BS EN ISO 16484-5:2017+A1:2020

BSI Standards Publication

Building automation and control systems (BACS)

Part 5: Data communication protocol

National foreword

This British Standard is the UK implementation of EN ISO 16484-5:2017+A1:2020. It is identical to ISO 16484-5:2017, incorporating amendment 1:2020. It supersedes BS EN ISO 16484-5:2017, which is withdrawn.

The text of ISO amendment 1:2020 has been provided in its entirety at the beginning of this document. BSI's policy of providing consolidated content remains unchanged; however, in the interest of expediency, in this instance BSI have chosen to collate the relevant content at the beginning of this document.

The UK participation in its preparation was entrusted to Technical Committee RHE/2, Ventilation for buildings, heating and hot water services.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date	Text affected
31 May 2020	Implementation of ISO amendment 1:2020 with CEN endorsement A1:2020

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 16484-5:2017+A1

May 2020

ICS 35.240.67; 91.040.01

English Version

Building automation and control systems (BACS) - Part 5: Data communication protocol (ISO 16484-5:2017)

Systèmes d'automatisation et de gestion technique du bâtiment - Partie 5: Protocole de communication de données (ISO 16484-5:2017)

Systeme der Gebäudeautomation - Teil 5: Datenkommunikationsprotokoll (ISO 16484-5:2017)

This European Standard was approved by CEN on 18 July 2017.

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European foreword

This document (EN ISO 16484-5:2017) has been prepared by Technical Committee ISO/TC 205 "Building environment design" in collaboration with Technical Committee CEN/TC 247 “Building Automation, Controls and Building Management” the secretariat of which is held by SNV.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2018 and conflicting national standards shall be withdrawn at the latest by January 2018.

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Endorsement notice

The text of ISO 16484-5:2017 has been approved by CEN as EN ISO 16484-5:2017 without any modification.

Foreword to amendment A1

This document (EN ISO 16484-5:2017/A1:2020) has been prepared by Technical Committee ISO/TC 205 "Building environment design" in collaboration with Technical Committee CEN/TC 247 “Building Automation, Controls and Building Management” the secretariat of which is held by SNV.

This Amendment to the European Standard EN ISO 16484-5:2017 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by November 2020.

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Endorsement notice

The text of ISO 16484-5:2017/Amd 1:2020 has been approved by CEN as EN ISO 16484-5:2017/A1:2020 without any modification.

BS EN ISO 16484-5:2017+A1:2020

INTERNATIONAL STANDARD

ISO 16484-5

Sixth edition
2017-05

AMENDMENT 1
2020-04

Building automation and control systems (BACS) —

Part 5: Data communication protocol

AMENDMENT 1

Systèmes d'automatisation et de gestion technique du bâtiment —
Partie 5: Protocole de communication de données
AMENDEMENT 1

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Foreword

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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 documents should be noted. International Standards are drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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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 environmental 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).

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.

(This foreword is not part of the standard. It is merely informative and does not contain requirements necessary for conformance to the standard.)

FOREWORD

The purpose of this addendum is to add several independent substantive changes to the BACnet standard. The changes are summarized below.

135-2016bd-1. Add Staging Object Type.
135-2016be-1. Add Lighting BIBBS and Device Profiles.
135-2016bi -1. Add Audit Reporting.
135-2016bi -2. Change DeviceCommunicaitonControlService for Audit Reporting.
135-2016bi -3. Modify Logging Objects to Allow for Extremely Large Logs.
135-2016bk -1. Expand the reserved range of BACnetPropertyIdentifier.
135-2016bl - 1. Clarify Result(-) response for failed WritePropertyMultiple requests.
135-2016bl - 2. Clarify ReadPropertyMultiple response on OPTIONAL when empty.
135-2016bl - 3. Clarify Out_Of_Service.
135-2016bm-1. Reduce allowed range for Usage Timeout.
135-2016bm-2. Specify design choices for MS/TP devices.
125-2016bm-3. Handle unwanted MS/TP frames in IDLE state.
135-2016bn-1. Make SCHED BIBBs consistent on supported datatypes, and add BOOLEAN.
135-2016bn-2. Clarify COV and COVP related BIBBs.
135-2016bn-3. Clock is required for support of AE-ACK-A.
135-2016bp-1. Make rules for POST consistent with rules for PUT.
135-2016bp-2. Make 'type' consistent at all levels and introduce 'effectiveType'.
135-2016bp-3. Fully specify the behavior of "includes".
135-2016bp-4. Remove the path syntax from the 'select' query parameter.
135-2016bp-5. Resolve conflicting statements about configuring external authorization servers.
135-2016bp-6. Remove incorrect table for callback formats.
135-2016bp-7. Allow plain text POSTs for primitive data.
135-2016bp-8. Allow extended error numbers.
135-2016bp-9. Add new error numbers.
135-2016bp-10. Add formal definition for JSON equivalent to XML's <CSML>.
135-2016bp-11. Specify 'name' safety check for setting data.
135-2016bp-12. Specify how to evaluate relative paths for collections of links.
135-2016bp-13. Allow proprietary categories for the 'metadata' query.
135-2016bq-1. Fix the Absentee_Limit property of the Access Credential object type.
135-2016bq-2. Ensure that the denied or granted access event is generated last.

