BMS variables list

RoofTop UATYA software

[1. Validity 2](#_Toc62824828)

[2. Generality 2](#_Toc62824829)

[3. General information 2](#_Toc62824830)

[4. Protocol selection 3](#_Toc62824831)

[5. User level (basic database) 4](#_Toc62824832)

[5.1. List of variable addresses read only 4](#_Toc62824833)

[5.2. List of variable addresses in writing 6](#_Toc62824834)

[5.2.1. Logic required on / off by BMS 7](#_Toc62824835)

[5.2.2. BMS set point logic 7](#_Toc62824836)

[6. Service level (advanced database) 9](#_Toc62824837)

[6.1. List of probe variables (read only) 9](#_Toc62824838)

[6.2. List of digital input variables (read only) 10](#_Toc62824839)

[6.3. List of digital output variables (read only) 11](#_Toc62824840)

[6.4. List of analog output variables (read only) 13](#_Toc62824841)

[6.5. List of calculated variables (read only) 14](#_Toc62824842)

[6.6. Alarms list 15](#_Toc62824843)

[6.7. List of BACnet/IP variables (Accessory) 21](#_Toc62824844)

[6.8. List of SNMP variables (Accessory) 22](#_Toc62824845)

[6.9. LonWorks 23](#_Toc62824846)

[6.9.1. Generality 23](#_Toc62824847)

[6.9.2. SNVT table variables 23](#_Toc62824848)

# Validity

This manual is valid from version 16.7.7 of the RoofTop UATYA software.

# Generality

The purpose of this document is to provide the list of shared variables in the RoofTop UATYA software. The association between the relative graphical interface and the shared variable will also be presented.

The document is divided into three sections.

1. Basic parameters for communication
2. User level: information useful to the end user
3. Service level: useful information for the maintenance technician / installer
4. Complete list of the main information available for BMS systems

# General information

By default the controller has the following parameters:

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Default | Possible values | Info |
| Enable writing from BMS supervision  (SP [6]) | 0=Disabled | 0= Disabled, 1=Enabled | Modifiable from Service |
| BMS - Modbus RTU - Serial address (SP [32]) \* | 1 | 1..247 | Modifiable from Service |
| BMS - Modbus RTU - Speed \* \*\*  (SP [33]) | 1=19200 bps | 0=9600, 1=19200, 2=38400 | Modifiable from Service |
| Fixed parameters | 8 data bit | - | Uneditable |
| Parity bit \* \*\*  (SP [35]) | 0=None | 0=None, 1=Even, 2=Odd | Modifiable from Service |
| Number of stop bits \* \*\*  (SP [34]) | 1 | 1..2 | Modifiable from Service |
| BMS - BACnet IP - Device instance (SP [22]) \* | 102 | 0..419 | First 3 digits |
| BMS - BACnet IP - Device instance (SP [23]) \* | 3245 | 0..4302 | Last 4 digits |
| BMS - BACnet MS / TP - Station address  (SP [24]) \* | 1 | 0..127 | Modifiable from Service |
| BMS - BACnet MS / TP - Speed  (SP [25]) \* | 1=19200 bps | 0=9600, 1=19200, 2=38400 | Modifiable from Service |
| BMS - BACnet MS / TP - Max master  (SP [26]) \* | 1 | 0..127 | Modifiable from Service |
| BMS - BACnet MS / TP - Max info frames  (SP [26]) \* | 1 | 0..127 | Modifiable from Service |

\* these parameters can be modified from the web server inside the controller: (http://10.2.3.20/#/tools )

\*\* Whenever there is a change to these parameters, an automatic restart of the board will take place after 60 seconds (only with the unit in the OFF state)

For the password, refer to the "service" control manual

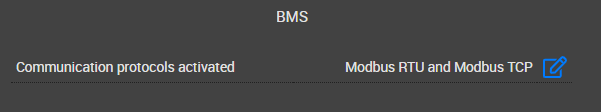
The following abbreviations are made in this document:

|  |  |
| --- | --- |
| Name | Description |
| Variable | memory area with prefixed address which contains information available to the outside. |
| Register | Integer variable with limits -32767 to 32678 |
| Reg. | Abbreviation of registry |
| Coil | Boolean variable with meaning: 0 = false, 1 = true |
| BOOL | Same meaning as Coil |
| UOM | Unit of measure |

# Protocol selection

The standard units have the Modbus TCP / IP and Modbus RTU protocol as standard, available respectively in the Ethernet port and in the BMS2 port. When ordering, you can also request the BACnet IP protocol or the SNMP protocol on the Ethernet port. it is also possible to request the BACnet MS / TP protocol on the BMS2 port or the LonWorks protocol on the BMS1 port. If one of the last two protocols was selected as the active protocol, it would replace the Modbus RTU protocol.

Remember that at most one of the optional protocols can be activated. To do this you need to use the touch display on the unit or the "tools" page of the wep app. Through the selection menu it is therefore possible to select the optional protocol to be activated.



