



BSR/ASHRAE Addendum c
to ANSI/ASHRAE Standard 135.1-2003

Public Review Draft

ASHRAE® Standard

Proposed Addendum c to Standard 135.1-2003, *Method of Test for Conformance to BACnet®*

First Public Review (March 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 Board of Directors and ANSI. 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 “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 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.

SSPC 135 wishes to recognize the efforts of the following people in developing this addendum: **tbd**.

- 135.1-2003c-1. Update references to refer to 135-2004, p. 1.
- 135.1-2003c-2. Add new object types from 135-2004, p. 22.
- 135.1-2003c-3. Omit certain tests based on Protocol_Revision, p. 26.
- 135.1-2003c-4. Exception schedule priority requirements, p. 29.
- 135.1-2003c-5. Minor corrections, p. 30.

In the following document, language to be added to existing clauses of ANSI/ASHRAE 135.1-2003 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.

135.1-2003c-1. Update references to correspond to 135-2004

Rationale

135.1-2003 makes references to 135-2001 that need to be updated to refer to 135-2004.

Addendum 135.1-2003c-1

[Change 3, p. 1]

3. DEFINITIONS

All definitions from ANSI/ASHRAE Standard ~~135-2001~~ *135-2004* also apply to this addendum.

[Change 6.2.8, p. 25]

6.2.8 WAIT Statement

The WAIT statement is used to pause the execution of the TD for some specified amount of time.

<wait statement> ::= WAIT <timer value>

Test Steps: The TD shall pause the amount of time specified by the <timer value> before proceeding to the next test step. The <timer value> shall be one of the timers specified in 6.3 of this standard, in ANSI/ASHRAE ~~135-2001~~, *135-2004*, or as otherwise specified.

[Change 6.4, p. 27]

6.4 BACnet References

All references to BACnet clauses in this standard refer to ANSI/ASHRAE ~~135-2001~~, *135-2004*, except when otherwise noted ("*BACnet-2001*" refers to ANSI/ASHRAE *135-2001*).

[Change 7.3.1.1, p. 29]

7.3.1.1 Out_Of_Service, Status_Flags, and Reliability Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: 12.1.7, 12.1.9, 12.1.10, 12.2.7, 12.2.9, 12.2.10, ~~12.3.6, 12.3.8, 12.3.9, 12.3.7, 12.3.9, 12.3.10, 12.4.6, 12.4.8, 12.4.9, 12.5.7, 12.5.9, 12.5.10, 12.6.7, 12.6.9, 12.6.10, 12.7.6, 12.7.8, 12.7.9, 12.7.7, 12.7.9, 12.7.10, 12.8.6, 12.8.8, 12.8.9, 12.14.8, 12.14.10, 12.14.11, 12.15.8, 12.15.10, 12.15.11, 12.16.6, 12.16.8, 12.16.9, 12.16.8, 12.16.10, 12.16.11, 12.17.7, 12.17.9, 12.17.10, 12.17.6, 12.17.8, 12.17.9, 12.18.7, 12.18.9, 12.18.10, 12.19.6, 12.19.8, and 12.19.9, 12.19.7, 12.19.9, 12.19.10, 12.20.6, 12.20.8, 12.20.9, 12.23.7, 12.23.9, and 12.23.10.~~

Purpose: This test case verifies that Present_Value is writable when Out_Of_Service is TRUE. It also verifies the interrelationship between the Out_Of_Service, Status_Flags, and Reliability properties. If the PICS indicates that the Out_Of_Service property of the object under test is not writable, and if the value of the property cannot be changed by other means, then this test shall be omitted. This test applies to *Accumulator*, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Life Safety Point, Life Safety Zone, Multi-state Input, Multi-state Output, Multi-state Value, and *Loop and Pulse Converter* objects.

[Change 7.3.1.2, p. 30]

7.3.1.2 Relinquish Default Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.2.16, 12.3.12, 12.6.22, 12.7.20, 12.18.14 and 12.19.3.~~ 12.3.16, 12.4.12, 12.7.22, 12.8.20, 12.19.14, and 12.20.13.

[Change 7.3.1.4, p. 32]

7.3.1.4 Minimum_Off_Time

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.6.19, 12.7.17,~~ 12.7.19, 12.8.17, 19.2.3, and Annex I.

[Change 7.3.1.5, p. 32]

7.3.1.5 Minimum_On_Time

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.6.20, 12.7.18,~~ 12.7.20, 12.8.18, 19.2.3, and Annex I.

[Change 7.3.1.6, p. 33]

7.3.1.6 Override of Minimum Time

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~19.~~ 19.2.

[Change 7.3.1.8, p. 33]

7.3.1.8 Binary Object Change of State Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.4.14, 12.4.15, 12.4.16, 12.5.14, 12.5.15, 12.5.16, 12.6.14, 12.6.15, and 12.6.16.~~ 12.6.14, 12.6.15, 12.6.16, 12.7.14, 12.7.15, 12.7.16, 12.8.12, 12.8.13, and 12.8.14.

[Change 7.3.1.9, p. 35]

7.3.1.9 Binary Object Elapsed Active Time Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.5.17, 12.5.18, 12.6.17, 12.6.18, 12.7.15, and 12.7.16.~~ 12.6.17, 12.6.18, 12.7.17, 12.7.18, 12.8.15, and 12.8.16.

[Change 7.3.1.10, p. 36]

7.3.1.10 Event_Enable Tests

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: *12.1.27, ~~12.1.23, 12.2.24, 12.3.20, 12.5.22, 12.6.26, 12.7.24, 12.11.10, 12.2.23, 12.3.24, 12.4.20, 12.6.22, 12.7.26, 12.8.24, 12.12.10, 12.14.18, 12.15.18, 12.15.19, 12.16.19, 12.16.33, 12.17.17, 12.18.18, 12.19.18, 12.17.33, 12.18.17, 12.19.18, 12.20.18, 12.23.26, and 12.23.23.~~ 12.25.22.*

Purpose: To verify that notification messages are transmitted only if the bit in Event_Enable corresponding to the event transition has a value of TRUE. This test applies to Event Enrollment objects and *Accumulator*, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Life Safety Point, Life Safety Zone, Loop, Multi-state Input, Multi-state Output, ~~and Multi-state Value~~ *Value, Pulse Converter and Trend Log* objects that support intrinsic reporting.

