SLOVENSKI STANDARD

SIST EN ISO 16484-6:2009

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Avtomatizacija stavb in sistemi za regulacijo - 6. del: Preskušanje skladnosti protokolov za izmenjavo podatkov (ISO 16484-6:2009)

Building automation and control systems (BACS) - Part 6: Data communication conformance testing (ISO 16484-6:2009)

Systeme der Gebäudeautomation - Teil 6: Datenübertragungsprotokoll - Konformitätsprüfung (ISO 16484-6:2009)

Systèmes d'automatisation et de gestion technique du bâtiment - Partie 6: Essais de conformité de la communication de données (ISO 16484-6:2009)

Ta slovenski standard je istoveten z: EN ISO 16484-6:2009

ICS:

35.240.99	Uporabniġke reġitve IT na drugih podroļ jih	IT applications in other fields
97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

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EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Building automation and control systems (BACS) - Part 6: Data communication conformance testing (ISO 16484-6:2009)

Systèmes d'automatisation et de gestion technique du bâtiment - Partie 6: Essais de conformité de la communication de données (ISO 16484-6:2009)

Systeme der Gebäudeautomation - Teil 6: Datenübertragungsprotokoll - Konformitätsprüfung (ISO 16484-6:2009)

This European Standard was approved by CEN on 21 February 2009.

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Foreword

This document (EN ISO 16484-6:2009) 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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 16484-6:2005.

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Endorsement notice

The text of ISO 16484-6:2009 has been approved by CEN as a EN ISO 16484-6:2009 without any modification.

INTERNATIONAL STANDARD

ISO 16484-6

Second edition
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Building automation and control systems (BACS) —

Part 6: Data communication conformance testing

Systèmes d'automatisation et de gestion technique du bâtiment —

Partie 6: Essais de conformité de la communication de données

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16484-6 was prepared by Technical Committee ISO/TC 205, *Building environment design*.

This second edition cancels and replaces the first edition (ISO 16484-6:2005), of which it constitutes a minor revision.

ISO 16484 consists of the following parts, under the general title *Building automation and control systems (BACS)*:

— *Part 2: Hardware*

— *Part 3: Functions*

— *Part 5: Data communication protocol*

— *Part 6: Data communication conformance testing*

A Part 1, dealing with project implementation, and a Part 4, dealing with applications, are under development.

Building automation and control systems (BACS) —

Part 6:
Data communication conformance testing

1 Scope

This part of ISO 16484 defines a standard method for verifying that an implementation of the BACnet protocol provides each capability claimed in its Protocol Implementation Conformance Statement (PICS) in conformance with the BACnet standard.

This part of ISO 16484 provides a comprehensive set of procedures for verifying the correct implementation of each capability claimed on a BACnet PICS, including

a) support of each claimed BACnet service, either as an initiator, executor, or both,

b) support of each claimed BACnet object-type, including both required properties and each claimed optional property,

c) support of the BACnet network layer protocol,

d) support of each claimed data link option, and

e) support of all claimed special functionality.

2 Relationship between this part of ISO 16484 and ANSI/ASHRE 135.1-2007

This part of ISO 16484 comprises, from Clause 4 onwards, the US standard ANSI/ASHRE 135.1-2007, *Method of Test for Conformance to BACnet*, published by the American National Standards Institute and the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

3 Terms, definitions and abbreviated terms

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

3.1
local network
network to which a BACnet device is directly connected

3.2
remote network
network that is accessible from a BACnet device only by passing through one or more routers

3.3
test database
database of BACnet functionality and objects created by reading the contents of an EPICS

BNF	Backus-Naur Form syntax
EPICS	electronic protocol implementation conformance statement
IUT	implementation under test
TCSL	testing and conformance scripting language
TD	testing device
TPI	text protocol information

4 ELECTRONIC PICS FILE FORMAT

An electronic protocol implementation conformance statement (EPICS) file contains a BACnet protocol implementation conformance statement expressed in a standardized text form. EPICS files are machine and human readable representations of the implementation of BACnet objects and services within a given device. EPICS files shall use the extension ".TPI" (text protocol information) and contain normal editable text lines consisting of text character codes ending in carriage return/linefeed pairs (X'0D', X'0A').

EPICS files are used by software testing tools to conduct and interpret the results of tests defined in this standard. An EPICS file shall accompany any device tested according to the procedures of this standard.

4.1 Character Encoding

BACnet provides for a variety of possible character encodings. The character encodings in BACnet fall into three groups: octet streams, double octet streams and quad octet streams. Octet streams represent characters as single octet values. In some cases, such as Microsoft DBCS and JIS C 6226, certain octet values signal that the second octet which follows should be viewed along with the leading octet as a single value, thus extending the range to greater than 256 possible characters. In contrast, double octet streams view pairs of octets as representing single characters. The ISO 10646 UCS-2 encoding is an example. The first or leading octet of the pair is the most significant part of the value. Quad octet streams, such as ISO 10646 UCS-4, treat tuples of four octets at a time as single characters with the first or leading octet being the most significant.

To accommodate the various encodings that may be used with BACnet device descriptions, EPICS files begin with a header that serves both to identify the file as an EPICS file, and to identify the particular encoding used. The header begins with the string "PICS #" where # is replaced by a numeral representing the character set as shown in Table 4-1.

Table 4-1. Character Set Codes

code	character set
0	ANSI X3.4
1	Microsoft DBCS
2	JIS C 6226
3	ISO 10646 (UCS-4)
4	ISO 10646 (UCS-2)
5	ISO 8859-1

An octet stream format can be recognized by examining the first eight octets of the EPICS file. Using ANSI X3.4 encoding as an example these eight octets will contain: X'50' X'49' X'43' X'53' X'20' X'30' X'0D' X'0A'. This represents the text "PICS 0" followed by carriage return and linefeed.

A double octet stream format can be recognized by examining the first 16 octets of the EPICS file. Using ISO 10646 UCS-2 encoding as an example these 16 octets will contain:

X'00' X'50' X'00' X'49' X'00' X'43' X'00' X'53'
X'00' X'20' X'00' X'34' X'00' X'0D' X'00' X'0A'

This represents the text "PICS 4" followed by carriage return and linefeed.

A quad octet stream format can be recognized by examining the first 32 octets of the EPICS file. Using ISO 10646 UCS-4 as an example these 32 octets will contain:

X'00' X'00' X'00' X'50' X'00' X'00' X'00' X'49'
X'00' X'00' X'00' X'43' X'00' X'00' X'00' X'53'
X'00' X'00' X'00' X'20' X'00' X'00' X'00' X'33'
X'00' X'00' X'00' X'0D' X'00' X'00' X'00' X'0A'

This represents the text "PICS 3" followed by carriage return and linefeed.