Whenever there is a change to the active protocol, an automatic restart of the board will take place after 60 seconds (only with the unit in the OFF state).

# User level (basic database)

## List of variable addresses read only

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |
| BMS.BMS\_VAR\_LIST[156] | 256 | Supply ventilation - Temperature setpoint | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[157] | 257 | Supply ventilation - Air flow setpoint | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[158] | 258 | Supply ventilation - Pressure setpoint | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[159] | 259 | Supply ventilation - Delta pressure setpoint | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[160] | 260 | Return ventilation - Air flow setpoint | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[161] | 261 | Return ventilation - Pressure setpoint | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[162] | 262 | Return ventilation - Delta pressure setpoint | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[163] | 263 | Mechanical cooling – Temperature setpoint | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[164] | 264 | Mechanical heating / Auxiliary heating in winter mode – Temperature setpoint | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[165] | 265 | Auxiliary heating in summer mode – Temperature setpoint | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[166] | 266 | Post hot gas - Temperature setpoint | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[167] | 267 | Humidification - Relative humidity setpoint | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[168] | 268 | Humidification - Absolute humidity setpoint | 03 | g/Kg | 10 |
| BMS.BMS\_VAR\_LIST[175] | 275 | Unit status:  0=Off,  10=Starting,  20=On,  30=Shutdown | 03 | - | - |
| BMS.BMS\_VAR\_LIST[176] | 276 | Unit working mode:  -1 = On in alarm  1 = Stand-by  2 = Off by Datalink  3 = Off by ES  4 = Off by BMS  5 = Off by KEY/WEB  6 = Off by DIN  10 = Mechanical cooling  11 = Mechanical heating  12 = Mechanical dehumidification  13 = Auxiliary heating  14 = Humidification  15 = Free cooling  16 = Free heating  17 = Mechanical cooling + Auxiliary heating  18 = Mechanical cooling + Humidification  19 = Mechanical cooling + Free cooling  20 = Mechanical heating + Auxiliary heating  21 = Mechanical heating + Humidification  22 = Mechanical heating + Free heating  23 = Mechanical dehumidification + Auxiliary heating  24 = Mechanical dehumidification + Free cooling  25 = Mechanical cooling + Auxiliary heating + Humidification  26 = Mechanical cooling + Auxiliary heating + Free cooling  27 = Mechanical heating + Auxiliary heating + Humidification  28 = Mechanical heating + Auxiliary heating + Free heating  29 = Mechanical dehumidification + Auxiliary heating + Free cooling  30 = Mechanical cooling + Auxiliary heating + Humidification + Free cooling  31 = Mechanical heating + Auxiliary heating + Humidification + Free heating | 03 | - | - |
| BMS.BMS\_VAR\_LIST[177] | 277 | Supply ventilation regulation type:  2=Constant air flow (PC)  3=Variable air flow (POC)  4=Constant pressure (PRC)  5=Constant delta pressure (DPC) |  | - | - |
| BMS.BMS\_VAR\_LIST[178] | 278 | Return ventilation regulation type:  2=Constant air flow (PC)  3=Percentage air flow (POC%)  4=Constant pressure (PRC)  5=Constant delta pressure (DPC) |  | - | - |
| BMS.BMS\_VAR\_LIST[222] | 322 | Supply ventilation - Request 0..1000 | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[223] | 323 | Return ventilation - Request 0..1000 | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[224] | 324 | Mechanical cooling / dehumidification / heating – Request 0..1000 | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[225] | 325 | Auxiliary heating – Request 0..1000 | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[226] | 326 | Humidification – Request 0..1000 | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[188] | 288 | Supply ventilation air flow | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[189] | 289 | Return ventilation air flow | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[30] | 130 | Supply air temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[31] | 131 | Return ait temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[25] | 125 | bit 1: Non-serious alarm  bit 2: Serious alarm | 03 | - | - |
| BMS.BMS\_VAR\_LIST[179] | 279 | Alarm active | 03 | - | - |
| BMS.BMS\_VAR\_LIST[180] | 280 | Last alarm active | 03 | - | - |
| BMS.BMS\_VAR\_LIST[186] | 286 | bit 0: Summer mode / Winter mode | 03 | - | - |

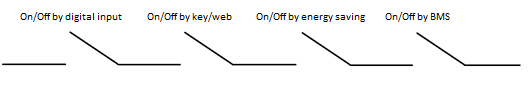
## List of variable addresses in writing