[Change 7.3.1.11, p. 38]

7.3.1.11 Acked_Transitions Tests

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; AcknowledgeAlarm Service Execution Tests, 9.1; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: *12.1.28, ~~12.1.24, 12.2.25, 12.3.21, 12.5.23, 12.6.27, 12.7.25, 12.11.11, 12.2.24, 12.3.25, 12.4.21, 12.6.23, 12.7.27, 12.8.25, 12.12.11, 12.14.19, 12.15.19, 12.15.20, 12.16.20, 12.16.34, 12.17.18, 12.18.19, 12.19.19, 12.17.34, 12.18.18, 12.19.19, 12.20.19, 12.23.27 and 12.23.24.~~ 12.25.23.*

Purpose: To verify that the Acked_Transitions property tracks whether or not an acknowledgment has been received for a previously issued event notification. It also verifies the interrelationship between Status_Flags and Event_State. This test applies to Event Enrollment objects and *Accumulator*, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Life Safety Point, Life Safety Zone, Loop, Multi-state Input, Multi-state Output, ~~and Multi-state Value~~ *Value, Pulse Converter and Trend Log* objects that support intrinsic reporting.

[Change 7.3.1.12, p. 42]

7.3.1.12 Notify_Type Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: *12.1.29, ~~12.1.25, 12.2.26, 12.3.22, 12.5.24, 12.6.28, 12.7.26, 12.11.6, 12.2.25, 12.3.26, 12.4.22, 12.6.24, 12.7.28, 12.8.26, 12.12.6, 12.14.20, 12.15.20, 12.15.21, 12.16.21, 12.16.35, 12.17.19, 12.18.20, 12.19.20, 12.17.35, 12.18.19, 12.19.20, 12.20.20, 12.23.28, and 12.23.25.~~ 12.25.24.*

Purpose: To verify that the value of the Notify_Type property determines whether an event notification is transmitted as an alarm or as an event. This test applies to Event Enrollment objects and *Accumulator*, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Life Safety Point, Life Safety Zone, Loop, Multi-state Input, Multi-state Output, ~~and Multi-state Value~~ *Value, Pulse Converter and Trend Log* objects that support intrinsic reporting.

[Change 7.3.1.13, p. 43]

7.3.1.13 Limit_Enable Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.1.22, 12.2.23, and 12.3.19.~~ 12.1.26, 12.2.22, 12.3.23, 12.4.19, and 12.23.25.

Purpose: To verify that the Limit_Enable property correctly enables or disables reporting of out of range events. This test applies to *Accumulator*, Analog Input, Analog Output, ~~and Analog Value~~ *Value*, and *Pulse Converter* objects that support intrinsic reporting. If the Limit_Enable property is not writable and cannot be reconfigured this test shall be omitted.

[Change 7.3.1.14.1, p. 46]

7.3.1.14.1 Process_Identifier Property Test

Dependencies: None.

~~BACnet~~ BACnet-2001 Reference Clause: 12.11.4.

Purpose: To verify that the Process_Identifier property correctly supports the required value range. This test shall be performed only if the Protocol_Revision property is present in the Device object and has a value ~~greater than or equal to 4.~~ *in the range of 1 through 3.*

[Change 7.3.1.14.2, p. 46]

7.3.1.14.2 Recipient_List Test

Dependencies: None

BACnet Reference Clause: ~~12.20.8.~~ 12.21.8.

[Change 7.3.2.1.1, p. 47]

7.3.2.1.1 Input Tracking Test

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.1.4.~~ 12.2.4.

[Change 7.3.2.2.1, p. 47]

7.3.2.2.1 Output Tracking Test

Dependencies: WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.2.4.~~ 12.3.4.

[Change 7.3.2.4, p. 48]

7.3.2.4 Averaging Object Tests

An Averaging object provides a way to monitor the average, minimum, and maximum values attained by a sampled property. The datatype of the sampled property can be BOOLEAN, INTEGER, Unsigned, Enumerated, or Real. The tests in this clause shall be repeated once for each of these datatypes.

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.4.~~ 12.5.

[Change 7.3.2.4.2, p. 50]

7.3.2.4.2 Managing the Sample Window

BACnet Reference Clause: ~~12.4.15~~ 12.5.15.

[Change 7.3.2.5.1, p. 50]

7.3.2.5.1 Input Tracking Test

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.5.4.~~ 12.6.4.

[Change 7.3.2.5.3, p. 51]

7.3.2.5.3 Polarity Property Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.5.11.~~ 12.6.11.

[Change 7.3.2.6.1, p. 52]

7.3.2.6.1 Output Tracking Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.6.4.~~ 12.7.4.

[Change 7.3.2.6.3, p. 52]

7.3.2.6.3 Polarity Property Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.6.11.~~ 12.7.11.

[Change 7.3.2.8, p. 53]

7.3.2.8 Calendar Test

These tests verify that the Present_Value property of the Calendar object bears the relationship to Date_List specified by BACnet Clause ~~12.8.6.~~ 12.9.6.

[Change 7.3.2.8.1, p. 53]

7.3.2.8.1 Single Date Rollover Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.8.~~ 12.9.

[Change 7.3.2.8.2, p. 54]

7.3.2.8.2 Date Range Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.8.~~ 12.9.

[Change 7.3.2.8.3, p. 54]

7.3.2.8.3 WeekNDay Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.8.~~ 12.9.

[Change 7.3.2.9.1, p. 55]

7.3.2.9.1 All Writes Successful with Post Delay Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.9.8.~~ 12.10.8.

[Change 7.3.2.9.2, p. 56]

7.3.2.9.2 Quit on Failure Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.9.8.~~ 12.10.8.

[Change 7.3.2.9.3, p. 56]

7.3.2.9.3 External Writes Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.9.8.~~ 12.10.8.

[Change 7.3.2.9.4, p. 57]

7.3.2.9.4 Empty Action List Test

Dependencies: WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.9.8.~~ 12.10.8.

