ASHRAE

ADDENDA

ASHRAE BACnet®

A Data Communication Protocol for Building Automation and Control Networks

Approved by the ASHRAE Standards Committee on June 28, 2024, and by the American National Standards Institute on June 28, 2024.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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ASHRAE Standing Standard Project Committee 135
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ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

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[This foreword, the table of contents, the introduction, 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.

135-2020*cq*-1 Define a new "short form" for Array, List, and SequenceOf base types., p. 3
135-2020*cq*-2 Formally define the existing "short form" for primitives., p. 5

In the following document, language to be added to existing clauses of ANSI/ASHRAE Standard 135-2020 is indicated through the use of *italics* and deletions are indicated by ~~strikethrough~~. Where entirely new subclauses are proposed to be added, plain type is used throughout. Only this new and deleted text is open to comment at this time. All other material in this document is provided for context only and is not open for public review comment except as it relates to the proposed changes.

The use of placeholders such as XX, YY, ZZ, X1, X2, NN, x, n, ? etc. should not be interpreted as literal values of the final published version. These placeholders will be assigned actual numbers/letters only after final publication approval of the addendum.

135-2020*cq*-1 Define a new "short form" for Array, List, and SequenceOf base types.
Rationale

The requirement by Annex Z to use a JSON object for every structured base type defined in Annex Y can become verbose for base types Array, List, and SequenceOf. In many cases, the position indicators can be inferred; therefore, the member names of "1", "2", "3", etc., are unnecessary and undesirable.

[Add new Clause Z.3.3, p. 1369]

Z.3.3   Short Form For Array, List, and SequenceOf

If all values of an Array, List, or SequenceOf are present in the representation, then the values can be represented as a JSON array, with the numerical indexes implied.

For example, a representation in the form

"foo": { "$base":"List", "$"1": 55, "2":66, "3":77, "4":88 }

can have the values be represented as a JSON array as:

"foo": { "$base":"List", "$values": [55, 66, 77, 88] }

Note that the JSON member name is "$values" rather than the scalar "$value" that is used for primitive base types.

If all values are present and no metadata is present, then the "short form" encoding can be used. In this case, the values are represented directly as a JSON array.

For example, a representation in the form

"foo": { "$values": [55, 66, 77, 88] }

can be represented in the short form as

"foo": [55, 66, 77, 88]

This applies to nonprimitive members as well, so

"foo": { "$values": [{"a":55, "b":66 } , {"a":77, "b":88 }] }

can be represented in the short form as

"foo": [{"a":55, "b":66 }, {"a":77, "b":88 }]

The short form cannot be used when metadata is present. This is often the case when the definition of the Array, List, or SequenceOf is not determined by its context and therefore must convey metadata for $base, $type, or $memberType. For example, the following cannot use the short form:

"foo": { "$base":"List", "$memberType":"Real", "$values": [55, 66, 77, 88] },
"bar": { "$type":"555-BarType", "$values": [55, 66, 77, 88]   }

The JSON array form cannot be used when a representation does not include all the values of the Array, List, or SequenceOf; therefore, the position numbers cannot be inferred to be "1", "2", "3", etc. For example, the following representation cannot use the JSON array form:

"big-list": { "4231": 55, "4232":66, "4233":77, "4234":88 }

Note that the JSON array form for Array, List, and SequenceOf was added in Protocol_Revision 26 and there may be consumers that only parse the original long form with numeric member names. Therefore, if it is not known to the generator that the consumer can parse the short form, the numeric form should be used. For dynamic generation, this might be determined by communication (e.g., BACnet/WS). For file generation, the knowledge of the consumer's capabilities might be determined by the use case of the file (e.g., use cases that were developed after the array form was defined).

135-2020*cq*-2 Formally define the existing "short form" for primitives.

Rationale

The "short form" of the JSON representation of a primitive data item's value was never formally defined in Annex Z, even though it was defined for metadata in Annex W and is widely used in examples of values.

[Add new Clause Z.5.2 p. 1369]

Z.5.2   Short Form for Primitive Values

If the value is the only thing being represented for a primitive base type, then the "short form" can optionally be used. In this case, the appropriate JSON type specified in Table Z-1 is used as the value of the JSON object member.

For example, the representations

    "my-real": { "$value": 75 }
    "my-boolean": { "$value": false }
    "my-string": { "$value": "Hello"}

can be represented in short form as

    "my-real": 75
    "my-boolean": false
    "my-string": "Hello"

Note that the Null base type does not have a value and therefore does not have a "short form." If a Null data item has no metadata, it is represented as

    "my-null": {}

ANSI/ASHRAE Addendum cq to ANSI/ASHRAE Standard 135-2020

[Add a new entry to History of Revisions, p. 1429]

(This History of Revisions is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard.)

HISTORY OF REVISIONS

. . .	. . .	. . .
1	26	**Addendum *cq* to ANSI/ASHRAE Standard 135-2020**
		Approved by ASHRAE on June 28, 2024; and by the American National Standards Institute on June 28, 2024.
		1. Define a new "short form" for Array, List, and SequenceOf base types.
		2. Formally define the existing "short form" for primitives.

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ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

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