To activate the writing of the modbus variables, the parameter SP[6] must have the value 1. This parameter can be activated only at the service level. Below are the variables involved for unit control:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |
| BMS.BMS\_VAR\_LIST[141] | 241 | Supply ventilation - Air flow setpoint | 06 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[142] | 242 | Supply ventilation - Pressure setpoint | 06 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[143] | 243 | Supply ventilation - Delta pressure setpoint | 06 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[144] | 244 | Return ventilation - Air flow setpoint | 06 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[145] | 245 | Return ventilation - Pressure setpoint | 06 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[146] | 246 | Return ventilation - Delta pressure setpoint | 06 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[147] | 247 | Mechanical cooling / Cascade control – Temperature setpoint | 06 | °C | 10 |
| BMS.BMS\_VAR\_LIST[148] | 248 | Mechanical heating / Auxiliary heating in winter mode – Temperature setpoint | 06 | °C | 10 |
| BMS.BMS\_VAR\_LIST[149] | 249 | Auxiliary heating in summer mode – Temperature setpoint | 06 | °C | 10 |
| BMS.BMS\_VAR\_LIST[150] | 250 | Post hot gas - Temperature setpoint | 06 | °C | 10 |
| BMS.BMS\_VAR\_LIST[151] | 251 | Humidification - Relative humidity setpoint | 06 | % | 10 |
| BMS.BMS\_VAR\_LIST[152] | 252 | Humidification - Absolute humidity setpoint | 06 | g/Kg | 10 |
| BMS.BMS\_VAR\_LIST[172] | 272 |  | 06 | - | - |
| bit 0 |  | 0=Switch off unit,  1=Switch on unit |  |  |  |
| bit 1 |  | 0=Summer mode,  1=Winter mode |  |  |  |
| bit 2 |  | 0=Switch off heaters,  1=Switch on heaters |  |  |  |
| bit 3 |  | 0=Switch off post hot gas,  1=Switch on post hot gas |  |  |  |
| bit 4 |  | 0=Switch off humidification,  1=Switch on humidification |  |  |  |
| BMS.BMS\_VAR\_LIST[250] | 350 | BMS watchdog (used if PAL19 > 0) | 06 | - | - |

### Logic required on / off by BMS

Once the parameter SP[6] has been enabled, it will behave as in the figure:



So to get the unit on and in regulation we should make sure that:

1. The digital input (if any) is closed
2. There is keyboard consent
3. There is consent from energy saving (if you configure the time slots)
4. There is consent from the BMS system

If at least one consent of these is not present, no drive is performed by the unit.

### BMS set point logic

Once parameter SP [6] has been enabled (BMS enabled by supervisor) the unit's temperature control will be calculated according to the variables written through the supervisory system.

All setpoints sent by the BMS system are always limited by a minimum and maximum value defined in this table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable name | Description | Min | Max | UOM |
| FA[27] | Constant air flow control – Min. flow rate control (supply ventilation) | 0 | FA28 | 10 m3/h |
| FA[28] | Constant air flow control – Max. flow rate control (supply ventilation) | FA27 | 9999 | 10 m3/h |
| FA[34] | Constant pressure control – Min. pressure setpoint (supply ventilation) | 0.0 | FA35 | Pa |
| FA[35] | Constant pressure control – Max. pressure setpoint (supply ventilation) | FA34 | 3270.0 | Pa |
| FA[50] | Constant delta pressure control – Min. pressure setpoint (supply ventilation) | -3270.0 | FA51 | Pa |
| FA[51] | Constant delta pressure control – Max. pressure setpoint (supply ventilation) | FA50 | 3270.0 | Pa |
| RFA[27] | Constant air flow control – Min. flow rate control (return ventilation) | 0 | RFA28 | 10 m3/h |
| RFA[28] | Constant air flow control – Max. flow rate control (return ventilation) | RFA27 | 9999 | 10 m3/h |
| RFA[34] | Constant pressure control – Min. pressure setpoint (return ventilation) | 0.0 | RFA35 | Pa |
| RFA[35] | Constant pressure control – Max. pressure setpoint (return ventilation) | RFA34 | 3270.0 | Pa |
| RFA[50] | Constant delta pressure control – Min. pressure setpoint (return ventilation) | -3270.0 | RFA51 | Pa |
| RFA[51] | Constant delta pressure control – Max. pressure setpoint (return ventilation) | RFA50 | 3270.0 | Pa |
| ST[2] | Mechanical cooling – Min. temperature setpoint \* | 10.0 | ST3 | °C |
| ST[3] | Mechanical cooling – Max. temperature setpoint \* | ST2 | 35.0 | °C |
| STH[2] | Mechanical heating / Auxiliary heating in winter operating – Min. temperature setpoint | 15.0 | STH3 | °C |
| STH[3] | Mechanical heating / Auxiliary heating in winter operating – Max. temperature setpoint | STH2 | 40.0 | °C |
| HU[2] | Minimum relative humidity setpoint | 0.0 | HU3 | % |
| HU[3] | Maximum relative humidity setpoint | HU2 | 100.0 | % |
| HU[7] | Minimum absolute humidity setpoint | 4.5 | HU8 | g/Kg |
| HU[8] | Maximum absolute humidity setpoint | HU7 | 100.0 | g/Kg |

\* ST[2] and ST[3] are also used to limit the auxiliary heating setpoint in summer operating and the post hot gas setpoint.