[Change **7.3.2.9.5**, p. 57]

7.3.2.9.5 Action 0 Test

Dependencies: WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.9.8.~~ *12.10.8.*

[Change **7.3.2.9.6**, p. 57]

7.3.2.9.6 Action_Text Test

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clauses: ~~12.9.8 and 12.9.9.~~ *12.10.8 and 12.10.9.*

[Change **7.3.2.9.7**, p. 58]

7.3.2.9.7 Write While In_Process is TRUE Test.

Dependencies: WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.9.8 and 12.9.9.~~ *12.10.8 and 12.10.9.*

[Change **7.3.2.13**, p. 58]

7.3.2.13 Group Object Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.13.~~ *12.14.*

[Change **7.3.2.14.1**, p. 59]

7.3.2.14.1 Tracking Value Test

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.14.~~ *12.15.5.*

[Change **7.3.2.15.1**, p. 60]

7.3.2.15.1 Tracking Value Test

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.15.~~ *12.16.5.*

[Change **7.3.2.16.1**, p. 60]

7.3.2.16.1 Manipulated_Variable_Reference Tracking

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.16.12.~~ *12.17.12.*

[Change **7.3.2.16.2**, p. 61]

7.3.2.16.2 Controlled_Variable_Reference Tracking

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.16.13~~, 12.17.13.

[Change **7.3.2.16.3**, p. 62]

7.3.2.16.3 Setpoint_Reference Tracking

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.16.16~~, 12.17.16.

[Change **7.3.2.17.2**, p. 62]

7.3.2.17.2 Number_Of_States and State_Text

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clauses: ~~12.17.11 and 12.17.12~~, 12.18.11 and 12.18.12.

[Change **7.3.2.17.4**, p. 63]

7.3.2.17.4 Input Tracking Test

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.17.4~~, 12.18.4.

[Change **7.3.2.18.2**, p. 63]

7.3.2.18.2 Number_Of_States and State_Text

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clauses: ~~12.18.11 and 12.18.12~~, 12.19.11 and 12.19.12.

[Change **7.3.2.18.5**, p. 64]

7.3.2.18.5 Output Tracking Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.18.4~~, 12.19.4.

[Change **7.3.2.19.2**, p. 64]

7.3.2.19.2 Number_Of_States and State_Text

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clause: ~~12.19~~, 12.20.10 and 12.20.11.

[Change 7.3.2.20.1, pp. 64-65]

7.3.2.20.1 Priority Tests

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.20.6.~~ 12.21.6.

[Change 7.3.2.20.2.1, p. 67]

7.3.2.20.2.1 Ack_Required False Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.20.7.~~ 12.21.7.

[Change 7.3.2.20.2.2, p. 67]

7.3.2.10.2.2 Ack_Required True Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.20.7.~~ 12.21.7.

[Change 7.3.2.20.3.1, p. 68]

7.3.2.20.3.1 ValidDays Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.20.8.~~ 12.21.8.

[Change 7.3.2.20.3.2, p. 69]

7.3.2.20.3.2 FromTime and ToTime Test

Dependencies: ValidDays Test, 7.3.2.20.3.1; ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.20.8.~~ 12.21.8.

[Change 7.3.2.20.3.3, p. 69]

7.3.2.20.3.3 IssueConfirmedNotifications Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.20.8.~~ 12.21.8.

[Change 7.3.2.20.3.4, p. 71]

7.3.2.20.3.4 Transitions Test

Dependencies: ConfirmedEventNotification Service Initiation Tests, 8.4; UnconfirmedEventNotification Service Initiation Tests, 8.5; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.20.8~~. 12.21.8.

[Change 7.3.2.22.1, p. 73]

7.3.2.22.1 Effective_Period Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.6~~. 12.24.6.

[Change 7.3.2.22.2, p. 74]

7.3.2.22.2 Weekly_Schedule Property Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.7~~. 12.24.7.

[Change 7.3.2.22.3.1, p. 75]

7.3.2.22.3.1 Calendar Reference Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~. 12.24.8.

[Change 7.3.2.22.3.2, p. 76]

7.3.2.22.3.2 Calendar Entry Date Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~. 12.24.8.

[Change 7.3.2.22.3.3, p. 76]

7.3.2.22.3.3 Calendar Entry DateRange Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~. 12.24.8.

[Change 7.3.2.22.3.4, p. 77]

7.3.2.22.3.4 Calendar Entry WeekNDay Month Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~; 12.24.8.

[Change 7.3.2.22.3.5, p. 78]

7.3.2.22.3.5 Calendar Entry WeekNDay Week Of Month Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~; 12.24.8.

[Change 7.3.2.22.3.6, p. 78]

7.3.2.22.3.6 Calendar Entry WeekNDay Last Week Of Month Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~; 12.24.8.

[Change 7.3.2.22.3.7, p. 79]

7.3.2.22.3.7 Calendar Entry WeekNDay Day Of Week Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~; 12.24.8.

[Change 7.3.2.22.3.8, p. 80]

7.3.2.22.3.8 Event Priority Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~; 12.24.8.

[Change 7.3.2.22.3.9, p. 80]

7.3.2.22.3.9 List of BACnetTimeValue Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.8~~; 12.24.8.

[Change 7.3.2.22.4, p. 81]

7.3.2.22.4 Weekly_Schedule and Exception_Schedule Interaction Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clauses: ~~12.22.7, 12.22.8~~; 12.24.7, 12.24.8.

[Change 7.3.2.22.5, p. 81]

7.3.2.22.5 Exception_Schedule Restoration Test

Dependencies: ReadProperty Service Execution Tests, 9.18; ReinitializeDevice Service Execution Tests, 9.27; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clauses: ~~12.22.7, 12.22.8~~. 12.24.7, 12.24.8.

[Change 7.3.2.22.6, p. 82]

7.3.2.22.6 Weekly_Schedule Restoration Test

Dependencies: ReadProperty Service Execution Tests, 9.18; ReinitializeDevice Service Execution Tests, 9.27; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.7~~. 12.24.7.

