



**BSR/ASHRAE Addendum *bw* to
ANSI/ASHRAE Standard 135-2016**

Public Review Draft

**Proposed Addendum *bw* to Standard
135-2016, BACnet[®] - A Data
Communication Protocol for Building
Automation and Control Networks**

**First Public Review (September 2018)
(Draft shows Proposed Changes to Current Standard)**

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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.

135-2016~~bw~~-1. Add Time Series Data Exchange Format, p. 3

In the following document, language to be added to existing clauses of ANSI/ASHRAE 135-2016 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 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 like X, Y, Z, X1, X2, N, 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.

135-2016*bw*-1. Add Time Series Data Exchange Format

Rationale

There is a need for a simple, universal data exchange format for the transfer of a time-series data between various platforms for operations such as analyzing the energy performance of buildings.

This had been proposed to ASHRAE as a separate standard, but was rejected because it was felt that the scope was too narrow and it would be better presented as a normative annex in Standard 135.

NOTE: This CSV format will not be consumable by Excel easily. Excel does not like any Date-Time formats and will not graph anything with less than a day resolution.

[Change **Clause 3.3**, p.7]

3.3 Abbreviations and Acronyms Used in this Standard

...	
CRC	cyclic redundancy check
CSV	<i>comma-separated values, as defined by RFC 4180</i>
D' '	denotes that decimal notation is used between the single quotes
...	

[Insert new entry to **Clause 25**, preserving the alphabetical order, p. 932]

IETF RFC 4180, Common Format and MIME Type for Comma-Separated Values (CSV) Files, Internet Engineering Task Force

[Add new **Annex XX**, p. 1348]

ANNEX XX – TIME SERIES DATA EXCHANGE FORMAT (NORMATIVE)

(This annex is part of this standard and is required for its use.)

Collected trend data has value in many third-party applications, including building energy optimization using energy information systems, trend analysis for one-time building assessments, continuous commissioning, and fault detection and diagnostics. To facilitate standard exchange of this data, its format in text files is defined here.

XX.1 File Generation

As an example implementation, a system for collecting or archiving trends could provide a menu in the user interface of the system that allows the export of trend data in a standardized format. The export function would incorporate options to limit the data exported to certain time periods and/or to certain trend sources. The means of specifying what to export is a local matter.

Since this CSV format is defined for only one trend source, each source must be exported into a separate file. However, since some trend sources might have multiple values per sample, this CSV format also supports the possibility of more than one value, represented in subsequent columns from the primary value.

XX.2 File Format

Trend data shall be exported as text files in CSV format as specified by RFC 4180, with columns comprised of the timestamps and data values. Each line shall be terminated with a carriage return and line feed (ASCII #13 followed by ASCII #10). The first line of the file shall be filled with the word "DateTime" followed by comma, followed by a

descriptive name indicating the trend source. Subsequent comma-separated column headings for multiple values, if any, shall also use a descriptive name identifying the data in that column. Subsequent lines shall contain the time stamps and trend data value(s), in ascending order of date and time.

Note that RFC 4180 specifies the rules for quoting when fields contain commas or quotes.

The name of the exported file is a local matter with the exception that either the user shall be given the opportunity to name the file or the name of the trend source shall be incorporated into the file name so as to make it recognizable to the user and unique among other exported files.

Each descriptive column heading shall be a nonempty printable string in UTF-8 format and shall be limited to 80 characters.

The timestamp column shall use the format defined by XML Schema `xs:datetime`. Fractional seconds are optional. The time zone indicator is required.

Each data value shall be represented as a string that is appropriate for the data type and shall be formatted as if returned in 'plain text' from the services described in Annex W.

Examples of CSV files are shown in Figure XX-1 and XX-2.

File: History of B8-Plant-CH3-CHWS-Temp-F.csv

DateTime,B8-Plant-CH3-CHWS-Temp-F
2009-06-16T13:01:02-08:00, 42.0
2009-06-16T13:06:02-08:00, 42.5
2009-06-16T13:11:02-08:00, 42.3

Figure XX-1. Example of a CSV file.

File: History of B8-Plant-CH3-CHWS-multi.csv

DateTime,B8-Plant-CH3-CHWS-Temp-F,Status_Flags,Running
2009-06-16T21:01:02Z, 42.0,,active
2009-06-16T21:06:02Z, 0.0,fault;alarm,active
2009-06-16T21:11:02Z, 42.3,,active

Figure XX-2. Example of a CSV file with multiple values.

[Add new **Clause K.X**, p. 1077]

K.X External Systems BIBBs

These BIBBs prescribe interactions with external (non-BACnet) systems.

K.X.1 BIBB - Time Series Data Export (EX-TSDE-B)

The system shall provide for the export of time series data according to the requirements of Annex XX.

[Add a new entry to **History of Revisions**, p. 1364]

HISTORY OF REVISIONS

...
1	X	Addendum <i>bw</i> to ANSI/ASHRAE Standard 135-2016 Approved by ASHRAE on MONTH DAY, 20XX; and by the American National Standards Institute on MONTH DAY, 20XX. 1. Add Time Series Data Exchange Format