INTERPRETATION IC 135-2012-17 OF
ANSI/ASHRAE STANDARD 135-2012 BACnet® -
A Data Communication Protocol for Building
Automation and Control Networks

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE 135-2012, Clauses 12.25.14, 12.30.19, and 21 (BACnetLogData and BACnetLogRecord) relating to trending.

Background: The standard is not clear on how to collect values with a datatype of Double in Trend Log or Trend Log Multiple objects, because there is no CHOICE context-tag for Double.

The LogDatum specification in clause for Log Buffer of Trend Log states:
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 record shall be appended to the buffer.

	LOG_DISABLED	This flag is changed whenever collection of 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 record will cause the 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 buffer, the subsequent immediate change to FALSE shall not be recorded. A record indicating the purging of the buffer shall be placed into the buffer even if the Trend Log is disabled or outside of the time range defined by the Start_Time and Stop_Time properties.
	LOG_INTERRUPTED	This flag indicates that the collection of 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 record might have been missed.

boolean-value real-value enum-value unsigned-value signed-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 by which the clock changed. If the number is not known, such as when the clock is initialized for the first time, the value recorded shall be zero. This 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.

```
BACnetLogRecord ::=  SEQUENCE {
        timestamp       [0] BACnetDateTime,
        logDatum        [1] CHOICE {
                log-status      [0] BACnetLogStatus,
                boolean-value   [1] BOOLEAN,
                real-value      [2] REAL,
                enum-value      [3] ENUMERATED,     -- Optionally limited to 32 bits
                unsigned-value  [4] Unsigned,     -- Optionally limited to 32 bits
                signed-value    [5] INTEGER,    -- Optionally limited to 32 bits
                bitstring-value [6] BIT STRING,-- Optionally limited to 32 bits
                null-value      [7] NULL,
                failure         [8] Error,
                time-change     [9] REAL,
                any-value       [10] ABSTRACT-SYNTAX.&Type  -- Optional
                },
        statusFlags     [2] BACnetStatusFlags OPTIONAL
        }
```

Similarly, the LogData specification in clause for Log Buffer of Trend Log Multiple states:
The choices available for LogData are listed below:

log- status	This choice represents a change in the status or operation of the Trend Log Multiple 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 Multiple 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 Log_Buffer is cleared by writing zero to the Record_Count property, or due to 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 buffer even if logging is disabled or outside of the time range defined by the Start_Time and Stop_Time properties.
LOG_INTERRUPTED	This flag indicates that the collection of log records by the Trend Log Multiple object was interrupted by a power failure, device reset, object reconfiguration or other such disruption, such that samples prior to this record might have been missed.

log-data	The set of logged values. The order of logged values shall correspond to the order of the Log_DeviceObjectProperty array.

	boolean-value	These choices represent the data values and datatypes read from the

real-value	monitored object and property.
enum-value	
unsigned-value	
signed-value	
bitstring-value	
null-value	

any-value — This choice represents the data values and datatypes read from the monitored object and property.

failure — This choice indicates either that an entry in the Log_DeviceObjectProperty array contains an object or device instance equal to 4194303, that a previously logged value was purged, or that an error was 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 by which the clock changed. If the number is not known, such as when the clock is initialized for the first time, the value recorded shall be zero.

```
BACnetLogData ::= CHOICE {
        log-status      [0] BACnetLogStatus,
        log-data        [1] SEQUENCE OF CHOICE {
                        boolean-value   [0] BOOLEAN,
                        real-value      [1] REAL,
                        enum-value      [2] ENUMERATED,        -- Optionally limited to 32 bits
                        unsigned-value  [3] Unsigned,          -- Optionally limited to 32 bits
                        signed-value    [4] INTEGER,           -- Optionally limited to 32 bits
                        bitstring-value [5] BIT STRING,        -- Optionally limited to 32 bits
                        null-value      [6] NULL,
                        failure         [7] Error,
                        any-value       [8] ABSTRACT-SYNTAX.&Type  -- Optional
                        },
        time-change     [2] REAL
        }
```

Interpretation: To collect LogDatum or LogData containing values with the Double datatype, the data in the Log_Buffer of the Trend Log or Trend Log Multiple object shall be encoded with the CHOICE context-tag for any-value and within that shall be application-tagged as Double.

Question: Is this interpretation correct?

Answer: Yes