[Change 7.3.2.22.7, p. 83]

7.3.2.22.7 List_Of_Object_Property_Reference Internal Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.9~~. 12.24.10.

[Change 7.3.2.22.8, p. 83]

7.3.2.22.8 List_Of_Object_Property_Reference External Test

Dependencies: ReadProperty Service Execution Tests, 9.18; TimeSynchronization Service Execution Tests, 9.30.

BACnet Reference Clause: ~~12.22.9~~. 12.24.10.

[Change 7.3.2.23.1, p. 84]

7.3.2.23.1 Log_Enable Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.5~~. 12.25.5.

[Change 7.3.2.23.2, p. 85]

7.3.2.23.2 Start_Time Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.6~~. 12.25.6.

[Change 7.3.2.23.3, p. 86]

7.3.2.23.3 Stop_Time Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.7~~ 12.25.7.

[Change 7.3.2.23.4, pp. 86-87]

7.3.2.23.4 Log_Interval Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.9~~ 12.25.9.

[Change 7.3.2.23.5, p. 87]

7.3.2.23.5 COV_Resubscription_Interval Test

Dependencies: Confirmed Notifications Subscription, 8.10.1; Unconfirmed Notifications Subscription, 8.10.2.

BACnet Reference Clause: ~~12.23.10~~ 12.25.10.

[Change 7.3.2.23.6.1, p. 88]

7.3.2.23.6.1 Stop_When_Full TRUE Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.12~~ 12.25.12.

[Change 7.3.2.23.6.2, p. 89]

7.3.2.23.6.2 Stop_When_Full FALSE Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.12~~ 12.25.12.

[Change 7.3.2.23.7, p. 89]

7.3.2.23.7 Buffer_Size Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.13~~ 12.25.13.

[Change 7.3.2.23.8, p. 90]

7.3.2.23.8 Record_Count Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.15~~ 12.25.15.

[Change 7.3.2.23.9, p. 90]

7.3.2.23.9 Total_Record_Count Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.16~~. 12.25.16.

Purpose: To verify that the Total_Record_Count property increments for each record added to the Log_Buffer, even after Buffer_Size records have been added. (Note: it is not reasonable to test for the requirement of BACnet Clause ~~12.23.16~~ 12.25.16 that the value wrap from -1 to 0; even if a record was collected every 100th of a second it could take more than 497 days to complete the test.)

[Change 7.3.2.23.10, p. 91]

7.3.2.23.10 Notification_Threshold Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~12.23.17~~. 12.25.17.

[Change 7.3.2.23.11, p. 92]

7.3.2.23.11 Notification Time Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet-2001 Reference Clauses: 12.23.19, 12.23.20, and 12.23.26.

[Change 7.3.2.23.12, p. 94]

7.3.2.23.12 COV Subscription Failure Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.23.5, 12.23.9, and 12.23.10~~. 12.25.5, 12.25.9, and 12.25.10.

[Change 8.3, p. 105]

8.3 UnconfirmedCOVNotification Service Initiation Tests

This clause defines the tests necessary to demonstrate support for initiating UnconfirmedCOVNotification service requests. The UnconfirmedCOVNotification tests are specific to a particular object type that provides intrinsic COV reporting capabilities. The IUT shall pass all of the tests for each object type that is claimed to be supported in the PICS.

Dependencies: SubscribeCOV Service Execution Tests, 9.10; ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clause: ~~13.14~~. 13.7.

[Change 8.4.1, p. 107]

8.4.1 CHANGE_OF_BITSTRING Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11~~, 12.12.5, 12.12.7, 13.3.1, and 13.8.

[Change 8.4.2, p. 108]

8.4.2 CHANGE_OF_STATE Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.5, 12.7, 12.17, 12.19~~, 12.6, 12.8, 12.18, 12.20, 13.2, 13.3.2, and 13.8.

[Change 8.4.3.1, p. 111]

8.4.3.1 Numerical Algorithm

The test in this clause applies to use of the CHANGE_OF_VALUE algorithm applied to Integer or Real datatypes.

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11~~, 12.12, 13.3.2, and 13.8.

[Change 8.4.3.2, p. 112]

8.4.3.2 Bitstring Algorithm

The test in this clause applies to use of the CHANGE_OF_VALUE algorithm applied to Bitstring datatypes.

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11~~, 12.12, 13.3.2, and 13.8.

[Change 8.4.4, p. 113]

8.4.4 COMMAND_FAILURE Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.6, 12.18~~, 12.7, 12.12, 12.19, 13.2, 13.3.4, and 13.8.

[Change 8.4.5, p. 115]

8.4.5 FLOATING_LIMIT Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11, 12.16, 12.20~~, 12.12, 12.17, 12.21, 13.2, 13.3.5, and 13.8.

[Change 8.4.6, p. 118]

8.4.6 OUT_OF_RANGE Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.1, 12.2, 12.3, 12.11~~, 12.2, 12.3, 12.4, 12.12, 12.23, 13.2, 13.3.6, and 13.8.

[Change **8.4.7**, p. 121]

8.4.7 BUFFER_READY Tests

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clauses: ~~12.11, 12.23~~, 12.12, 12.25, 13.2, 13.3.7, and 13.8.

[Change **8.4.8.1**, p. 122]

8.4.8.1 NORMAL to OFFNORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.2**, p. 123]

8.4.8.2 OFFNORMAL to NORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.3**, p. 124]

8.4.8.3 NORMAL to LIFE_SAFETY_ALARM Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.4**, p. 125]

8.4.8.4 LIFE_SAFETY_ALARM to NORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.5**, p. 126]

8.4.8.5 LIFE_SAFETY_ALARM to OFFNORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.6**, p. 127]

8.4.8.6 OFFNORMAL to LIFE_SAFETY_ALARM Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.7**, p. 128]

8.4.8.7 Mode Transition Tests when Event State is Maintained

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.8**, p. 130]

8.4.8.8 NORMAL to OFFNORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.9**, p. 131]

8.4.8.9 OFFNORMAL to NORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.10**, p. 132]

8.4.8.10 NORMAL to LIFE_SAFETY_ALARM Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.11**, p. 133]

8.4.8.11 LIFE_SAFETY_ALARM to NORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.12**, p. 134]

8.4.8.12 LIFE_SAFETY_ALARM to OFFNORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.13**, p. 135]

8.4.8.13 OFFNORMAL to LIFE_SAFETY_ALARM Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.4.8.14**, p. 137]

8.4.8.14 TO-FAULT Transition Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.8 and Figure ~~13.9~~ 13-9.

[Change **8.5.1**, p. 138]

8.5.1 CHANGE_OF_BITSTRING Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11~~, 12.12, 13.3.1, and ~~13.7~~ 13.9.

[Change **8.5.2**, p. 138]

8.5.2 CHANGE_OF_STATE Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.5, 12.7, 12.17, 12.19~~, 12.6, 12.8, 12.18, 12.20, 13.2, 13.3.2, and 13.9.

