

## BACnet Protocol Implementation Conformance Statement

**Date:** May 22, 2017

**Vendor Name:** Amalva UAB

**Product Name:** C6

**Firmware Revision:** 2

**BACnet Protocol Revision:** 12

**Product Description:**

Controller with integrated communication module (UDP, 47808 port, 10Mbit Ethernet, RJ45 socket) designed to control and monitor *Komfovent* air handling units.

**BACnet Standardized Device Profile (Annex L):**

- BACnet Operator Workstation (B-OWS)
- BACnet Advanced Operator Workstation (B-AWS)
- BACnet Operator Display (B-OD)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

**List all BACnet Interoperability Building Blocks Supported (Annex K):**

|                   |          |                              |
|-------------------|----------|------------------------------|
| Data sharing      | DS-RP-B  | Read Property                |
|                   | DS-RPM-B | Read Property Multiple       |
|                   | DS-WP-B  | Write Property               |
| Device management | DM-DCC-B | Device Communication Control |
|                   | DM-DDB-B | Dynamic Device Binding       |
|                   | DM-DOB-B | Dynamic Object Binding       |
|                   | DM-TS-B  | Time Synchronization         |

**Segmentation Capability:**

- Able to transmit segmented messages Window Size \_\_\_\_\_
- Able to receive segmented messages Window Size \_\_\_\_\_

**Standard Object Types Supported:**

| Object type  | Properties   |
|--------------|--|
| Device       | Object_Identifier, Object_Name, Object_Type, System_Status, Vendor_Name, Vendor_Identifier, Model_Name, Firmware_Revision, Application_Software_Version, Protocol_Version, Protocol_Revision, Protocol_Services_Supported, Protocol_Object_Types_Supported, Object_List, Max_APDU_Length_Accepted, Segmentation_Supported, APDU_Timeout, Number_Of_APDU_Retries, Device_Address_Binding, Database_Revision, Property_List; Description, Local_Date, Local_Time |
| Analog value | Object_Identifier, Object_Name, Object_Type, Present_Value, Status_Flags, Event_State, Out_Of_Service, Units, Property_List; Reliability   |
| Binary value | Object_Identifier, Object_Name, Object_Type, Present_Value, Status_Flags, Event_State, Out_Of_Service, Property_List; Incative_Text, Active_Text   |

|                        |  |
|------------------------|--|
| Date value             | Object_Identifier, Object_Name, Object_Type, Present_Value, Status_Flags, Property_List  |
| Multi-state value      | Object_Identifier, Object_Name, Object_Type, Present_Value, Status_Flags, Event_State, Out_Of_Service, Number_Of_States, Property_List; State_Text |
| Positive integer value | Object_Identifier, Object_Name, Object_Type, Present_Value, Status_Flags, Units, Property_List; Reliability  |
| Time value             | Object_Identifier, Object_Name, Object_Type, Present_Value, Status_Flags, Property_List  |

**Data Link Layer Options:**

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s) \_\_\_\_\_
- MS/TP master (Clause 9), baud rate(s): \_\_\_\_\_
- MS/TP slave (Clause 9), baud rate(s): \_\_\_\_\_
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): \_\_\_\_\_
- Point-To-Point, modem, (Clause 10), baud rate(s): \_\_\_\_\_
- LonTalk, (Clause 11), medium: \_\_\_\_\_
- BACnet/ZigBee (ANNEX O)
- Other: \_\_\_\_\_

**Device Address Binding:**

- Yes  No

**Networking Options:**

- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
  - Does the BBMD support registrations by Foreign Devices?  Yes  No
  - Does the BBMD support network address translation?  Yes  No

**Network Security Options:**

- Non-secure Device - is capable of operating without BACnet Network Security
- Secure Device - is capable of using BACnet Network Security (NS-SD BIBB)
  - Multiple Application-Specific Keys:
  - Supports encryption (NS-ED BIBB)
  - Key Server (NS-KS BIBB)

**Character Sets Supported:**

- ISO 10646 (UTF-8)  IBM™/Microsoft™ DBCS  ISO 8859-1
- ISO 10646 (UCS-2)  ISO 10646 (UCS-4)  JIS X 0208

**If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:**

Not applicable.