# Service level (advanced database)

The information in this paragraph is additional to that in the previous paragraphs

## List of probe variables (read only)

The following variables indicating the status of the probes are visible from BMS:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |
| BMS.BMS\_VAR\_LIST[30] | 130 | Supply air temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[31] | 131 | Return air temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[32] | 132 | Return air relative humidity | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[33] | 133 | Supply air differential pressure | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[34] | 134 | Static pressure of supply channel / Aisle differential pressure | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[35] | 135 | External air temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[36] | 136 | External air relative humidity | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[37] | 137 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[38] | 138 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[39] | 139 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[40] | 140 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[41] | 141 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[42] | 142 | Circuit 1 - Condensation pressure | 03 | bar | 100 |
| BMS.BMS\_VAR\_LIST[43] | 143 | Circuit 1 - Evaporation pressure | 03 | bar | 100 |
| BMS.BMS\_VAR\_LIST[44] | 144 | Circuit 1 – Compressor 1 - Discharge temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[45] | 145 | Circuit 1 - Suction temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[46] | 146 | Circuit 1 - Liquid temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[47] | 147 | Circuit 1 – Compressor 2 - Discharge temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[48] | 148 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[49] | 149 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[50] | 150 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[51] | 151 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[52] | 152 | Circuit 2 - Condensation pressure | 03 | bar | 100 |
| BMS.BMS\_VAR\_LIST[53] | 153 | Circuit 2 - Evaporation pressure | 03 | bar | 100 |
| BMS.BMS\_VAR\_LIST[54] | 154 | Circuit 2 – Compressor 1 - Discharge temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[55] | 155 | Circuit 2 - Suction temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[56] | 156 | Circuit 2 - Liquid temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[57] | 157 | Circuit 2 – Compressor 2 - Discharge temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[58] | 158 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[59] | 159 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[60] | 160 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[61] | 161 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[62] | 162 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[63] | 163 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[64] | 164 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[65] | 165 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[66] | 166 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[67] | 167 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[68] | 168 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[69] | 169 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[70] | 170 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[71] | 171 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[72] | 172 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[73] | 173 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[74] | 174 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[75] | 175 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[76] | 176 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[77] | 177 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[78] | 178 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[79] | 179 | Dynamic setpoint | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[80] | 180 | Supply air relative humidity | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[81] | 181 | Return air differential pressure | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[82] | 182 | Static pressure of return channel / Aisle diff. pressure | 03 | Pa | 10 |
| BMS.BMS\_VAR\_LIST[83] | 183 | CO2 air quality | 03 | ppm | 1 |
| BMS.BMS\_VAR\_LIST[84] | 184 | VOC air quality | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[85] | 185 | Current consumption | 03 | A | 10 |
| BMS.BMS\_VAR\_LIST[86] | 186 | Mixed air temperature | - | - | - |
| BMS.BMS\_VAR\_LIST[87] | 187 | Not used | - | - | - |
| BMS.BMS\_VAR\_LIST[88] | 188 | Circuit 1 - Coil temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[89] | 189 | Circuit 2 - Coil temperature | 03 | °C | 10 |

