INTERPRETATION IC 135-2024-3 OF
ANSI/ASHRAE STANDARD 135-2024 BACnet® -
A Data Communication Protocol for Building
Automation and Control Networks

Approval Date: February 8, 2025

Request from: Michael Osborne, BTB Consulting, 408 - 9864 Fourth St, Sidney, BC, V8L 2Z4.

Reference: This request for interpretation refers to ANSI/ASHRAE Standard 135-2024, Clauses K.4.11 and K.4.12 and pertains to the requirement to retrieve and present log records that contain StatusFlags.

Background:

K.4.11 BIBB - Trending-View-A (T-V-A)

The A device displays trend data from the B device. Within the context of this BIBB, the term "trend object" shall refer to both Trend Log and Trend Log Multiple objects.

BACnet Service	Initiate	Execute
ReadRange	x	

The A device uses ReadRange to retrieve and display trend object Log_Buffer properties.

Devices claiming support for this BIBB shall be capable of presenting data from trend objects for the following types of data:

Boolean, Real, ENUMERATED, Unsigned32, Integer, BitString, Null

Devices claiming conformance to a Protocol_Revision less than 7 are not required to support these interactions with Trend Log Multiple objects. The A device need not be capable of interoperating with Trend Logs of the form defined in Protocol_Revision 1.

K.4.12 BIBB - Trending-Advanced View and Modify-A (T-AVM-A)

The A device displays trend data from the B device and manipulates trend log collection parameters in the B device. Devices claiming support for this BIBB shall support DS-RP-A and DS-WP-A. Within the context of this BIBB, the term "trend object" shall refer to both Trend Log and Trend Log Multiple objects.

BACnet Service	Initiate	Execute
CreateObject	x	
DeleteObject	x	
ReadProperty	x	
ReadRange	x	
WriteProperty	x	

The A device shall be capable of using ReadRange to retrieve and display trend object Log_Buffer properties, ReadProperty to retrieve and display trend object properties, WriteProperty to modify trend object properties, and CreateObject and DeleteObject to create and delete trend objects, Event Enrollment and Notification Class objects. The properties that the A device shall be capable of reading and writing are listed below. Device A may use alternate services where support for execution of the alternate service is supported by the B Device.

Table K-28. Trend Object Properties That T-AVM-A Devices Shall Be Capable of Presenting and Modifying

Enable	Stop_When_Full
Start_Time	Buffer_Size
Stop_Time	Record_Count
Log_DeviceObjectProperty	Total_Record_Count (retrieve only)
Logging_Type	Notification_Threshold
Log_Interval	Last_Notify_Record (retrieve only)
Align_Intervals	Event_State (retrieve only)
Interval_Offset	Notification_Class
COV_Resubscription_Interval	Event_Enable
Client_COV_Increment	Event_Time_Stamps (retrieve only)

In addition, devices claiming support for T-AVM-A shall be capable of creating and configuring Event Enrollment objects to monitor trend objects using the BUFFER_READY algorithm. The A device shall also be capable of creating and configuring Notification Class objects (as described in AE-AVM-A) for setup of Automated Trend Retrieval.

Devices claiming support for this BIBB shall be capable of presenting trend object data of the following types:

Boolean, Real, ENUMERATED, Unsigned32, Integer, BitString, Null

Devices claiming support for this BIBB shall be capable of writing values within the full range as defined in Tables K-4 and K-6.

A device claiming support for T-AVM-A is interoperable with devices that support T-VMT-I-B or T-VMMV-I-B.

Devices claiming conformance to a Protocol_Revision less than 7, are not required to support these interactions with Trend Log Multiple objects nor properties added to the Trend Log object in Protocol_Revision 7. The A device need not be capable of interoperating with Trend Logs of the form defined in Protocol_Revision 1.

