

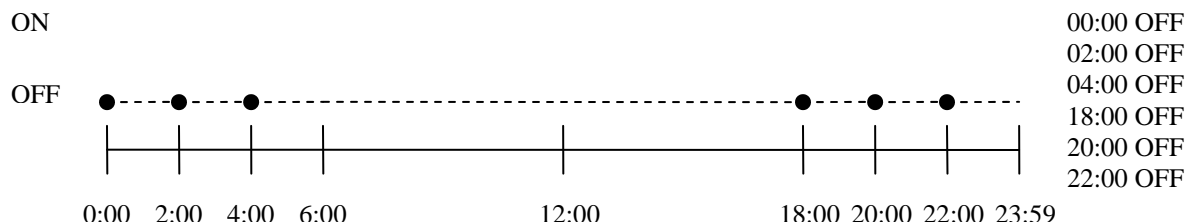
**INTERPRETATION IC 135-2010-1 OF
ANSI/ASHRAE STANDARD 135-2010 BACnet® -
A Data Communication Protocol for Building
Automation and Control Networks**

Approval Date: May 25, 2011

Request from: Bernhard Isler (bernhard.isler@siemens.com), Siemens Switzerland Ltd, Building Technologies Division, International Headquarters, Gubelstrasse 22, CH-6301 Zug, Switzerland.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 135-2010, Clause 12.24, relating to Schedule Object Type.

Background: In the lighting domain a schedule needs to be able to command the same value at subsequent points in time (e.g. 18:00 OFF; 20:00 OFF; ..). This allows e.g. to override local commands at the same command priority. The actual language in Clause 12.24.4 is unclear if this is allowed. The language could be interpreted in the following way: if the Present_Value is OFF and the subsequent entry in e.g. Weekly_Schedule is also OFF, then this value is not written to the referenced properties. The Clauses 12.24.7 to 12.24.9 use the terms 'schedule action' and 'in effect' which are independent if the value changes or not.



A similar use case for this feature is present in HVAC control, where a temperature setting has to be reset, e.g. each midnight, to a default value, in order to override manual settings done during the day.

12.24.4 Present_Value

... This property shall be writable when Out_Of_Service is TRUE (see 12.24.14).

Any change in the value of this property shall be written to all members of the List_Of_Object_Property_References property. ...

The normal calculation of the value of the Present_Value property is illustrated as follows (the actual algorithm used is a local matter but must yield the same results as this one):

1. Find the highest relative priority (as defined by Clause 12.24.8) Exception_Schedule array element that is in effect for the current day and whose current value (see method below) is not NULL, and assign that value to the Present_Value property.

2. If the Present_Value was not assigned in the previous step, then evaluate the current value of the Weekly_Schedule array element for the current day and if that value is not NULL, assign it to the Present_Value property.
3. If the Present_Value was not assigned in the previous steps, then assign the value of the Schedule_Default property to the Present_Value property.

The method for evaluating the current value of a schedule (either exception or weekly) is to find the latest element in the list of BACnetTimeValues that occurs on or before the current time, and then use that element's value as the current value for the schedule. If no such element is found, then the current value for the schedule shall be NULL.

...

12.24.7 Weekly_Schedule (first paragraph)

... A BACnetDailySchedule consists of a list of BACnetTimeValues that are (time, value) pairs, which describe the sequence of schedule actions on one day of the week when no Exception_Schedule is in effect. ...

12.24.8 Exception_Schedule (second paragraph)

... If the current date matches any of the calendar entry criteria, the Exception Schedule would be activated and the list of BACnetTimeValues would be enabled for use.

...

12.24.9 Schedule_Default (first paragraph)

This property holds a default value to be used for the Present_Value property when no other scheduled value is in effect (see Clause 12.24.4).

...

Interpretation: A schedule action is in effect when a (time, value) pair is active for the current time. This schedule action is in effect until another (time, value) pair comes into effect. A (time, value) pair that comes into effect and has the value NULL stops the effect of a schedule action. This may activate a weekly schedule action or the Schedule_Default value. A schedule action ends latest at the end of the day. If a schedule action goes into effect, the Present_Value is updated and the referenced properties are written.

The Schedule object's behavior on writing to the referenced properties is independent of whether the value changes from one schedule action to the next, or to and from the use of the Schedule_Default value. Schedule actions that come into effect with the same value are different schedule actions and thus will update the Present_Value and the referenced properties are written.

Question: Is this interpretation correct?

Answer: No.

Comments: The standard is ambiguous. The standard does not rule whether an implementation is required to write, or is not allowed to write a value out if the newly calculated value is derived from a new time- value pair but with a value that is equal to the present value.