## List of digital input variables (read only)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |  |
| BMS.BMS\_VAR\_LIST[20] | 120 |  | 03 | - | - |  |
| bit 0 |  | Remote on / off |  |  |  |  |
| bit 1 |  | Supply ventilation - Thermal overload |  |  |  |  |
| bit 2 |  | Heater 1 - Thermal overload |  |  |  |  |
| bit 3 |  | Heater 2 - Thermal overload |  |  |  |  |
| bit 4 |  | Not used |  |  |  |  |
| bit 5 |  | Not used |  |  |  |  |
| bit 6 |  | Supply air flow switch |  |  |  |  |
| bit 7 |  | Dirty filter alarm |  |  |  |  |
| bit 8 |  | Not used |  |  |  |  |
| bit 9 |  | Fire / smoke alarm |  |  |  |  |
| bit 10 |  | Min / max voltage alarm |  |  |  |  |
| bit 11 |  | Not used |  |  |  |  |
| bit 12 |  | Not used |  |  |  |  |
| bit 13 |  | External alarm |  |  |  |  |
| bit 14 |  | Not used |  |  |  |  |
| bit 15 |  | Not used |  |  |  |  |
| BMS.BMS\_VAR\_LIST[21] | 121 |  | 03 | - | - |  |
| bit 0 |  | Not used |  |  |  |  |
| bit 1 |  | Summer / winter changeover |  |  |  |  |
| bit 2 |  | Circuit 1 - Low pressure switch |  |  |  |  |
| bit 3 |  | Not used |  |  |  |  |
| bit 4 |  | Not used |  |  |  |  |
| bit 5 |  | Not used |  |  |  |  |
| bit 6 |  | Circuit 1 - External ventilation - Thermal overload |  |  |  |  |
| bit 7 |  | Not used |  |  |  |  |
| bit 8 |  | Circuit 2 - Low pressure switch |  |  |  |  |
| bit 9 |  | Not used |  |  |  |  |
| bit 10 |  | Not used |  |  |  |  |
| bit 11 |  | Not used |  |  |  |  |
| bit 12 |  | Circuit 2 - External ventilation - Thermal overload |  |  |  |  |
| bit 13 |  | Not used |  |  |  |  |
| bit 14 |  | Not used |  |  |  |  |
| bit 15 |  | Not used |  |  |  |  |
| BMS.BMS\_VAR\_LIST[22] | 122 |  | 03 | - | - |  |
| bit 0 |  | Heaters disabling |  |  |  |  |
| bit 1 |  | Humidifier disabling |  |  |  |  |
| bit 2 |  | Not used |  |  |  |  |
| bit 3 |  | Not used |  |  |  |  |
| bit 4 |  | Not used |  |  |  |  |
| bit 5 |  | Not used |  |  |  |  |
| bit 6 |  | Not used |  |  |  |  |
| bit 7 |  | Not used |  |  |  |  |
| bit 8 |  | Not used |  |  |  |  |
| bit 9 |  | Not used |  |  |  |  |
| bit 10 |  | Not used |  |  |  |  |
| bit 11 |  | Not used |  |  |  |  |
| bit 12 |  | Not used |  |  |  |  |
| bit 13 |  | Return ventilation - Thermal overload |  |  |  |  |
| bit 14 |  | Circuit 1 - Compressor 1 - Thermal overload |  |  |  |  |
| bit 15 |  | Circuit 1 - Compressor 2 - Thermal overload |  |  |  |  |
| BMS.BMS\_VAR\_LIST[23] | 123 |  | 03 | - | - |  |
| bit 0 |  | Circuit 1 - High pressure switch |  |  |  |  |
| bit 1 |  | Circuit 1 - Compressor 1 - Enabling |  |  |  |  |
| bit 2 |  | Circuit 1 - Compressor 2 - Enabling |  |  |  |  |
| bit 3 |  | Circuit 2 - Compressor 1 - Thermal overload |  |  |  |  |
| bit 4 |  | Circuit 2 - Compressor 2 - Thermal overload |  |  |  |  |
| bit 5 |  | Circuit 2 - High pressure switch |  |  |  |  |
| bit 6 |  | Circuit 2 - Compressor 1 - Enabling |  |  |  |  |
| bit 7 |  | Circuit 2 - Compressor 2 - Enabling |  |  |  |  |
| bit 8 |  | Forcing wash / recycle |  |  |  |  |
| bit 9 |  | Dirty filter alarm 2 |  |  |  |  |
| bit 10 |  | Pump down |  |  |  |  |
| bit 11 |  | Permission for second setpoint |  |  |  |  |
| bit 12 |  | Boiler - Generic alarm |  |  |  |  |
| bit 13 |  | Burner - Generic alarm |  |  |  |  |
| bit 14 |  | Leak detector |  |  |  |  |
| bit 15 |  | Not used |  |  |  |  |