In the following document, language to be added to existing clauses of EN ISO 16484-5 and Addenda is indicated through the use of *italics*, while deletions are indicated by ~~strikethrough~~. Where entirely new subclauses are proposed to be added, plain type is used throughout.

The use of placeholders like X, Y, Z, X1, X2, etc., should not be interpreted as literal values of the final standard. These placeholders will be assigned actual numbers/letters only with incorporation of this addendum into the standard for republication.

Building automation and control systems (BACS) —

Part 5:
Data communication protocol

AMENDMENT 1

135-2016*bd*-1 Add a Staging Object Type

Rationale

The Staging object type provides a way for BACnet devices to map analog values onto multiple Binary Value, Binary Output, or Binary Lighting Output objects.

A common use case is in lighting applications, where a level, identified by a numeric value, sets the appropriate values of multiple binary outputs (on or off).

Support of this new object type is excluded from all data sharing BIBBs for life safety and access control.

[Insert new **Clause 12.X**]

12.X Staging Object Type

The Staging object type defines a standardized object whose properties represent the externally visible characteristics of a staged value. A "Staging" maps a numeric value onto multiple discrete ranges that define individual “stages” ($\mathbf{N_{stages}}$). Each Staging object is associated with a collection of references to binary valued objects ($\mathbf{N_{references}}$). Each Staging object may therefore control Binary Output, Binary Value, or Binary Lighting Output objects. Every stage specifies an arbitrary combination of ACTIVE/INACTIVE values to be written to these referenced objects. Stages are defined by a limit, a deadband, and the collection of values for the referenced objects.

Figure 12-X shows a typical Staging object application with four stages ($\mathbf{N_{stages}}$ =4) and two referenced binary objects ($\mathbf{N_{references}}$ = 2).

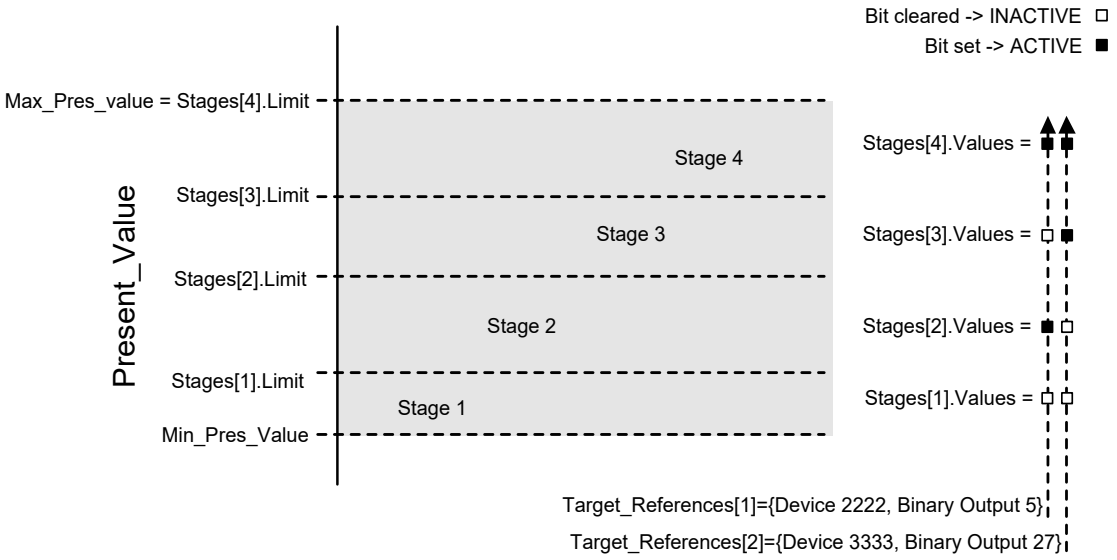

Figure 12-X. Typical Staging Application ($\mathbf{N_{stages}}$ =4, $\mathbf{N_{references}}$ = 2)

