ISO/~~DIS~~ FDIS 16484-2:~~2023(E)~~

ISO/TC 205

~~Date: 2023-11-29~~

Secretariat: ANSI

Date: 2024-10-10

Building automation and control systems (BACS)

Part 2: Hardware

Systèmes d'automatisation et de contrôle des bâtiments (BACS) —

Partie 2: Matériel

FDIS stage

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: + 41 22 749 01 11
~~Email~~E-mail: copyright@iso.org
Website: ~~www.iso.org~~www.iso.org

Published in Switzerland

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at ~~www.iso.org/patents~~www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see ~~www.iso.org/iso/foreword.html~~www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 205, *Building environment design*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 247, *Building Automation, Controls and Building Management,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 16484-2:2004), which has been technically revised.

A list of all parts in the ISO 16484 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Field Code Changed

Building automation and control systems (BACS) — Part 2: Hardware

1 Scope

This document specifies the hardware requirements needed to carry out building automation tasks.

This document is applicable to physical devices, i.e.:

— devices that require human interaction, e.g. such as management stations or operator panels;

— devices for data storage and analysis, e.g. such as edge or cloud servers;

— devices for control applications, e.g. such as automation stations;

— devices for physical quantities acquisition, e.g. such as sensors and actuators.

This document includes provides a generic system topology based on a building network infrastructure, which includes both the devices inside the building envelope and those outside the building envelope.

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.

IEC 60529, *Degrees of protection provided by enclosures (IP code)*

IEC/TR 62443-3-1, *Industrial communication networks — Network and system security — Part 3-1: Security technologies for industrial automation and control systems*

IEC 62443-3-3, *Industrial communication networks — Network and system security — Part 3-3: System security requirements and security levels*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/ https://www.electropedia.org/

3.1 ~~3.1~~
access control system
dedicated security system, that includes the automatic checking of access rights under organizational measures, barrier and door control for buildings and rooms, and registration of events

3.2 ~~3.2~~
alarm
warning given by the system either:

a) indicating the presence of a hazard to property, the environment, or to life

b) a condition detected by a device or controller regarded as abnormal, that implements a rule or logic specifically designed to look for that condition, e.g. "frost alarm"

Note 1 to entry: An alarm can be an annunciation that is either audible, visual or both that alerts an operator to an abnormal condition, which can require corrective action.

~~3.3~~
3.3 ~~analog~~
analogue **input**
~~AI~~
part of the hardware pertaining to a control device for measuring

~~3.4~~
3.4 ~~analog~~
analogue **output**
~~AO~~
part of the hardware pertaining to a control device for positioning

~~3.3~~3.5~~3.5~~
application
set of user information processing requirements or functions that together form a logical unit supporting a process

Note 1 to entry: A ~~BACS~~building automation and control system can support many different applications.

~~3.4~~3.6~~3.6~~
binary input
~~BI~~
hardware pertaining to control devices for state processing

Note 1 to entry: The function is also referred to as binary input state.

~~3.5~~3.7~~3.7~~
binary output
~~BO~~
hardware pertaining to control devices for switching

Note 1 to entry: The function is also referred to as output switching.

3.63.83.8
building
large volume separate fixed structures, i.e. commercial or residential premises, however excluding industrial structures

Note 1 to entry: BACS Building automation and control system can also be employed for other structures, such as houses, tunnels, railways, and ships.

3.73.93.9
building automation and control system
BACS
system, comprising all products, software and engineering services for automatic controls (including interlocks), monitoring, optimization, operation, human intervention, and management to achieve energy-efficient, economical, and safe operation of building services

Note 1 to entry: The trade designation and the industry branch are also referred to as either building automation or building control, or both.

[SOURCE: ISO 52120-1:2021, 3.2, modified — Note 1 has been added.]

Note 2 to entry: Building automation and control system (BACS) is also referred to as building management system (BMS), of which building energy management is part.

Note 3 to entry: The use of the word "control" does not imply that either the system or the device or both are restricted to control functions. Processing of data and information is also possible.

Note 4 to entry: If a building automation and control system, or building energy management system, conforms to the requirements of the ISO 16484 series, it may be designated as a building automation and control system (BACS).

Note 5 to entry: Building services are divided into technical, infrastructural and financial building services and energy management is part of technical building management.

3.83.10 3.10
building management
totality of services involved in the management, operation and monitoring of buildings (including plants and installations)

Note 1 to entry: Building management is divided into technical building management, infrastructural building management and commercial building management and has interfaces to area and facility management.

[SOURCE: ISO 52120-1:2021, 3.4, modified — Note 1 has been added.]

3.93.11 3.11
building network infrastructure
communication infrastructure next to the traditional electrical and sanitary installations in modern buildings

Note 1 to entry: The network is optimally set up for the needs of the building and its use and ensures that cyber security needs are met, taking IEC 62443 series into consideration.

3.103.12 3.12
building services
utilities and installations supplied and distributed within a building, such as electricity, gas, heating, water, waste, and communications

~~3.11~~3.13 ~~3.13~~
cabling
system of cables and connecting hardware that supports the wired connection of the building automation and control system ~~(BACS)~~ and other equipment

~~3.12~~3.14 ~~3.14~~
cloud
servers located in data centres all over the world that are accessed over the internet, as well as the software and databases that run on those servers

Note 1 to entry: By using cloud computing, users and companies do not need to manage physical servers themselves or run software applications on their own machines.

~~3.13~~3.15 ~~3.15~~
communication
act of conveying meaning from one entity or group to another through the use of mutually understood signs, symbols, and semiotic rules

~~3.14~~3.16 ~~3.16~~
communication interface
physical and electrical requirements for the connection of components of communicating products

~~3.15~~3.17 ~~3.17~~
configuration
site-specific information related to physical and functional units, entered during system engineering resulting in the system configuration

Note 1 to entry: Generally, the configuration does not change once the system is functioning.

~~3.16~~3.18 ~~3.18~~
controller
automation station
device for either regulation or logic control, or both~~,~~ as well as the monitoring and processing of information such as temperature, humidity and pressure

Note 1 to entry: The use of the words "automation" and "control" does not imply that the device or system is restricted to control functions only. Monitoring and processing of other information is possible.

Note 2 to entry: In IT, a device that controls the transfer of data between a computer and a peripheral device is also referred to as a controller.

~~3.17~~3.19 ~~3.19~~
counter input
~~CI~~
hardware pertaining to a control device for pulse counting

~~3.18~~3.20 ~~3.20~~
data
representation of information in a formalized manner suitable for human or automatic processing

Note 1 to entry: Processing includes communication and interpretation.