**Objects:**

| <b>Analog value</b>                   |                 |                         |        |
|---------------------------------------|-----------------|-------------------------|--------|
| Object name                           | Object instance | Present value           |        |
|                                       |                 | Range/values/units      | Access |
| AWAY: setpoint                        | 0               | 5.0 – 40.0 [°C]         | W      |
| NORMAL: setpoint                      | 1               | 5.0 – 40.0 [°C]         | W      |
| INTENSIVE: setpoint                   | 2               | 5.0 – 40.0 [°C]         | W      |
| BOOST: setpoint                       | 3               | 5.0 – 40.0 [°C]         | W      |
| KITCHEN: setpoint                     | 4               | 5.0 – 40.0 [°C]         | W      |
| FIREPLACE: setpoint                   | 5               | 5.0 – 40.0 [°C]         | W      |
| OVERRIDE: setpoint                    | 6               | 5.0 – 40.0 [°C]         | W      |
| HOLIDAYS: setpoint                    | 7               | 5.0 – 40.0 [°C]         | W      |
| ECO: minimum supply air temperature   | 8               | 5.0 – 40.0 [°C]         | W      |
| ECO: maximum supply air temperature   | 9               | 5.0 – 40.0 [°C]         | W      |
| AIR QUALITY: temperature setpoint     | 10              | 5.0 – 40.0 [°C]         | W      |
| INFO: supply temperature              | 11              | [°C]                    | R      |
| INFO: extract temperature             | 12              | [°C]                    | R      |
| INFO: outdoor temperature             | 13              | [°C]                    | R      |
| INFO: water temperature               | 14              | [°C]                    | R      |
| INFO: panel 1 temperature             | 15              | [°C]                    | R      |
| INFO: panel 2 temperature             | 16              | [°C]                    | R      |
| INFO: current supply fan intensivity  | 17              | [%]                     | R      |
| INFO: current extract fan intensivity | 18              | [%]                     | R      |
| INFO: heat exchanger                  | 19              | [%]                     | R      |
| INFO: electric heater                 | 20              | [%]                     | R      |
| INFO: water heater                    | 21              | [%]                     | R      |
| INFO: water cooler                    | 22              | [%]                     | R      |
| INFO: DX unit                         | 23              | [%]                     | R      |
| EFFICIENCY/STATUS: SPI                | 24              | [W/(m <sup>3</sup> /h)] | R      |
| EFFICIENCY/STATUS: SPI (day)          | 25              | [W/(m <sup>3</sup> /h)] | R      |

| <b>Binary value</b>                  |                 |                             |        |
|--------------------------------------|-----------------|-----------------------------|--------|
| Object name                          | Object instance | Present value               |        |
|                                      |                 | Range/values/units          | Access |
| CONTROL: ON/OFF status               | 0               | 0 – off    1 – on           | W      |
| CONTROL: ECO mode                    | 1               | 0 – off    1 – on           | W      |
| CONTROL: AUTO mode                   | 2               | 0 – off    1 – on           | W      |
| AWAY: heating                        | 3               | 0 – off    1 – on           | W      |
| NORMAL: heating                      | 4               | 0 – off    1 – on           | W      |
| INTENSIVE: heating                   | 5               | 0 – off    1 – on           | W      |
| BOOST: heating                       | 6               | 0 – off    1 – on           | W      |
| KITCHEN: heating                     | 7               | 0 – off    1 – on           | W      |
| FIREPLACE: heating                   | 8               | 0 – off    1 – on           | W      |
| OVERRIDE: heating                    | 9               | 0 – off    1 – on           | W      |
| HOLIDAYS: heating                    | 10              | 0 – off    1 – on           | W      |
| ECO: free heating/cooling            | 11              | 0 – off    1 – on           | W      |
| ECO: heating enable denied           | 12              | 0 – off    1 – on           | W      |
| ECO: cooling enable denied           | 13              | 0 – off    1 – on           | W      |
| AIR QUALITY: enabled                 | 14              | 0 – disabled    1 – enabled | W      |
| AIR QUALITY: heating                 | 15              | 0 – off    1 – on           | W      |
| ALARMS: low supply air flow          | 16              | 0 – no    1 – yes           | R      |
| ALARMS: low extract air flow         | 17              | 0 – no    1 – yes           | R      |
| ALARMS: return water temperature low | 18              | 0 – no    1 – yes           | R      |

|                                     |    |        |         |   |
|-------------------------------------|----|--------|---------|---|
| ALARMS: low supply air temperature  | 19 | 0 – no | 1 – yes | R |
| ALARMS: high supply air temperature | 20 | 0 – no | 1 – yes | R |
| ALARMS: electric heater overheat    | 21 | 0 – no | 1 – yes | R |
| ALARMS: heat exchanger failure      | 22 | 0 – no | 1 – yes | R |
| ALARMS: heat exchanger icing        | 23 | 0 – no | 1 – yes | R |
| ALARMS: internal fire alarm         | 24 | 0 – no | 1 – yes | R |
| ALARMS: external fire alarm         | 25 | 0 – no | 1 – yes | R |
| ALARMS: temperature sensor failure  | 26 | 0 – no | 1 – yes | R |
| ALARMS: controller failure          | 27 | 0 – no | 1 – yes | R |
| ALARMS: service mode                | 28 | 0 – no | 1 – yes | R |
| ALARMS: clogged air filters         | 29 | 0 – no | 1 – yes | R |

