ADDENDA

ANSI/ASHRAE Addendum p to
ANSI/ASHRAE Standard 135.1-2013

Method of Test for Conformance to BACnet®

Approved by ASHRAE on May 31, 2018, and by the American National Standards Institute on June 1, 2018.

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a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard, or
d. permission to reprint portions of the Standard.

[This foreword and the "rationales" on the following pages 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 changes to ANSI/ASHRAE 135.1-2013 and Addenda. 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 changes are summarized below.

135.1-2013p-1. Fix the EPICS Consistency Tests, p. 2
135.1-2013p-2. Remove EPICS Database Templates, p. 4
135.1-2013p-3. Add Test for Use of Error Code BUSY with Command Object, p. 5

In the following document, language to be added to existing clauses is indicated through the use of italics, while deletions are indicated by ~~strikethrough~~. Where entirely new subclauses are added, plain type is used throughout. All other material in this addendum is provided for context only.

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 after incorporation of this addendum into the standard for republication.

135.1-2013*p*-1. Fix the EPICS Consistency Tests.

Rationale

New requirements are added to the EPICS consistency tests:
- verify the Property_List property
- verify the Max_Segments_Accepted value
- verify the declaration of temporarily existent File objects
- verify the declaration of conditionally writable properties

In addition, the naming of the Protocol_Services_Supported and Protocol_Object_Types_Supported properties is fixed.

[Change **Clause 5**, p. 23]

5. EPICS CONSISTENCY TESTS

These tests are static tests of the EPICS and do not involve interrogating the IUT. There are no Test Configuration or Test Step sections with TCSL in these tests because the tests are static tests of the EPICS and not tests of the IUT itself.

Each implementation shall be tested to ensure consistency among interrelated data elements. These tests shall include:

(a) All object types required by the specified BIBBs shall be indicated as supported in the Standard Object Types Supported section of the EPICS.

…

(c) The ~~Object_Types_Supported~~ *Protocol_Object_Types_Supported* property of the Device object in the test database shall indicate support for each object type required by the supported BIBBs.

…

(e) The ~~Application_Services_Supported~~ *Protocol_Services_Supported* property of the Device object in the test database shall indicate support for each application service for which the supported BIBBs requires support for execution of the service.

(f) The object types listed in the Standard Object Types Supported section of the EPICS shall have a one-to-one correspondence with object types listed in the ~~Object_Types_Supported~~ *Protocol_Object_Types_Supported* property of the Device object contained in the test database. *An object type is supported if it can be made to exist in the IUT`s database.*

(g) For each object type listed in the Standard Object Types Supported ~~section of the EPICS~~ there s*hall be at least one object of* that type in the test database. *It is permissible for there to be no instance of the File object type if File objects are dynamically creatable and come into existence only temporarily during Backup and Restore.*

…

(i) For each object included in the test database, all required properties for that object as defined in Clause 12 of BACnet shall be present. *Standard properties which are not defined for the implemented Protocol_Revision shall not be present.* In addition, if any of the properties supported for an object require the conditional presence of other properties, their presence shall be verified.

(j) For each property that is required to be writable, *or conditionally writable,* that property shall be marked as writable, *or conditionally writable,* in the EPICS.

…

(m) For each object included in the test database, any properties that are deprecated or removed shall not appear after the Protocol_Revision in which the property was deprecated or removed.

(n) If the Protocol_Revision property is present in the Device object and its value is greater than or equal to 14, for each object included in the test database, the Property_List property shall have one entry for each property present, including non-standard properties, but excluding Object_Type, Object_Identifier, Object_Name, and Property_List.

(o) If the Segmentation_Supported property in the Device object is SEGMENTED_BOTH or SEGMENTED_RECEIVE, then the value of the Max_Segments_Accepted property of the Device object shall be greater than 1.

135.1-2013*p*-2. Remove EPICS Database Templates.

Rationale

Remove EPICS database templates to reduce maintenance issues.

[Modify **Clause 4.5.10**, p. 9]

…

Properties in the test database that are conditionally writable shall have a "C" following the property value, as shown in the example below. It is recommended that the governing mechanism be identified in a comment:

```
{
   object-identifier: (analog-input, 6)
   object-name: "❑"
   object-type: analog-input
   present-value: 12.3 C        -- Writable when Out_Of_Service is TRUE
   other properties...
}
```

~~The following sections show templates for each of the standard object types. To improve readability, the carriage return/linefeed pairs are not explicitly shown in the examples.~~

[Delete all **Clauses 4.5.10.1 thru 4.5.10.28**, p. 9]

135.1-2013*p*-3. Add Test for Use of Error Code BUSY with Command Object.

Rationale

Add a test to ensure writes to the Present_Value of a Command object results in an error consisting of an error class of OBJECT and an error code of BUSY. This requirement was added with Addendum 135-2008h, Section 1 (i.e., protocol revision 10).

[Change **Clause 7.3.2.9.7**, p. 71]

7.3.2.9.7 Write While In_Process is TRUE Test

Dependencies: WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: 12.10.8 and 12.10.9.

Purpose: To verify that an action list continues to completion if a second action list is commanded while In_Process is TRUE and that the second action list is not executed.

Test Concept: The IUT is configured with two action lists that include a sequence of externally visible outputs with post delays for each action. The TD triggers the first action list. The external outputs are observed in order to trigger the second action list during the post delay of the first list. The TD triggers the second action list. The external outputs are observed to verify that the second action list is not executed. If the IUT does not support Post Delay, then this test shall be omitted. If the IUT does not support action list configuration, then this test shall be omitted.

Configuration Requirements: The IUT shall be configured with a Command object O having two distinct action lists, X and Y, that include writing to a sequence of externally visible outputs. There shall be a post delay between writes to the externally visible outputs that is long enough for the tester to observe the delay (This ensures In_Process remains TRUE long enough to command the second action list).

Test Steps:

1. WRITE Present_Value = X
~~2. RECEIVE Simple-ACK-PDU~~
~~3. WRITE Present_Value = Y~~
2. TRANSMIT WriteProperty-Request,
'Object Identifier' = O,
'Property Identifier' = Present_Value,
'Property Value' = Y
~~4~~ *3. IF (Protocol_Revision is present and Protocol_Revision ≥ 10) THEN*
RECEIVE BACnet-Error-PDU,
Error Class = OBJECT,
Error Code = BUSY
ELSE
(RECEIVE BACnet-Error-PDU,
Error Class = OBJECT,
Error Code = BUSY) |
*(*RECEIVE BACnet-Error-PDU,
Error Class = SERVICES,
Error Code = SERVICE_REQUEST_DENIED | OTHER*)*
~~5~~ *4.* CHECK (that the externally visible actions of X ~~took~~ *take* place)
~~6~~ *5.* CHECK (that the externally visible actions of Y ~~did~~ *do* not take place)
~~7~~ *6.* VERIFY In_Process = FALSE,
~~8~~ *7.* VERIFY All_Writes_Successful = TRUE

[Add to **HISTORY OF REVISIONS**, p. 662]

HISTORY OF REVISIONS

Summary of Changes to the Standard
. . .
ANSI/ASHRAE Standard 135.1-2013 A consolidated version of the standard that incorporates Addenda *j, k, l, m and n* to ANSI/ASHRAE 135.1-2011 and all of the known errata.
Addendum *p* to ANSI/ASHRAE 135.1-2013 Approved by ASHRAE on May 31, 2018, and by the American National Standards Institute on June 1, 2018. 1. Fix the EPICS Consistency Tests 2. Remove EPICS Database Templates 3. Add Test for Use of Error Code BUSY with Command Object

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