International Standard

ISO 16484-1

Second edition
2024-01

Building automation and control systems (BACS) —

Part 1: Project specification and implementation

Systèmes de gestion technique du bâtiment (SGTB) —
Partie 1: Spécifications et mise en œuvre d'un projet

Reference number
ISO 16484-1:2024(en)

© ISO 2024



COPYRIGHT PROTECTED DOCUMENT

© ISO 2024
All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Abbreviated terms ... **3**
5 Requirements and recommendations ... **4**
5.1 Overview ... 4
5.1.1 General ... 4
5.1.2 Phases of the BACS project ... 4
5.1.3 Documentation ... 5
5.1.4 Training ... 5
5.1.5 Reviewing and improving building performance ... 5
5.1.6 Graphical overview ... 5
5.2 Design phase ... 6
5.2.1 General ... 6
5.2.2 Determination of project requirements ... 7
5.2.3 Project planning and organization ... 11
5.2.4 Design documents and technical specification ... 12
5.2.5 Contract ... 13
5.3 Engineering phase ... 13
5.3.1 General ... 13
5.3.2 Project planning and coordination details ... 13
5.3.3 Detailed hardware and function design ... 13
5.3.4 Approval of design submittals ... 14
5.3.5 Hardware configuration ... 14
5.3.6 Control strategy configuration ... 14
5.3.7 Management and operator function configuration ... 15
5.3.8 System test ... 15
5.4 Installation phase ... 16
5.4.1 General ... 16
5.4.2 Installation ... 16
5.4.3 BACS commissioning ... 17
5.5 Completion phase ... 18
5.5.1 General ... 18
5.5.2 System demonstration ... 19
5.5.3 Operator training ... 19
5.5.4 Handover ... 19
5.5.5 Acceptance ... 20
5.5.6 Finalization ... 20
5.5.7 Completion decision ... 20
5.6 Documentation ... 20
5.6.1 General ... 20
5.6.2 User documents ... 20
5.6.3 Datasheets ... 20
5.6.4 Operation and maintenance documents ... 20
5.7 Training ... 21
6 Review and improvement of building performance ... **21**
Bibliography ... **22**

© ISO 2024 – All rights reserved

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. 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.

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 16484-1:2010), which has been technically revised.

The main changes are as follows:

— updating of normative references;

— updating of terms and definitions;

— mention of cyber security measures and wireless communication.

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.

© ISO 2024 – All rights reserved

Introduction

The ISO 16484 series is aimed at the design of new buildings and the retrofitting of existing buildings for an acceptable indoor environment, practical energy conservation and efficiency.

The ISO 16484 series is applicable to building automation and control systems (BACS), as follows:

— The environmental design for all building types requires complex methods of automation and control. The functional integration of services other than heating, ventilating and air conditioning (HVAC) is a general task for all parties employed to develop an integrated multi-application system. The integration comprises, for example, lighting and electric power distribution control, security control, transportation, maintenance management or facilities management. This system integration allows the user to take advantage of synergies between the different applications. The ISO 16484 series gives guidance to architects, consultants and contractors as well as guidance to users on how to share such resources.

— The innovation cycles between devices, systems and networks vary. In order to make it possible to add and to change existing devices and extend the building automation and control network, several interfaces, both proprietary and standardized, are defined between the BACS network and the other systems. A manufacturer can design a product, both to meet their specific marketing objectives and to give the option to integrate that special device into a multi-application BACS. Interfaces are also defined in appropriate parts of the ISO 16484 series along with the necessary communications protocol and conformance test required to support the interworking of devices.

— A manufacturer, a systems house, or an electrical or mechanical contractor can assemble the implementation of a building automation and control system.

— The application of the ISO 16484 series is not to standardize the hardware and software design or the architecture of a system, but to define the process for the creation of project specifications, where the functionality and the quality of the solution are clearly defined.

The ISO 16484 series is intended for use by those involved in the design, manufacture, engineering, installation, commissioning, operational maintenance and training of BACS when contracted, i.e.

— as a guideline to the terminology of the building automation and control trade. Unambiguous terminology is required for a complete and accurate conveyance of the intent and details of the ISO 16484 series;

— in product development, to avoid unnecessary duplication of function or terminology, but not necessarily placing a restraint on the evolution of new products, systems or applications;

— as a basis for interfacing products and systems. In order to interoperate, the elements of a BACS require a unified data communication protocol and information model;

— as a basis for drawing up a project specification for procurement;

— as a code of practice for expert commissioning;

— by educational establishments wishing to train people in the field of BACS.

© ISO 2024 – All rights reserved

Building automation and control systems (BACS) —

Part 1:
Project specification and implementation

1 Scope

This document specifies guiding principles for project design and implementation and for the integration of other systems into the building automation and control systems (BACS).

This document specifies the phases required for the BACS project, including

— design (determination of project requirements and production of design documents including technical specifications),

— engineering (detailed function and hardware design),

— installation (installing and commissioning of the BACS), and

— completion (handover, acceptance and project finalization).

This document also specifies the requirements for as-built documentation and training.

This document is not applicable to operation and maintenance, nor is it applicable to retro or continuous commissioning, including a commissioning authority.

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.

ISO/IEC 14763-2, *Information technology — Implementation and operation of customer premises cabling — Part 2: Planning and installation*

ISO 16484-2, *Building automation and control systems (BACS) — Part 2: Hardware*

ISO 16484-5, *Building automation and control systems (BACS) — Part 5: Data communication protocol*

ISO 16484-6, *Building automation and control systems (BACS) — Part 6: Data communication conformance testing*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16484-2, ISO 16484-5, ISO 16484-6 and the following 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

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

© ISO 2024 – All rights reserved