| Date value     |                 |                         |        |
|----------------|-----------------|-------------------------|--------|
| Object name    | Object instance | Present value           |        |
|                |                 | Range/values/units      | Access |
| HOLIDAYS: from | 0               | 2017-01-01 – 2035-12-31 | W      |
| HOLIDAYS: till | 1               | 2017-01-01 – 2035-12-31 | W      |

| Multi-state value            |                 |   |            |
|------------------------------|-----------------|---|------------|
| Name                         | Object instance | Present value   |            |
|                              |                 | Range/values/units  | Access     |
| CONTROL: auto mode control   | 0               | 1 – scheduling      2 – air quality   | R          |
| CONTROL: current mode        | 1               | 1 – standby<br>2 – away<br>3 – normal<br>4 – intensive<br>5 – boost<br>6 – kitchen<br>7 – fireplace<br>8 – override<br>9 – holiday<br>10 – auto<br>11 – off         | W<br>[2-5] |
| SCHEDULER: operation program | 2               | 1 – stay at home<br>2 – working week<br>3 – office<br>4 – custom  | W          |
| SCHEDULER: next mode         | 3               | 1 – standby<br>2 – away<br>3 – normal<br>4 – intensive<br>5 – boost   | R          |
| SCHEDULER: next mode weekday | 4               | 1 – today<br>2 – mo<br>3 – tu<br>4 – we<br>5 – th<br>6 – fr<br>7 – sa<br>8 – su   | R          |
| CONTROL: temperature control | 5               | 1 – supply<br>2 – extract<br>3 – room<br>4 – balance  | W          |
| CONTROL: flow control        | 6               | 1 – CAV<br>2 – VAV<br>3 – DCV   | W          |
| CONTROL SEQUEENCE: stage 1   | 7               | 1 – none<br>2 – external coil<br>3 – electric heater<br>4 – external DX unit  | W          |
| CONTROL SEQUEENCE: stage 2   | 8               |   | W          |
| CONTROL SEQUEENCE: stage 3   | 9               |   | W          |
| SETTINGS: coil type          | 10              | 1 – hot water<br>2 – cold water   | W          |
| SETTINGS: language           | 11              | 1 – en<br>2 – lt<br>3 – ru<br>4 – pl<br>5 – sk<br>6 – de<br>7 – fr<br>8 – hu<br>9 – it<br>10 – ee<br>11 – nl<br>12 – lv<br>13 – pt<br>14 – se<br>15 – fi<br>16 – hr | W          |

|                             |    |  |   |   |
|-----------------------------|----|--|---|---|
| SETTINGS: flow units        | 12 | 1 – m <sup>3</sup> /h  | 2 – l/s   | W |
| OVERRIDE: mode              | 13 | 1 – all time<br>2 – if on  | 3 – if off  | W |
| HOLIDAYS: microventilation  | 14 | 1 – 1 t. per day<br>2 – 2 t. per day   | 3 – 3 t. per day<br>4 – 4 t. per day  | W |
| AIR QUALITY: sensor type B8 | 15 | 1 – none   | 3 – VOC   | W |
| AIR QUALITY: sensor type B9 | 16 | 2 – CO <sub>2</sub>  | 4 – RH  | W |
| RESET SETTINGS              | 17 | 1 – none<br>2 – “away”<br>3 – “normal”<br>4 – “intensive”<br>5 – “boost”<br>6 – “holidays” | 7 – “override”<br>8 – “kitchen”<br>9 – “fireplace”<br>10 – air quality<br>11 – eco<br>12 – advanced | W |

