

BSR/ASHRAE Addendum *k*  
to ANSI/ASHRAE Standard 135-2004

# Public Review Draft

ASHRAE® Standard

## Proposed Addendum *k* to Standard 135-2004, *BACnet*®—*A* *Data Communication Protocol* *for Building Automation and* *Control Networks*

First Public Review (November 2007)  
(Draft Shows Proposed Changes  
to Current Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed addendum, use the comment form and instructions provided with this draft. The draft is subject to modification until it is approved for publication by the responsible project committee, the ASHRAE Standards Committee, and the Board of Directors. Then it will be submitted to the American National Standards Institute Board of Standards Review (BSR) for approval. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE web site) remains in effect. The current edition of any standard may be purchased from the ASHRAE Bookstore @ <http://www.ashrae.org> or by calling 404-636-8400 or 1-800-527-4723 (for orders in the U.S. or Canada).

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**[This foreword and the “rationale” on the following page are not part of this standard. They are merely informative and do not contain requirements necessary for conformance to the standard.]**

## **FOREWORD**

The purpose of this addendum is to present a proposed change for public review. These modifications are the result of change proposals made pursuant to the ASHRAE continuous maintenance procedures and of deliberations within Standing Standard Project Committee 135. The proposed changes are summarized below.

### **135-2004*k*-1. Add support for one Character Encoding Form at a time, p. 1.**

In the following document, language to be added to existing clauses of ANSI/ASHRAE 135-2004 and Addenda is indicated through the use of *italics*, while deletions are indicated by ~~strike through~~. Where entirely new subclauses are proposed to be added, plain type is used throughout. Only this new and deleted text is open to comment as this time. All other material in this addendum is provided for context only and is not open for public review comment except as it relates to the proposed changes.

<p>Note to Reviewers: The draft Addendum <i>k</i> that was posted for public review from September 14 to October 29 was posted in error; it was not the correct draft. It still included the DCBS character set, which should have been removed (as the committee voted to do). This draft, which is being posted for an additional 45 days, is the correct draft for Addendum <i>k</i>. Among other changes, it removes the DCBS character set.</p>
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**135-2004k-1. Add support for one Character Encoding Form at a time.**

**Rationale**  
 "Support" for character sets has not been well defined but is needed for interoperability.  
 In addition, the standard is updated to reflect the fact that the Japanese Industrial Standards Committee has changed the name of "JIS C 6226" to "JIS X 0208".

**Addendum 135-2004k-1**

[Add new Clause **3.2.10**, p. 3, and renumber subsequent clauses.]

**3.2.10 character set:** a mapping of an Abstract Character Repertoire through a Character Encoding Scheme (according to UNICODE Technical Report# 17-5) to a set of sequences of code units. A code unit is an integer occupying a specified binary width in a computer architecture.

[Add to **Table 12-13**, p. 178.]

**Table 12-13. Properties of the Device Object Type**

Property Identifier	Property Datatype	Conformance Code
....	....	....
Slave_Address_Binding	List of BACnetAddressBinding	O <sup>12</sup>
Profile_Name	CharacterString	O
Character_Set	Unsigned8	R
Strict_Character_Mode	BOOLEAN	R

[Add new Clause **12.11.X**, p. 184.]

**12.11.X Character\_Set**

This property, of type Unsigned8, indicates either the single character set supported by the device when Strict\_Character\_Mode is TRUE, or the preferred character set when Strict\_Character\_Mode is FALSE. Detailed guidelines on interoperable character set usage may be found in Clause 22.2.1.6. To indicate the selected character set, the value of this property shall equal the value of the initial octet of a character string that is encoded in the selected character set. The allowed values for this initial octet are defined in Clause 20.2.9. This property is expected to be set during device commissioning and is not expected to change during the normal course of operation.

[Add new Clause **12.11.Y**, p. 184.]

**12.11.Y Strict\_Character\_Mode**

This property, of type BOOLEAN, defines whether strict character mode is active or not. When Strict\_Character\_Mode is TRUE, attempting to write a character string value using a character set other than the one specified by the Character\_Set property shall cause a 'Result(-)' to be returned specifying an 'Error Class' of PROPERTY and an 'Error Code' of CHARACTER\_SET\_NOT\_SUPPORTED. When Strict\_Character\_Mode is FALSE, writing a character string using a character set other than the one specified by the Character\_Set property may be accepted. Detailed guidelines on interoperable character set usage may be found in Clause 22.2.1.6. This property is expected to be set during device commissioning and is not expected to change during the normal course of operation.

A value of TRUE for this property only indicates that new string values cannot be written using a character set that is different from that specified by the Character\_Set property. It does not indicate that all character strings in a device are encoded using the character set specified by the Character\_Set property because some character strings may be read-only or may have been written when this property was FALSE or when the Character\_Set property had a different value.

[Change Clause **20.2.9**, p. 381.]

**20.2.9 Encoding of a Character String Value**

The encoding of a character string value shall be primitive.