[Change **8.5.3.1**, p. 139]

8.5.3.1 Numerical Algorithm

The test in this clause applies to use of the CHANGE_OF_VALUE algorithm applied to Integer or Real datatypes.

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11~~, 12.12, 13.3.3, and 13.9.

[Change **8.5.3.2**, p. 139]

8.5.3.2 Bitstring Algorithm

The test in this clause applies to use of the CHANGE_OF_VALUE algorithm applied to Bitstring datatypes.

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11~~, 12.12, 13.3.3, and 13.9.

[Change **8.5.4**, pp. 130-140]

8.5.4 COMMAND_FAILURE Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.6, 12.18~~, 12.7, 12.12, 12.19, 13.2, 13.3.4, and 13.9.

[Change **8.5.5**, p. 140]

8.5.5 FLOATING_LIMIT Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11, 12.16,~~ 12.12, 12.17, 13.2, 13.3.5, and 13.9.

[Change **8.5.6**, p. 140]

8.5.6 OUT_OF_RANGE Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.1, 12.2, 12.3, 12.11,~~ 12.2, 12.3, 12.4, 12.12, 13.2, 13.3.6, and 13.9.

[Change **8.5.7**, p. 141]

8.5.7 BUFFER_READY Tests

Dependencies: ReadProperty Service Execution Tests, 9.18.

BACnet Reference Clauses: ~~12.11, 12.23,~~ 12.12, 12.25, 13.2, 13.3.7, and 13.9.

[Change **8.5.8.1**, p. 141]

8.5.8.1 NORMAL to OFFNORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15,~~ 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9.~~ 13-9.

[Change **8.5.8.2**, p. 141]

8.5.8.2 OFFNORMAL to NORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15,~~ 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9.~~ 13-9.

[Change **8.5.8.3**, p. 141]

8.5.8.3 NORMAL to LIFE_SAFETY_ALARM Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15,~~ 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9.~~ 13-9.

[Change **8.5.8.4**, p. 142]

8.5.8.4 LIFE_SAFETY_ALARM to NORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15,~~ 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9.~~ 13-9.

[Change **8.5.8.5**, p. 142]

8.5.8.5 LIFE_SAFETY_ALARM to OFFNORMAL Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.6**, p. 142]

8.5.8.6 OFFNORMAL to LIFE_SAFETY_ALARM Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.7**, p. 142]

8.5.8.7 Mode Transition Tests when Event State is Maintained

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.8**, p. 143]

8.5.8.8 NORMAL to OFFNORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.9**, p. 143]

8.5.8.9 OFFNORMAL to NORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.10**, p. 143]

8.5.8.10 NORMAL to LIFE_SAFETY_ALARM Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.11**, p. 143]

8.5.8.11 LIFE_SAFETY_ALARM to NORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~ 13-9.

[Change **8.5.8.12**, p. 144]

8.4.8.12 LIFE_SAFETY_ALARM to OFFNORMAL Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~. 13-9.

[Change **8.5.8.13**, p. 144]

8.5.8.13 OFFNORMAL to LIFE_SAFETY_ALARM Mode Transition Test

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~. 13-9.

[Change **8.5.8.14**, p. 144]

8.5.8.14 TO-FAULT Transition Tests

Dependencies: ReadProperty Service Execution Tests, 9.18; WriteProperty Service Execution Tests, 9.22.

BACnet Reference Clauses: ~~12.11.7, 12.14, 12.15~~, 12.12.7, 12.15, 12.16, 13.3.8, ~~13.13~~ 13.9 and Figure ~~13.9~~. 13-9.

[Change **8.36**, p. 166]

8.36 VT-Open Service Initiation Tests

This clause defines the tests necessary to demonstrate support for initiating VT-Open service requests.

Dependencies: ReadProperty Service Execution tests, 9.18.

BACnet Reference Clauses: 17.2 and ~~12.10~~. 12.11.

[Change **8.37**, p. 167]

8.37 VT-Close Service Initiation Tests

This clause defines the tests necessary to demonstrate support for initiating VT-Close service requests. The IUT shall pass the test defined in 8.37.1. If the IUT supports more than one active VT session it shall also pass the tests defined in 8.37.2 and 8.37.3.

Dependencies: ReadProperty Service Execution tests, 9.18.

BACnet Reference Clauses: 17.3 and ~~12.10~~. 12.11.

[Change **9.28**, p. 262]

9.28 ConfirmedTextMessage Service Execution Tests

The purpose of this test group is to verify the correct execution of the ConfirmedTextMessage service request. BACnet does not define what is to happen when a ConfirmedTextMessage service request is received except that an acknowledgement is to be returned. It is likely that some other externally observable action will take place but this is vendor specific. These tests verify that a correct acknowledgment is returned and any other action that is defined by the vendor.

BACnet Reference Clause: 16.5.

[Change **13.2**, p. 425]

13.2 Time Master

Purpose: To verify that an IUT can perform the function of a time master. To be a time master, a device must be capable of keeping time and of issuing TimeSynchronization service requests.

Dependencies: None.

BACnet Reference Clause: ~~12.10~~ 12.11.