| Positive integer value            |                 |  |                                  |
|-----------------------------------|-----------------|--|----------------------------------|
| Object name                       | Object instance | Present value                              |                                  |
|                                   |                 | Range/values/units                         | Access                           |
| CONTROL: maximum supply flow      | 0               | [m <sup>3</sup> /h, l/s]                   | R                                |
| CONTROL: maximum extract flow     | 1               | [m <sup>3</sup> /h, l/s]                   | R                                |
| CONTROL: maximum supply pressure  | 2               | 0 – 1000 [Pa]                              | W                                |
| CONTROL: maximum extract pressure | 3               | 0 – 1000 [Pa]                              | W                                |
| CONNECTIVITY: IP address          | 4               | 0 – 4294967295                             | W                                |
| CONNECTIVITY: mask                | 5               | 0 – 4294967295                             | W                                |
| AWAY: supply flow                 | 6               | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| AWAY: extract flow                | 7               | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| NORMAL: supply flow               | 8               | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| NORMAL: extract flow              | 9               | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| INTENSIVE: supply flow            | 10              | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| INTENSIVE: extract flow           | 11              | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| BOOST: supply flow                | 12              | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| BOOST: extract flow               | 13              | 0.2 max – max [m <sup>3</sup> /h, l/s, Pa] | W                                |
| KITCHEN: supply flow              | 14              | 0.2 max – max [m <sup>3</sup> /h, l/s]     | W                                |
| KITCHEN: extract flow             | 15              | 0.2 max – max [m <sup>3</sup> /h, l/s]     | W                                |
| FIREPLACE: supply flow            | 16              | 0.2 max – max [m <sup>3</sup> /h, l/s]     | W                                |
| FIREPLACE: extract flow           | 17              | 0.2 max – max [m <sup>3</sup> /h, l/s]     | W                                |
| OVERRIDE: supply flow             | 18              | 0.2 max – max [m <sup>3</sup> /h, l/s]     | W                                |
| OVERRIDE: extract flow            | 19              | 0.2 max – max [m <sup>3</sup> /h, l/s]     | W                                |
| KITCHEN: timer                    | 20              | 0 – 300 [min]                              | W                                |
| FIREPLACE: timer                  | 21              | 0 – 300 [min]                              | W                                |
| OVERRIDE: timer                   | 22              | 0 – 300 [min]                              | W                                |
| AIR QUALITY: air quality setpoint | 23              | 0 – 2000 [ppm]<br>0 – 100 [%]              | W                                |
| AIR QUALITY: humidity setpoint    | 24              | 0 – 100 [%]                                | W                                |
| AIR QUALITY: minimum intensity    | 25              | 0, 20 – 100 [%]                            | W                                |
| AIR QUALITY: maximum intensity    | 26              | 0, 20 – 100 [%]                            | W                                |
| AIR QUALITY: check period         | 27              | 1 – 24 [h]                                 | W                                |
| ALARMS: active alarms count       | 28              | 0 – 10                                     | W<br>[39366<br>resets<br>alarms] |
| ALARMS: alarm history count       | 29              | 0 – 50                                     | R                                |
| INFO: current supply flow         | 30              | [m <sup>3</sup> /h, l/s]                   | R                                |
| INFO: current extract flow        | 31              | [m <sup>3</sup> /h, l/s]                   | R                                |
| INFO: filters impurity            | 32              | [%]  | R                                |

|  |    |          |   |
|--|----|----------|---|
| INFO: air dampers                            | 33 | [%]      | R |
| INFO: supply pressure                        | 34 | [Pa]     | R |
| INFO: extract pressure                       | 35 | [Pa]     | R |
| INFO: air quality/humidity sensor 1          | 36 | [ppm, %] | R |
| INFO: air quality/humidity sensor 2          | 37 | [ppm, %] | R |
| INFO: panel 1 humidity                       | 38 | [%]      | R |
| INFO: panel 2 humidity                       | 39 | [%]      | R |
| INFO: panel 1 air quality                    | 40 | [ppm]    | R |
| INFO: panel 2 air quality                    | 41 | [ppm]    | R |
| EFFICIENCY/STATUS: power consumption         | 42 | [W]      | R |
| EFFICIENCY/STATUS: heater power              | 43 | [W]      | R |
| EFFICIENCY/STATUS: heat exchanger recovery   | 44 | [W]      | R |
| EFFICIENCY/STATUS: heat exchanger efficiency | 45 | [%]      | R |
| EFFICIENCY/STATUS: energy saving             | 46 | [%]      | R |
| EFFICIENCY/STATUS: recovered energy (day)    | 47 | [Wh]     | R |
| EFFICIENCY/STATUS: recovered energy (month)  | 48 | [Wh]     | R |
| EFFICIENCY/STATUS: recovered energy (total)  | 49 | [Wh]     | R |
| CONSUMPTION: AHU (day)                       | 50 | [Wh]     | R |
| CONSUMPTION: AHU (month)                     | 51 | [Wh]     | R |
| CONSUMPTION: AHU (total)                     | 52 | [Wh]     | R |
| CONSUMPTION: add. air heater (day)           | 53 | [Wh]     | R |
| CONSUMPTION: add. air heater (month)         | 54 | [Wh]     | R |
| CONSUMPTION: add. air heater (total)         | 55 | [Wh]     | R |

| Time value                      |                 |                    |        |
|---------------------------------|-----------------|--------------------|--------|
| Object name                     | Object instance | Present value      |        |
|                                 |                 | Range/values/units | Access |
| SCHEDULER: next mode start time | 0               | 00:00 – 24:00      | R      |