## List of digital output variables (read only)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |  |
| BMS.BMS\_VAR\_LIST[25] | 125 |  | 03 | - | - |  |
| bit 0 |  | Supply ventilation |  |  |  |  |
| bit 1 |  | Non-serious alarm |  |  |  |  |
| bit 2 |  | Serious alarm |  |  |  |  |
| bit 3 |  | Heater 1 |  |  |  |  |
| bit 4 |  | Heater 2 |  |  |  |  |
| bit 5 |  | Ventilation alarm with leak detector alarm/fault |  |  |  |  |
| bit 6 |  | Not used |  |  |  |  |
| bit 7 |  | Circuit 1 - External ventilation |  |  |  |  |
| bit 8 |  | Not used |  |  |  |  |
| bit 9 |  | Not used |  |  |  |  |
| bit 10 |  | Circuit 2 - External ventilation |  |  |  |  |
| bit 11 |  | Not used |  |  |  |  |
| bit 12 |  | Not used |  |  |  |  |
| bit 13 |  | Circuit 1 - Compressor 1 |  |  |  |  |
| bit 14 |  | Circuit 1 - Compressor 2 |  |  |  |  |
| bit 15 |  | Circuit 2 - Compressor 1 |  |  |  |  |
| BMS.BMS\_VAR\_LIST[26] | 126 |  | 03 | - | - |  |
| bit 0 |  | Circuit 2 - Compressor 2 |  |  |  |  |
| bit 1 |  | Programmable 1 |  |  |  |  |
| bit 2 |  | Programmable 2 |  |  |  |  |
| bit 3 |  | Programmable 3 |  |  |  |  |
| bit 4 |  | Programmable 4 |  |  |  |  |
| bit 5 |  | Programmable 5 |  |  |  |  |
| bit 6 |  | Programmable 6 |  |  |  |  |
| bit 7 |  | Not used |  |  |  |  |
| bit 8 |  | Not used |  |  |  |  |
| bit 9 |  | Not used |  |  |  |  |
| bit 10 |  | Not used |  |  |  |  |
| bit 11 |  | Not used |  |  |  |  |
| bit 12 |  | Circuit 1 - Liquid solenoid |  |  |  |  |
| bit 13 |  | Circuit 2 - Liquid solenoid |  |  |  |  |
| bit 14 |  | Not used |  |  |  |  |
| bit 15 |  | Not used |  |  |  |  |
| BMS.BMS\_VAR\_LIST[27] | 127 |  | 03 | - | - |  |
| bit 0 |  | Not used |  |  |  |  |
| bit 1 |  | Not used |  |  |  |  |
| bit 2 |  | Not used |  |  |  |  |
| bit 3 |  | Not used |  |  |  |  |
| bit 4 |  | Not used |  |  |  |  |
| bit 5 |  | Not used |  |  |  |  |
| bit 6 |  | Not used |  |  |  |  |
| bit 7 |  | Not used |  |  |  |  |
| bit 8 |  | Return ventilation |  |  |  |  |
| bit 9 |  | Not used |  |  |  |  |
| bit 10 |  | Free cooling / free heating status |  |  |  |  |
| bit 11 |  | Circuit 1 - 4 ways valve |  |  |  |  |
| bit 12 |  | Circuit 2 - 4 ways valve |  |  |  |  |
| bit 13 |  | Boiler permission |  |  |  |  |
| bit 14 |  | Burner permission |  |  |  |  |
| bit 15 |  | Hot water coil permission |  |  |  |  |
| BMS.BMS\_VAR\_LIST[28] | 128 |  | 03 | - | - |  |
| bit 0 |  | Condensate collection tray heater |  |  |  |  |
| bit 1 |  | Not used |  |  |  |  |
| bit 2 |  | Not used |  |  |  |  |
| bit 3 |  | Cooling / heating status |  |  |  |  |
| bit 4 |  | Circuit 1 - Defrost status |  |  |  |  |
| bit 5 |  | Circuit 2 - Defrost status |  |  |  |  |
| bit 6 |  | Not used |  |  |  |  |
| bit 7 |  | Post hot gas - Main line solenoid valve |  |  |  |  |
| bit 8 |  | Post hot gas - Hot gas line solenoid valve |  |  |  |  |
| bit 9 |  | Zoning dampers / Additional ventilation |  |  |  |  |
| bit 10 |  | Post hot gas - Drain solenoid valve |  |  |  |  |
| bit 11 |  | Not used |  |  |  |  |
| bit 12 |  | Not used |  |  |  |  |
| bit 13 |  | Not used |  |  |  |  |
| bit 14 |  | Not used |  |  |  |  |
| bit 15 |  | Not used |  |  |  |  |

## List of analog output variables (read only)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |
| BMS.BMS\_VAR\_LIST[90] | 190 | Supply ventilation | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[91] | 191 | Circuit 1 - External ventilation | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[92] | 192 | Circuit 2 - External ventilation | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[93] | 193 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[94] | 194 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[95] | 195 | Hot water valve | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[96] | 196 | Modulating heaters | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[97] | 197 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[98] | 198 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[99] | 199 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[100] | 200 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[101] | 201 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[102] | 202 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[103] | 203 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[104] | 204 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[105] | 205 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[106] | 206 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[107] | 207 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[108] | 208 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[109] | 209 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[110] | 210 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[111] | 211 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[112] | 212 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[113] | 213 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[114] | 214 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[115] | 215 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[116] | 216 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[117] | 217 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[118] | 218 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[119] | 219 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[120] | 220 | Return ventilation | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[121] | 221 | Not used | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[122] | 222 | External air damper / Expulsion air damper / Bypass | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[123] | 223 | Recirculation air damper | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[124] | 224 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[125] | 225 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[126] | 226 | Not used | 03 | - | - |
| BMS.BMS\_VAR\_LIST[127] | 227 | Boiler request | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[128] | 228 | Burner request | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[129] | 229 | Not used | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[130] | 230 | Not used | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[131] | 231 | Not used | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[132] | 232 | Not used | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[133] | 233 | Preheating valve | 03 | % | 10 |