135.1-2003c-2 Add new object types

Rationale
 Several object types have been added to ANSI/ASHRAE Standard 135 since the 2001 version. This revision adds object types that appear in the published 2004 version (without addenda). This addendum adds references to those objects only, not the tests for those objects.

Addendum 135.1-2003c-2

[Change 4.5.4, p. 6]

[This clause is also changed in the proposed Addendum 135.1-2003b; the changes are additive and do not conflict]

4.5.4 Object Types Supported

...

The standard objects may be any of:

Analog Input	Command	Multi-state Input
Analog Output	Device	Multi-state Output
Analog Value	Event Enrollment	Multi-state Value
Averaging	File	Notification Class
Binary Input	Group	Program
Binary Output	Life Safety Point	Schedule
Binary Value	Life Safety Zone	Trend Log
Calendar	Loop	

<i>Accumulator</i>	<i>Command</i>	<i>Multi-state Output</i>
<i>Analog Input</i>	<i>Device</i>	<i>Multi-state Value</i>
<i>Analog Output</i>	<i>Event Enrollment</i>	<i>Notification Class</i>
<i>Analog Value</i>	<i>File</i>	<i>Program</i>
<i>Averaging</i>	<i>Group</i>	<i>Pulse Converter</i>
<i>Binary Input</i>	<i>Life Safety Point</i>	<i>Schedule</i>
<i>Binary Output</i>	<i>Life Safety Zone</i>	<i>Trend Log</i>
<i>Binary Value</i>	<i>Loop</i>	
<i>Calendar</i>	<i>Multi-state Input</i>	

[Insert new 4.5.10.1, p. 10, and renumber subsequent clauses]

[An identical addition is proposed by Addendum 135.1-2003b]

4.5.10.1 Accumulator

```
{
  object-identifier: (accumulator, )
  object-name: ""
  object-type: accumulator
  present-value: 
  description: ""
  device-type: ""
  status-flags: 
  event-state: 
  reliability: 
  out-of-service: 
  scale: 
  units: 
  prescale: 
  max-pres-value: 
  value-change-time: 
```

```
value-before-change: □  
value-set: □  
logging-record: □  
logging-object: □  
pulse-rate: □  
high-limit: □  
low-limit: □  
limit-monitoring-interval: □  
notification-class: □  
time-delay: □  
limit-enable: □  
event-enable: {□,□,□}  
acked-transitions: {□,□,□}  
notify-type: □  
event-time-stamps: {□,□,□}  
profile-name: "□"  
}
```

[Insert new 4.5.10.23, p.19, and renumber subsequent clauses]
[An identical addition is proposed by Addendum 135.1-2003b]

4.5.10.23 Pulse Converter

```
{  
  object-identifier: (pulse-converter, □)  
  object-name: "□"  
  object-type: pulse-converter  
  description: "□"  
  present-value: □  
  input-reference: □  
  status-flags: □  
  event-state: □  
  reliability: □  
  out-of-service: □  
  units: □  
  scale-factor: □  
  adjust-value: □  
  count: □  
  update-time: □  
  count-change-time: □  
  count-before-change: □  
  cov-increment: □  
  cov-period: □  
  notification-class: □  
  time-delay: □  
  high-limit: □  
  low-limit: □  
  deadband: □  
  limit-enable: □  
  event-enable: □  
  acked-transitions: {□,□,□}  
  notify-type: □  
  event-time-stamps: {□,□,□}  
  profile-name: "□"  
}
```

[Change ANNEX A, pp. 444-458]

ANNEX A – EXAMPLE EPICS (INFORMATIVE)

(This annex is not part of the standard but is included for informative purposes.)

...

Standard Object Types Supported:

```
{
    Accumulator      Creatable  Deleteable
    Analog Input     Creatable  Deleteable
    ...
    Program          Creatable  Deleteable
    Pulse Converter  Creatable  Deleteable
    Schedule          Creatable  Deleteable
    Trend Log        Creatable  Deleteable
}
```

...

List of Objects in test device:

```
{
    {
        object-identifier: (accumulator, 1)
        object-name: "meter 1"
        object-type: ACCUMULATOR
        present-value: 125
        description: ""
        device-type: "electric pulse"
        status-flags: {FALSE,FALSE,FALSE,FALSE}
        event-state: NORMAL
        reliability: NO-FAULT-DETECTED
        out-of-service: FALSE
        scale: 0
        units: KILOWATT_HOURS
        prescale: (1,10000)
        max-pres-value: 9999
        value-change-time: {(Tuesday, 2-January-2007), 9:39:21.02}
        value-before-change: 0
        value-set: 67 W
        logging-record: {(Tuesday, 2-January-2007), 9:39:33.01}, 0, 27,NORMAL}
        logging-object: (trend-log, 3)
        pulse-rate: 3
        high-limit: 15
        low-limit: 0
        limit-monitoring-interval: 300
        notification-class: 1
        time-delay: 10
        limit-enable: {TRUE, TRUE}
        event-enable: {TRUE, FALSE, TRUE}
        acked-transitions: {TRUE, TRUE, TRUE}
        notify-type: ALARM
        event-time-stamps: {(Monday, 1-January-2007),18:50:21.02},
        {(*-*-*),*:*:*.}, {(Monday, 1-January-2007), 18:51:34.0}}
```

```

    profile-name: ""
},
...
{
    object-identifier: (device, 90)
    ...
    protocol-object-types-supported:
    {
        T, T, T, T, T, T,      -- AI, AO, AV, BI, BO, BV
        T, T, T, T, T, T      -- calendar, command, device, event enrollment, file, group
        T, T, T, T, T, T, T,  -- loop, MSI, MSO, notification class, program, schedule
        T, T, T, T, T,        -- averaging, multi-state-value, trend-log, life-safety-point, life-safety-zone
        T, T                    -- accumulator, pulse-converter
    }
    object-list:
    {
        (accumulator, 1),
        ...
        (analog-value, 1),
        (averaging, 1),
        (binary-input, 1),
        ...
        (group, 1),
        (life-safety-point, 1),
        (life-safety-zone, 1),
        (loop, 1),
        ...
        (program, 1),
        (pulse-converter, 1),
        (schedule, 1),
        (trend-log, 1),
        ...
    }
    ...
},
...
{
    object-identifier: (pulse-converter, 1)
    object-name: "Meter 5"
    object-type: PULSE_CONVERTER
    description: ""
    present-value: 125.0
    input-reference: {(accumulator, 1), present-value}
    status-flags: {FALSE,FALSE,FALSE,FALSE}
    event-state: NORMAL
    reliability: NO-FAULT-DETECTED
    out-of-service: FALSE
    units: LITERS_PER_HOUR
    scale-factor: 0.5
    adjust-value: 500.0
    count: 250
    update-time: {(Thursday, 4-January-2007), 9:39:21.02}
    count-change-time: {(Thursday, 4-January-2007), 9:39:41.52}
    count-before-change: 523
    cov-increment: 10.0
    cov-period: 3600
}