The encoding shall contain an initial contents octet, and zero, one, or more additional contents octets equal in value to the octets in the data value, in the order in which they appear in the data value, i.e., most significant octet first, and with the most significant bit of an octet of the data value aligned with the most significant bit of an octet of the contents octets.

The initial octet shall specify the character set with the following encoding:

- X'00' ANSI X3.4
- X'01' ~~IBM<sup>™</sup>/Microsoft<sup>™</sup> DBCS~~ *this value was removed in version 1 revision x*
- X'02' JIS C 6226 X 0208
- X'03' ISO 10646 (UCS-4)
- X'04' ISO 10646 (UCS-2)
- X'05' ISO 8859-1

Other values of the initial octet are reserved by ASHRAE.

...

[Change **BACnetPropertyIdentifier** production in **21**, pp. 423-428]

**BACnetPropertyIdentifier** ::= ENUMERATED {

- ...
- change-of-state-time (16),
- character-set* (312),
- see notification-class (17),
- ...
- stop-when-full (144),
- strict-character-mode* (313),
- system-status (112),
- ...
- *see character-set* (312),
- *see strict-character-mode* (313)
- }

[Add new Clause **22.2.1.6** , page 436]

**22.2.1.6 Character Set Support**

When sending character strings or processing writes to character string properties, i.e., acting in the server role, BACnet devices shall support character sets as follows:

If the *Strict\_Character\_Mode* property has the value TRUE, then the following rules shall apply:

- 1) There shall be one character set supported at a time. The currently supported character set shall be indicated in the Device object property *Character\_Set*. If the *Character\_Set* property is writable, then the character set supported may be selected by writing to the *Character\_Set* property. If the *Character\_Set* property is not writable, then the means by which a character set is selected is a local matter. The supported character set shall be chosen from the list of character sets supported by the device, which may be restricted to one or more the character sets defined in Clause 20.2.9, or it may comprise all character sets defined in Clause 20.2.9. The handling of existing character string properties in a BACnet device when the value of the *Character\_Set* property is changed is a local matter.
- 2) Attempts to write to the device with a character set other than the one indicated by the *Character\_Set* property

shall cause a 'Result(-)' to be returned specifying an 'Error Class' of PROPERTY and an 'Error Code' of CHARACTER\_SET\_NOT\_SUPPORTED.

If the Strict\_Character\_Mode property has the value FALSE, then the following rules shall apply:

- 1) One or more of the character sets may be supported. Devices may choose to use a single character set or a mixture of character sets..
- 2) The preferred character set shall be indicated in the Device object property Character\_Set; however, the use of this set is not enforced and character strings encoded using different character sets may be accepted.

As long as the Character\_Set property has not changed, if a character string is written, then that character string, when read, shall be returned encoded in the same character set with which it was written. The handling of existing character strings when the value of the Character\_Set property is changed is a local matter.

For a client receiving and processing character strings, character set support is a local matter. A client may concurrently support multiple character sets in both sending and receiving modes.

[Add the following new reference in Clause 25, pp. 448-449.]  
[Note: the lines shown here are to be added with italics as shown.]

**25 REFERENCES**

...  
UNICODE Technical Report# 17-5: *Character Encoding Model*. The Unicode Consortium.

**Sources for Reference Material**

...  
The Unicode Consortium. P.O. Box 391476, Mountain View, CA 94039-1476, USA.

[Change Annex A, p. 451, as follows.]

...  
**Character Sets Supported**

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> ANSI X3.4         | <input checked="" type="checkbox"/> <del>IBM™</del> <del>Microsoft™</del> <del>DBCS</del> | <input type="checkbox"/> ISO 8859-1                   |
| <input type="checkbox"/> ISO 10646 (UCS-2) | <input type="checkbox"/> ISO 10646 (UCS-4)  | <input type="checkbox"/> JIS <del>C-6226</del> X 0208 |

[Change Annex C, p.458, as follows.]

```

DEVICE ::= SEQUENCE {
  ...
  max-segments-accepted [167] Unsigned,
  profile-name           [168] CharacterString OPTIONALOPTIONAL,
  character-set          [312] Unsigned8,
  strict-character-mode  [313] BOOLEAN
}

```

[Change **Annex D.11**, pp. 471-473.]

### **D.11 Example of a Device Object**

Example 1: A "sophisticated" BACnet device.

...

Property: Active\_COV\_Subscriptions = (((0, (Device, Instance 12)), 300),  
((Analog Input, 1),Present\_Value),TRUE,100,1.0),  
(((0, (Device, Instance 40)), 600),  
((Analog Input, 1),Present\_Value),TRUE,3,1.5))

Property: Character\_Set = 5  
Property: Strict\_Character\_Mode = TRUE

Example 2: A "simple" BACnet device.

...

Property: Database\_Revision = 69  
Property: Character\_Set = 0  
Property: Strict\_Character\_Mode = FALSE