



**STANDARD**

**ANSI/ASHRAE Standard 135.1-2011**

(Supersedes ANSI/ASHRAE Standard 135.1-2009)

Includes ANSI/ASHRAE Addenda listed in the History of Revisions

# Method of Test for Conformance to BACnet<sup>®</sup>

See the History of Revisions at the back of this standard for approval dates of addenda.

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## CONTENTS

CLAUSE	PAGE
1. PURPOSE .....	1
2. SCOPE .....	1
3. DEFINITIONS .....	1
4. ELECTRONIC PICS FILE FORMAT .....	1
4.1 Character Encoding .....	1
4.2 Structure of EPICS Files .....	2
4.3 Character Strings .....	3
4.4 Notational Rules for Parameter Values .....	3
4.5 Sections of the EPICS File .....	4
5. EPICS CONSISTENCY TESTS .....	23
6. CONVENTIONS FOR SPECIFYING BACnet CONFORMANCE TESTS .....	24
6.1 TCSL Components .....	24
6.2 TCSL Statements .....	25
6.3 Time Dependencies .....	30
6.4 BACnet References .....	31
6.5 TD Requirements .....	31
7. OBJECT SUPPORT TESTS .....	32
7.1 Read Support for Properties in the Test Database .....	32
7.2 Write Support for Properties in the Test Database .....	33
7.3 Object Functionality Tests .....	35
8. APPLICATION SERVICE INITIATION TESTS .....	132
8.1 AcknowledgeAlarm Service Initiation Tests .....	132
8.2 ConfirmedCOVNotification Service Initiation Tests .....	133
8.3 UnconfirmedCOVNotification Service Initiation Tests .....	142
8.4 ConfirmedEventNotification Service Initiation Tests .....	145
8.5 UnconfirmedEventNotification Service Initiation Tests .....	178
8.6 GetAlarmSummary Service Initiation Tests .....	185
8.7 GetEnrollmentSummary Service Initiation Tests .....	185
8.8 GetEventInformation Service Initiation Tests .....	187
8.9 LifeSafetyOperation Service Initiation Tests .....	187
8.10 SubscribeCOV Service Initiation Tests .....	188
8.11 SubscribeCOVProperty Service Initiation Tests .....	189
8.12 AtomicReadFile Service Initiation Tests .....	190
8.13 AtomicWriteFile Service Initiation Tests .....	190
8.14 AddListElement Service Initiation Tests .....	191
8.15 RemoveListElement Service Initiation Tests .....	192
8.16 CreateObject Service Initiation Tests .....	192
8.17 DeleteObject Service Initiation Tests .....	193
8.18 ReadProperty Service Initiation Tests .....	193
8.19 ReadPropertyConditional Service Initiation Tests .....	195
8.20 ReadPropertyMultiple Service Initiation Tests .....	196
8.21 ReadRange Service Initiation Tests .....	198
8.22 WriteProperty Service Initiation Tests .....	202
8.23 WritePropertyMultiple Service Initiation Tests .....	204
8.24 DeviceCommunicationControl Service Initiation Tests .....	206
8.25 ConfirmedPrivateTransfer Service Initiation Test .....	207
8.26 UnconfirmedPrivateTransfer Service Initiation Test .....	208
8.27 ReinitializeDevice Service Initiation Tests .....	208
8.28 ConfirmedTextMessage Service Initiation Tests .....	209
8.29 UnconfirmedTextMessage Service Initiation Tests .....	210
8.30 TimeSynchronization Service Initiation Tests .....	211
8.31 UTCTimeSynchronization Service Initiation Tests .....	211
8.32 Who-Has Service Initiation Tests .....	211

