INTERPRETATION IC 135-2004-8 OF
ANSI/ASHRAE STANDARD 135-2004 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 135-2004 in the following sections and tables relating to FLOATING_LIMIT and OUT_OF_RANGE transitions:

- Sections 12.2.19-12.2.21 (Analog Input) (pages 140-141)
- Sections 12.3.20-12.3.22 (Analog Output) (pages 145-146)
- Sections 12.4.16-12.4.18 (Analog Value) (pages 150-151)
- Section 12.17.32 (Loop) (page 211)
- Sections 12.23.22-12.23.24 (Pulse Converter) (pages 238-239)
- Section 13.3.5 FLOATING_LIMIT Algorithm (page 262)
- Section 13.3.6 OUT_OF_RANGE Algorithm (page 263)
- Table 13.2, Standard Objects That May Support Intrinsic Reporting (page 256)

Background: It is not clear from the text and the state diagrams whether event transitions directly from High_Limit to Low_Limit are expected, or whether an intervening transition to Normal is expected. The state diagrams specifically do not have such a transition indicated, but the text is not as clear. This issue has been raised a number of times within different BACnet groups and there does not seem to be general concensus among those reading the standard what the correct behaviour is.

Interpretation: An object that reports FLOATING_LIMIT or OUT_OF_RANGE events shall not generate TO-OFFNORMAL transitions from an OFFNORMAL (LOW_LIMIT, or HIGH_LIMIT) state.

Question: Is this interpretation correct?

Answer: Yes.

Comments: This interpretation is correct, but the committee wants to clarify the issue with the broader interpretation that objects must follow the state machines as indicated in Clause 13 and therefore may not transition directly from the High Limit state to the Low Limit state or vice versa.   It is also part of this interpretation that the delay timer is reset on each of these transitions. As an example, if the object is in the High Limit state and the value drops directly to below the Low Limit, then, after one delay time, the object would transmit a TO-NORMAL event, if so enabled, and enter the Normal state, and then, after another time delay, the object would transmit an OFF-NORMAL event, if so enabled, and enter the Low Limit State.