## List of calculated variables (read only)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command | UOM | Multiplier |
| BMS.BMS\_VAR\_LIST[188] | 288 | Supply ventilation air flow | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[189] | 289 | Return ventilation air flow | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[190] | 290 | POC supply ventilation air flow setpoint | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[191] | 291 | POC% return ventilation air flow setpoint | 03 | 10 m3/h | 1 |
| BMS.BMS\_VAR\_LIST[192] | 292 | Air delta temperature | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[193] | 293 | Return air dew point | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[194] | 294 | Condensation temperature circuit 1 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[195] | 295 | Evaporation temperature circuit 1 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[196] | 296 | Superheating circuit 1 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[197] | 297 | Subcooling circuit 1 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[198] | 298 | Delta pressure circuit 1 | 03 | bar | 100 |
| BMS.BMS\_VAR\_LIST[199] | 299 | Condensation temperature circuit 2 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[200] | 300 | Evaporation temperature circuit 2 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[201] | 301 | Superheating circuit 2 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[202] | 302 | Subcooling circuit 2 | 03 | °C | 10 |
| BMS.BMS\_VAR\_LIST[203] | 303 | Delta pressure circuit 2 | 03 | bar | 100 |
| BMS.BMS\_VAR\_LIST[204] | 304 | Return air absolute humidity | 03 | g/Kg | 10 |
| BMS.BMS\_VAR\_LIST[205] | 305 | Return air enthalpy | 03 | kJ/kg | 10 |
| BMS.BMS\_VAR\_LIST[206] | 306 | External air absolute humidity | 03 | g/Kg | 10 |
| BMS.BMS\_VAR\_LIST[207] | 307 | External air enthalpy | 03 | kJ/kg | 10 |
| BMS.BMS\_VAR\_LIST[208] | 308 | Inverter speed | 03 | rpm | 1 |
| BMS.BMS\_VAR\_LIST[209] | 309 | Circuit 1 – Valve opening | 03 | % | 10 |
| BMS.BMS\_VAR\_LIST[210] | 310 | Circuit 2 – Valve opening | 03 | % | 10 |