8.33	I-Have Service Initiation Tests .....	212
8.34	Who-Is Service Initiation Tests .....	213
8.35	I-Am Service Initiation Tests .....	213
8.36	VT-Open Service Initiation Tests .....	213
8.37	VT-Close Service Initiation Tests .....	215
8.38	VT-Data Service Initiation Tests .....	216
8.39	RequestKey Service Initiation Tests.....	218
8.40	Authenticate Service Initiation Tests.....	219
9.	APPLICATION SERVICE EXECUTION TESTS .....	223
9.1	AcknowledgeAlarm Service Execution Tests .....	223
9.2	ConfirmedCOVNotification Service Execution Tests.....	244
9.3	UnconfirmedCOVNotification Service Execution Tests.....	248
9.4	ConfirmedEventNotification Service Execution Tests.....	248
9.5	UnconfirmedEventNotification Service Execution Tests.....	251
9.6	GetAlarmSummary Service Execution Tests .....	251
9.7	GetEnrollmentSummary Service Execution Tests .....	252
9.8	GetEventInformation Service Execution Tests .....	256
9.9	LifeSafetyOperation Service Execution Test .....	258
9.10	SubscribeCOV Service Execution Tests .....	259
9.11	SubscribeCOVProperty Service Execution Tests.....	266
9.12	AtomicReadFile Service Execution Tests .....	273
9.13	AtomicWriteFile Service Execution Tests .....	279
9.14	AddListElement Service Execution Tests .....	289
9.15	RemoveListElement Service Execution Tests.....	292
9.16	CreateObject Service Execution Tests.....	293
9.17	DeleteObject Service Execution Tests.....	298
9.18	ReadProperty Service Execution Tests.....	299
9.19	ReadPropertyConditional Service Execution Tests.....	301
9.20	ReadPropertyMultiple Service Execution Tests .....	302
9.21	ReadRange Service Execution Tests .....	309
9.22	WriteProperty Service Execution Tests.....	318
9.23	WritePropertyMultiple Service Execution Tests .....	323
9.24	DeviceCommunicationControl Service Execution Test .....	332
9.25	ConfirmedPrivateTransfer Service Execution Tests.....	339
9.26	UnconfirmedPrivateTransfer Service Execution Tests.....	339
9.27	ReinitializeDevice Service Execution Tests .....	339
9.28	ConfirmedTextMessage Service Execution Tests .....	342
9.29	UnconfirmedTextMessage Service Execution Tests .....	344
9.30	TimeSynchronization Service Execution Tests .....	344
9.31	UTCTimeSynchronization Service Execution Tests .....	345
9.32	Who-Has Service Execution Tests .....	346
9.33	Who-Is Service Execution Tests.....	351
9.34	VT-Open Service Execution Tests .....	354
9.35	VT-Close Service Execution Tests.....	355
9.36	VT-Data Service Execution Tests .....	357
9.37	RequestKey Service Execution Test.....	357
9.38	Authenticate Service Execution Tests .....	359
9.39	General Testing of Service Execution .....	363
10.	NETWORK LAYER PROTOCOL TESTS .....	365
10.1	Processing Application Layer Messages Originating from Remote Networks .....	365
10.2	Router Functionality Tests .....	365
10.3	Half-Router Functionality Tests .....	389
10.4	B/IP PAD Tests .....	396
10.5	Initiating Network Layer Messages.....	398
10.6	Non-Router Functionality Tests .....	399
10.7	Route Binding Tests .....	401

11.	LOGICAL LINK LAYER PROTOCOL TESTS .....	407
11.1	UI Command and Response .....	407
11.2	XID Command and Response .....	407
11.3	TEST Command and Response .....	408
12.	DATA LINK LAYER PROTOCOLS TESTS .....	409
12.1	MS/TP State Machine Tests .....	409
12.2	PTP State Machine Tests .....	464
13.	SPECIAL FUNCTIONALITY TESTS .....	502
13.1	Segmentation .....	502
13.2	Time Master .....	511
13.3	Character Sets .....	511
13.4	Malformed PDUs .....	512
13.5	Slave Proxy Tests .....	513
13.6	Automatic Network Mapping .....	516
13.7	Automatic Device Mapping .....	516
14.	BACnet/IP Functionality Tests .....	517
14.1	Non-BBMD B/IP Device .....	517
14.2	BBMD B/IP Device with a Server Application .....	519
14.3	Broadcast Distribution Table Operations .....	523
14.4	Foreign Device Table Operations (Negative Tests) .....	527
14.5	BACnet Broadcast Management (No Foreign Device Table, No Applications) .....	528
14.6	Foreign Device Management .....	530
14.7	Broadcast Management (BBMD, Foreign Devices, Local Application) .....	534
14.8	Registering as a Foreign Device .....	542
14.9	Initiating BVLL Service Requests Conveying an NPDU .....	542
15.	Reporting Test Results .....	544
	ANNEX A - Example EPICS (INFORMATIVE) .....	545

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## 1. PURPOSE

To define 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.

## 2. SCOPE

This standard 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.

## 3. DEFINITIONS

All definitions from ANSI/ASHRAE Standard 135-2008 also apply to this addendum.

**3.1 local network:** the network to which a BACnet device is directly connected.

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

**3.3 test database:** a database of BACnet functionality and objects created by reading the contents of an EPICS.

### 3.4 Abbreviations and Acronyms Used in the Standard

<b>BNF</b>	Backus-Naur Form syntax
<b>EPICS</b>	electronic protocol implementation conformance statement
<b>IUT</b>	implementation under test
<b>TCSL</b>	testing and conformance scripting language
<b>TD</b>	testing device
<b>TPI</b>	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.