```

```
notification-class: 1
time-delay: 0
high-limit: 1000.0
low-limit: 0.0
deadband: 0.0
limit-enable: {FALSE, TRUE}
event-enable: {TRUE, FALSE, TRUE}
acked-transitions: {TRUE, TRUE, TRUE}
notify-type: ALARM
event-time-stamps: {(Monday, 1-January-2007),18:50:21.02},
  {(*-*-*)*:*:*.*},{(Monday, 1-January-2007), 18:51:34.0}}
profile-name: ""
},
...
{
  object-identifier: (trend-log, 1)
  object-name: "Room 3 Log"
  object-type: TREND_LOG
  description: "Room 3 Temperature"
  log-enable: T
  log-deviceobjectproperty: {(device, 100), (analog input, 3), present-value}
  log-interval: 6000
  stop-when-full: FALSE
  buffer-size: 250
  log-buffer: ()
  record-count: 250
  total-record-count: 131040
  notification-threshold: 83
  records-since-notification: 30
  last-notify-record: 131010
  event-state: NORMAL
  notification-class: 1
  event-enable: {FALSE, TRUE, TRUE}
  acked-transitions: {TRUE, TRUE, TRUE}
  notify-type: EVENT
  event-time-stamps: {(Monday, 1-January-2007),18:50:21.02},
    {(*-*-*)*:*:*.*},{(Monday, 1-January-2007), 18:51:34.0}}
  profile-name: ""
}
}
End of BACnet Protocol Implementation Conformance Statement
```

135.1-2003c-3 Omit certain tests based on Protocol_Revision

Rationale

Several test were made invalid by changes to 135-2004. This revision checks the Protocol_Revision property to determine test validity.

Addendum 135.1-2003c-3

[Change 7.3.2.22.3.2, p. 76]

7.3.2.22.3.2 Calendar Entry Date Test

...

Configuration Requirements: The IUT shall be configured to contain a Schedule object with an Exception_Schedule containing a BACnetCalendarEntry with a specific date. The criteria for the dates used in the test are given in Table 7-4. The local date and time shall be set such that the Present_Value property has a value other than V_1 . *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.3.3, p. 76]

7.3.2.22.3.3 Calendar Entry DateRange Test

...

Configuration Requirements: The IUT shall be configured to contain a Schedule object with an Exception_Schedule containing a BACnetCalendarEntry with a date range. The criteria for the dates used in the test are given in Table 7-5. The local date and time shall be set such that the Present_Value property has a value other than V_1 . *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.3.4, p. 77]

7.3.2.22.3.4 Calendar Entry WeekNDay Month Test

...

Configuration Requirements: The IUT shall be configured to contain a Schedule object with an Exception_Schedule containing a BACnetCalendarEntry with a WeekNDay entry specifying a month. The criteria for the dates used in the test are given in Table 7-6. The local date and time shall be set such that the Present_Value property has a value other than V_1 . *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.3.5, p. 78]

7.3.2.22.3.5 Calendar Entry WeekNDay Week Of Month Test

...

Configuration Requirements: The IUT shall be configured to contain a Schedule object with an Exception_Schedule containing a BACnetCalendarEntry with a WeekNDay entry specifying a week of the month. The criteria for the dates used in the test are given in Table 7-7. The local date and time shall be set such that the Present_Value property has a value other than V_1 . *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.3.6, p. 78]

7.3.2.22.3.6 Calendar Entry WeekNDay Last Week Of Month Test

...

Configuration Requirements: The IUT shall be configured to contain a Schedule object with an Exception_Schedule containing a BACnetCalendarEntry with a WeekNDay entry specifying the last week of the month. The criteria for the dates used in the test are given in Table 7-8. The local date and time shall be set such that the Present_Value property has a value other than V_1 . *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.3.7, p. 79]

7.3.2.22.3.7 Calendar Entry WeekNDay Day Of Week Test

...

Configuration Requirements: The IUT shall be configured to contain a Schedule object with an Exception_Schedule containing a BACnetCalendarEntry with a WeekNDay entry specifying the day of the week. The criteria for the dates used in the test are given in Table 7-9. The local date and time shall be set such that the Present_Value property has a value other than V_1 . *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.5, p. 81]

7.3.2.22.5 Exception_Schedule Restoration Test

...

Configuration Requirements: The IUT shall be configured with a Schedule object that contains an Exception_Schedule that has more than one scheduled write operation for a particular day. None of the write operations shall be scheduled for time 00:00 and there shall be no higher priority coincident BACnetSpecialEvents. In the test description D_1 represents a time between 00:00 on the day the Exception_Schedule is active and the time of the first schedule write operation in the BACnetSpecialEvent. V_{last} represents the value that is scheduled to be written in the last BACnetTimeValue pair for the day. *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.22.6, p. 82]

7.3.2.22.6 Weekly_Schedule Restoration Test

...

Configuration Requirements: The IUT shall be configured with a Schedule object that contains a Weekly_Schedule that has more than one scheduled write operation for a particular day. None of the write operations shall be scheduled for time 00:00 and there shall be no higher priority coincident BACnetSpecialEvents. In the test description D_1 represents a time between 00:00 and the time of the first scheduled write operation in the BACnetDailySchedule. V_{last} represents the value that is scheduled to be written in the last BACnetTimeValue pair for the day. *This test shall not be performed if the Protocol_Revision property is present in the Device object and has a value of 4 or greater.*

[Change 7.3.2.23.11, p. 92]

7.3.2.23.11 Notification Time Tests

...

