INTERPRETATION IC 135-2016-15 OF
ANSI/ASHRAE STANDARD 135-2016 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 Standard 135-2016, Clauses 13.2.2.1 and 13.3, regarding Transitions out of FAULT while an OFFNORMAL condition exists.

Background: The standard is clear that all transitions out of FAULT are to the NORMAL state. And that if an offnormal condition exists, the object will first transition to NORMAL and will then transition to an offnormal state.

The problem lies in determining how long an object should remain in the NORMAL state before transitioning to an offnormal state.

The event algorithms describe the pTimeDelay parameter as the amount of time that the offnormal condition must exist before the object indicates the transition to an offnormal state.

> This parameter, of type Unsigned, represents the time, in seconds, that the offnormal conditions must exist before an offnormal event state is indicated.

In addition, the transition generally follow this form:

> (a) If pCurrentState is NORMAL, and <some language describing an offnormal condition> for pTimeDelay, then indicate a transition to the OFFNORMAL event state.

These statements are made without regard to:

a) the implication made on the Present_Value of the object that the value is not reliable when in FAULT (and by extension should not be used as the basis for determining if an offnormal condition exists).
b) whether the measurement of time is from when the state machine entered the NORMAL state, or when the condition was originally detected.

There are 2 obvious approaches to determining when the device starts measuring the existence of the offnormal condition:

a) when the condition is first detected (before or during the FAULT state),
b) when the object enters the NORMAL state.

There may be other reasonable points in time when timing of the offnormal condition could start.

Interpretation: The standard does not rule on when an event-generating object should start timing the existence of the offnormal condition and as such a device is free to:

- start the timer at the point the condition is detected;
- at the point when the object enters the NORMAL state; or
- any time in between as deemed reasonable by the implementor.

Question: Is this Interpretation correct?

Answer: No.

Comments: While the standard does not directly state that Present_Value shall not be used for determining normal / offnormal conditions while Reliability is something other than NO_FAULT_DETECTED, the standard is clear that the value is unreliable and by extension should not be the basis for evaluating normal and offnormal conditions.

The state machines were written such that the normal / offnormal conditions should hold for the length of the applicable timer in the current state. As such, the offnormal timer should be considered to have been reset when the state machine transitioned from FAULT to NORMAL.