12.25.14 Log_Buffer

This property, of type BACnetLIST of BACnetLogRecord, is a list of up to Buffer_Size timestamped log records of datatype BACnetLogRecord, each of which conveys a recorded data value, an error related to data-collection, or status changes in the Trend Log object. Each log record has data fields as follows:

Timestamp When Logging_Type is POLLED or TRIGGERED the timestamp shall be the date and time the logging object attempts to acquire the record. When Logging_Type is COV, the timestamp shall be the date and time included within the notification if supplied, otherwise the date and time when the notification was received.

LogDatum The data value read from the monitored object and property, an error encountered in an attempt to read a value, or a change in status or operation of the Trend Log object itself.

StatusFlags If this field is present in the log record, then it shall contain the value of the Status_Flags property of the monitored object. If the monitored object is in a different device than the Trend Log object, then it is recommended that the Status_Flags and the data value in the monitored object property be acquired together with a single service request, such as ReadPropertyMultiple or one of the COV notification services.

The choices available for the LogDatum are listed below:

log-status This choice represents a change in the status or operation of the Trend Log object. Whenever one of the events represented by the flags listed below occurs, a log record shall be appended to the log buffer.

LOG_DISABLED		This flag is changed whenever collection of log records by the Trend Log object is enabled or disabled. It shall be TRUE if Enable is FALSE, or the local time is outside the range defined by Start_Time and Stop_Time, or the addition of this log record will cause the log buffer to be full and Stop_When_Full is TRUE; otherwise it shall be FALSE.
BUFFER_PURGED		This flag shall be set to TRUE whenever the buffer is cleared by writing zero to the Record_Count property or by a change to the Log_DeviceObjectProperty property. After this value is recorded in the log buffer, the subsequent immediate change to FALSE shall not be recorded. A log record indicating the purging of the log buffer shall be placed into the log buffer even if logging is disabled, the local time is outside of the time range defined by the Start_Time and Stop_Time properties, or the log buffer was completely empty before the request for clearing.
LOG_INTERRUPTED		This flag indicates that the collection of log records by the Trend Log object was interrupted by a power failure, device reset, object reconfiguration or other such disruption, such that samples prior to this log record might have been missed.
boolean-value real-value enumerated-value unsigned-value integer-value bitstring-value null-value		These choices represent the data values and datatypes read from the monitored object and property.
failure		This choice represents an error encountered in an attempt to read a data value from the monitored object. If the error is conveyed by an error response from a remote device the Error Class and Error Code in the response shall be recorded.
time-change		This choice represents a change in the clock setting in the device; it records the number of seconds and fraction of a second by which the clock changed. If, and only if, the number is not known, such as when the clock is initialized for the first time, the value recorded shall be 0.0. This log record shall be recorded after changing the local time of the device and the timestamp shall reflect the new local time of the device.
any-value		This choice represents the data values and datatypes read from the monitored object and property that are not specifically listed in LogDatum.

Also associated with each log record is an implied log record number, the value of which is equal to Total_Record_Count at the point where the log record has been added into the log buffer and Total_Record_Count has been adjusted accordingly. All clients shall be able to correctly handle the case where the Trend Log object is reset such that its Total_Record_Count is returned to zero and also the case where Total_Record_Count has wrapped back to one.

The log buffer is not network accessible except through the use of the ReadRange service, in order to avoid problems with record sequencing when segmentation is required.

If the object supports event reporting, then a reference to this property shall be the pLogBuffer parameter for the object's event algorithm. See Clause 13.3 for event algorithm parameter descriptions.

Problem:

T-V-A states: "The A device uses ReadRange to retrieve and display trend object Log_Buffer properties." and T-AVM-A states: " The A device shall be capable of using ReadRange to

retrieve and display trend object Log_Buffer properties, …". The Log_Buffer contains a list of log records that contain fields not properties.

The StatusFlags field is optional but, to be interoperable, a client that supports reading Trend Logs must be able to process ReadRange responses that contain this field.

Interpretation: A device that claims T-V-A or T-AVM-A must be able to retrieve and display the Timestamp, LogDatum, and StatusFlags fields contained in a log record.

Question: Is this Interpretation correct?

Answer: Yes