Purpose: To verify that the `Previous_Notify_Time` and `Current_Notify_Time` properties reflect the values sent in the most recent notification. *This test shall be performed only if the `Protocol_Revision` property is present in the Device object and has a value of 1 or 2.*

135.1-2003c-4 Exception schedule priority requirements

Rationale

Proper testing requires that there is no interference from higher priority exception schedules.

Addendum 135.1-2003c-4

[Change 7.3.2.22.3.9, p. 80]

7.3.2.22.3.9 List of BACnetTimeValue Test

...

Configuration Requirements: The IUT shall be configured with a Schedule object containing a ~~BACnetSpecialEvents~~ *BACnetSpecialEvent* with two or more BACnetTimeValue ~~entries~~ *entries and no BACnetSpecialEvents with a higher priority*. Each BACnetTimeValue entry shall have a distinguishable value.

[Change 7.3.2.22.7, p. 83]

7.3.2.22.7 List_Of_Object_Property_Reference Internal Test

...

Configuration Requirements: The IUT is configured with a Schedule object containing a List_Of_Object_Property_References property that references, if possible, at least one property in another object within the IUT. The Schedule object is configured with either a Weekly_Schedule or an active Exception_Schedule, during a period where Effective_Period is active, with at least two consecutive entries with distinguishable values in the List of ~~BACnetTimeValues~~ *BACnetTimeValues, and with no Exception_Schedules at a higher priority*. D_1 represents the date and time of the first of these two BACnetTimeValues, with corresponding value V_1 , while D_2 and V_2 (a value distinguishable from V_1) represent the second BACnetTimeValue. A time D_i is defined to occur between D_1 and D_2 .

[Change 7.3.2.22.8, p. 83]

7.3.2.22.8 List_Of_Object_Property_Reference External Test

...

Configuration Requirements: The TD is configured to indicate that it supports the WriteProperty-Request service but not WritePropertyMultiple-Request. The IUT is configured with a Schedule object containing a List_Of_Object_Property_References property that references a property of an object contained in the TD. The Schedule object is configured with either a Weekly_Schedule or an active Exception_Schedule, during a period where Effective_Period is active, with at least two consecutive entries with distinguishable values in the List of ~~BACnetTimeValues~~ *BACnetTimeValues, and with no Exception_Schedules at a higher priority*. D_1 represents the date and time of the first of these two BACnetTimeValues, with corresponding value V_1 , while D_2 and V_2 (a value distinguishable from V_1) represent the second BACnetTimeValue. A time D_i is defined to occur between D_1 and D_2 .

135.1-2003c-5 Minor corrections

Rationale
 Several small changes are required to correct or update the standard to match standard 135-2004.

Addendum 135.1-2003c-5

[Change 4.1, pp. 1-2]

...

Table 4-1. Character Set Codes

<i>code</i>	<i>character set</i>
0	ANSI 3.4 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 ~~3.4~~ 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.

[Change 4.5.5, p. 7]

4.5.5 Data Link Layer Options

...

```
BACnet/IP, 'DIX' Ethernet.┘
BACnet/IP, PPP┘ Other:  ┘
Other.┘
}┘
```

[Change 7.3.2.23.9, p. 90]

7.3.2.23.9 Total_Record_Count Test

...

Purpose: To verify that the Total_Record_Count property increments for each record added to the Log_Buffer, even after Buffer_Size records have been added. (Note: it is not reasonable to test for the requirement of BACnet Clause 12.23.16 that the value wrap from $2^{32}-1$ to 0 *one*; even if a record was collected every 100th of a second it could take more than 497 days to complete the test.)

[Change ANNEX A, pp. 444-458]

ANNEX A – EXAMPLE EPICS (INFORMATIVE)

(This annex is not part of the standard but is included for informative purposes.)

...

Data Link Layer Option:

```
{  
  ...  
  BACnet/IP, 'DIX' Ethernet  
  BACnet/IP, PPP Other: _____  
  LonTalk  
  Other  
}
```

...

Character Sets Supported:

```
{  
  ANSI X3.4  
  IBM/Microsoft DBCS  
  ISO 8859-1  
  JIS C 6226  
  ISO 10646 (UCS-4) (UCS-4)  
  ISO 10646 (UCS-2) (UCS-2)  
}
```

...

Special Functionality:

```
{  
  Maximum APDU size in octets: 1470 1476  
  ...  
}
```

...

List of Objects in test device:

```
{  
  ...  
  {  
    object-identifier: (analog-input, 1)  
    ...  
    out-of-service: F FALSE  
    ...  
  },  
  ...  
  {  
    object-identifier: (device, 90)  
    ...  
    protocol-revision: 2 4  
    protocol-services-supported:  
    {  
      T, T, T, T, T, T, -- Alarm and event  
      T, T, -- File  
      T, T, T, T, T, T, -- Create, Delete, Read  
      T, T, T, -- ReadMultiple, Write, WriteMultiple  
      T, T, T, T, -- PrivateXfer, Re-init  
      T, T, T, -- VT Open, Data, Close  
      T, T, -- security  
      T, T, T, T, T, -- I-Am, I-Have, uPrivateXfer  
      T, T, T, T -- TimeSync, Who-Has, Who-Is  
    }  
  }  
}
```

```
    T, T, T, T,      -- ReadRange, UTCTimeSync, LifeSafetyOperation, SubscribeCOVProperty
    T                -- GetEventInfo
  }
  ...
},
...
{
  object-identifier: (schedule, 2)
  ...
  exception-schedule: { {(23-November-1995),({0:00,INACTIVE}),10},
  schedule-default: INACTIVE
  list-of-object-property-references: ((binary-output, 9),present-value)
  priority-for-writing: 15
  reliability: NO_FAULT_DETECTED
  out-of-service: FALSE
  profile-name: ""
},
...
}
....
```