to the fault-tolerant system. During the operation of the electronic information system, the infrastructure shall ensure the normal operation of the electronic information system after an accident or maintenance or overhaul of the single-system equipment.

3.2.2 When the level A data center meets the following requirements at the

same time, the power supply of the electronic information equipment can be combined with the power supply mode of the uninterruptible power supply system and the mains power supply system.

3.2.3 When two or more data centers located in different areas are constructed

at the same time and are mutually backup, the data is transmitted in real time, the service meets the continuity requirements, the data center's infrastructure can be configured according to the fault-tolerant system, or redundant system.

4.1.1 Data center location shall be selected according to the following

requirements.

4.1.2 For the data center at a local area in the building, when determining the

location of the computer room, it shall conduct comprehensive analysis and economic comparison for such issues as safety, equipment transportation, pipeline laying, lightning induction, structural load, flooding, installation location of outdoor equipment of the air conditioning system.

4.2.1 The composition of the data center shall be determined according to the

operating characteristics of the system and the specific requirements of the equipment. It should be composed of the computer room, auxiliary area, support area, administrative area, other functional areas.

4.3.1 All types of equipment in the data center shall be arranged according to

the process design. They shall meet the requirements of system operation, operation management, personnel operation and safety, equipment and material transportation, equipment heat dissipation, installation and maintenance.

4.3.2 The mutual standby equipment in the fault-tolerant system shall be

arranged in different physical compartments; the mutual standby pipelines should be laid along different paths.

4.3.3 When the equipment in the cabinet (rack) is the front air-incoming (rear

air-outgoing) cooling mode, meanwhile the cabinet structure does not use closed cold air channel or closed hot air channel, the cabinet (rack) should be arranged face to face, back to back..

4.3.4 The distance between the channel and the equipment in the computer

room shall meet the following requirements.

5.1 Temperature, dew point temperature and airborne particle

concentration

5.1.1 The temperature, dew point temperature and relative humidity in the

computer room and auxiliary area shall meet the requirements for the use of electronic information equipment.

5.1.2 The airborne particle concentration in the computer room shall be tested

under static or dynamic conditions. The number of suspended particles with a particle size