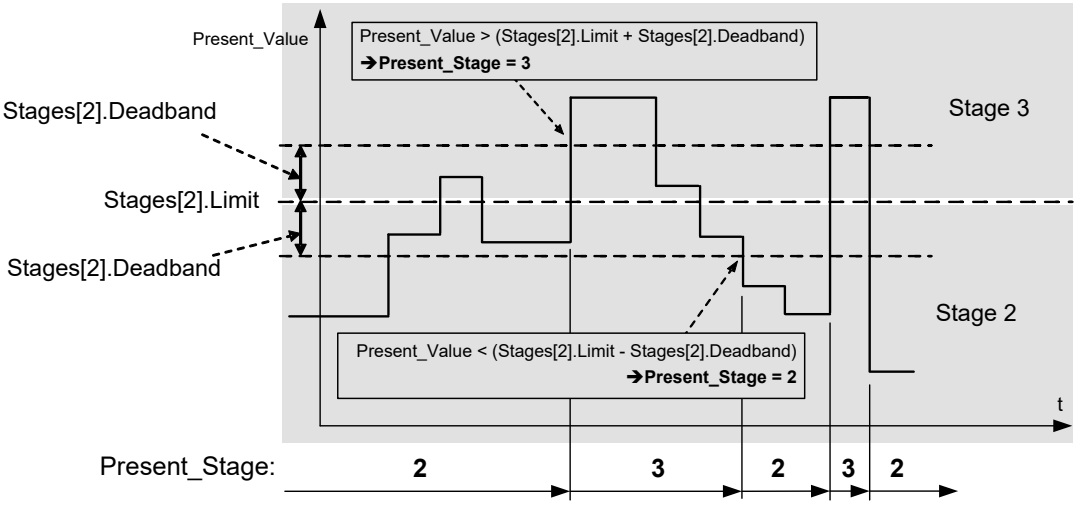

Figure 12-X2. Stage Limits incorporate hysteresis through the use of a Deadband around each Limit

Stages are defined by limits with a symmetrical deadband. A deadband greater than zero is used to prevent unwanted oscillation when the Present_Value is close to a limit. As the Present_Value increases, if it rises above the limit for a stage plus the deadband for that stage, the Present_Stage transitions to that stage+1. Similarly, as the Present_Value decreases, it must fall below the limit for a stage minus the deadband for that stage before Present_Stage transitions to that stage. The deadband is allowed to be zero (0.0).

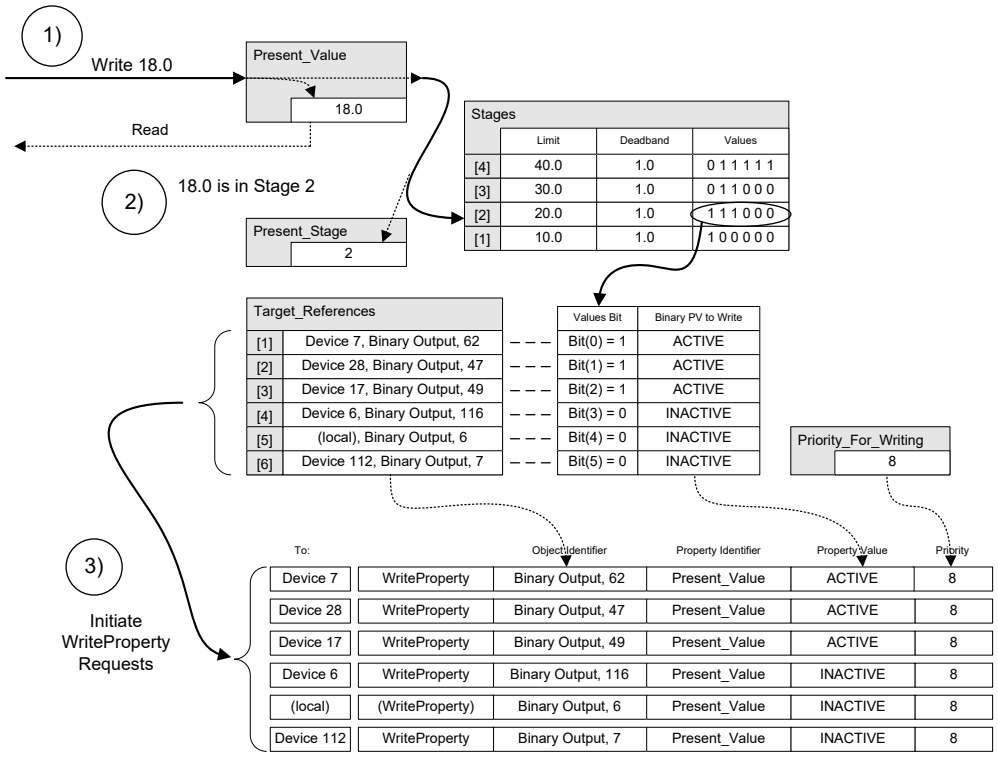

Figure 12-X3. Pipeline of operations when Present_Value is written

Staging objects may optionally support intrinsic reporting to facilitate the reporting of fault conditions. Staging objects that support intrinsic reporting shall apply the NONE event algorithm.

The object and its properties are summarized in Table 12-X and described in detail in this clause.