## Alarms list

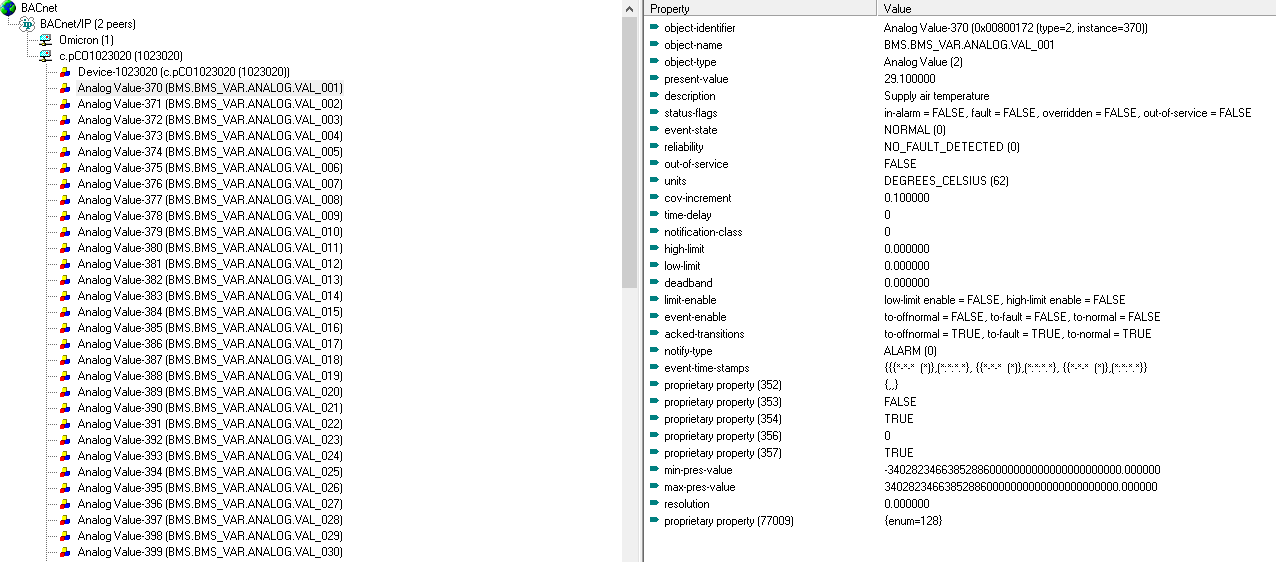
1= alarm active

|  |  |  |  |
| --- | --- | --- | --- |
| Variable name | Decimal address | Description | Modbus command |
| BMS.BMS\_VAR\_LIST[1] | 101 |  | 03 |
| bit 0 |  | AL1 - Internal memory error alarm |  |
| bit 1 |  | Not used |  |
| bit 2 |  | Not used |  |
| bit 3 |  | AL4 - Air flow alarm from differential pressure switch |  |
| bit 4 |  | AL5 - Air flow alarm from differential pressure transducer |  |
| bit 5 |  | AL6 - Circuit 1 - High pressure alarm from pressure switch |  |
| bit 6 |  | AL7 - Circuit 2 - High pressure alarm from pressure switch |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | AL10 - Circuit 1 - High pressure alarm from transducer |  |
| bit 10 |  | AL11 - Circuit 2 - High pressure alarm from transducer |  |
| bit 11 |  | AL12 - High humidity alarm of return air |  |
| bit 12 |  | AL13 - Low humidity alarm of return air |  |
| bit 13 |  | AL14 - Dirty filters alarm |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[2] | 102 |  | 03 |
| bit 0 |  | AL17 - BMS - Communication error alarm |  |
| bit 1 |  | AL18 - Circuit 1 - Compressor 1 - Thermal overload alarm |  |
| bit 2 |  | AL19 - Circuit 1 - Compressor 2 - Thermal overload alarm |  |
| bit 3 |  | AL20 - Circuit 2 - Compressor 1 - Thermal overload alarm |  |
| bit 4 |  | AL21 - Circuit 2 - Compressor 2 - Thermal overload alarm |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | AL26 - Temperature limitation activated of return air |  |
| bit 10 |  | AL27 - Low external air temperature alarm |  |
| bit 11 |  | AL28 - High temperature alarm of return air |  |
| bit 12 |  | AL29 - Low temperature alarm of return air |  |
| bit 13 |  | AL30 - High temperature alarm of supply air |  |
| bit 14 |  | AL31 - Low temperature alarm of supply air |  |
| bit 15 |  | AL32 - Temperature limitation activated of supply air |  |
| BMS.BMS\_VAR\_LIST[3] | 103 |  | 03 |
| bit 0 |  | AL33 - Circuit 1 - External fan - Thermal overload alarm |  |
| bit 1 |  | AL34 - Circuit 2 - External fan - Thermal overload alarm |  |
| bit 2 |  | AL35 - Supply ventilation - Thermal overload alarm |  |
| bit 3 |  | AL36 - Return ventilation - Thermal overload alarm |  |
| bit 4 |  | AL37 - Dirty filters alarm 2 |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[4] | 104 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | Not used |  |
| bit 2 |  | AL51 - Circuit 1 - Compressor 1 - Inverter tripped |  |
| bit 3 |  | AL52 - c.pCOe 1 - Communication error alarm |  |
| bit 4 |  | AL53 - c.pCOe 2 - Communication error alarm |  |
| bit 5 |  | AL54 - c.pCOe 3 - Communication error alarm |  |
| bit 6 |  | AL55 - Wrong phases sequence alarm |  |
| bit 7 |  | Not used |  |
| bit 8 |  | AL57 - Circuit 1 - High discharge temperature alarm |  |
| bit 9 |  | AL58 - Circuit 2 - High discharge temperature alarm |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | AL61 - Probe error alarm - Circuit 1 - High discharge temperature |  |
| bit 13 |  | AL62 - Probe error alarm - Circuit 2 - High discharge temperature |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[5] | 105 |  | 03 |
| bit 0 |  | AL65 - Probe error alarm - Return air temperature |  |
| bit 1 |  | AL66 - Probe error alarm - Circuit 1 - Liquid temperature |  |
| bit 2 |  | AL67 - Probe error alarm - Circuit 2 - Liquid temperature |  |
| bit 3 |  | AL68 - Probe error alarm - Circuit 1 - Battery temperature |  |
| bit 4 |  | AL69 - Probe error alarm - Circuit 2 - Battery temperature |  |
| bit 5 |  | AL70 - Probe error alarm - Supply air temperature |  |
| bit 6 |  | AL71 - Probe error alarm - Supply air relative humidity |  |
| bit 7 |  | AL72 - Transducer error alarm - Return air differential pressure |  |
| bit 8 |  | AL73 - Transducer error alarm - Static pressure of return channel / Aisle differential pressure |  |
| bit 9 |  | AL74 - Probe error alarm - CO2 air quality |  |
| bit 10 |  | AL75 - Probe error alarm - VOC air quality |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | AL78 - Probe error alarm - Return air relative humidity |  |
| bit 14 |  | AL79 - Probe error alarm - External air relative humidity |  |
| bit 15 |  | AL80 - Probe error alarm - External air temperature |  |
| BMS.BMS\_VAR\_LIST[6] | 106 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | Not used |  |
| bit 2 |  | Not used |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | Not used |  |
| bit 10 |  | AL91 - Probe error alarm - Mixed air temperature |  |
| bit 11 |  | Not used |  |
| bit 12 |  | AL93 - Probe error alarm - Current consumption |  |
| bit 13 |  | AL94 - Transducer error alarm - Circuit 1 - Condensing pressure |  |
| bit 14 |  | AL95 - Transducer error alarm - Circuit 2 - Condensing pressure |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[7] | 107 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | AL98 - Transducer error alarm - Circuit 1 - Evaporating pressure |  |
| bit 2 |  | AL99 - Transducer error alarm - Circuit 2 - Evaporating pressure |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | AL102 - Probe error alarm - Circuit 1 - Suction temperature |  |
| bit 6 |  | AL103 - Probe error alarm - Circuit 2 - Suction temperature |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | AL106 - Transducer error alarm - Supply air differential pressure |  |
| bit 10 |  | AL107 - Transducer error alarm - Static pressure of supply channel / Aisle differential pressure |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[8] | 108 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | AL114 - Circuit 1 - Low pressure difference |  |
| bit 2 |  | AL115 - Circuit 2 - Low pressure difference |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | AL127 - Circuit 1 - Compressor 1 - Maintenance alarm |  |
| bit 15 |  | AL128 - Circuit 1 - Compressor 2 - Maintenance alarm |  |
| BMS.BMS\_VAR\_LIST[9] | 109 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | Not used |  |
| bit 2 |  | AL131 - Circuit 2 - Compressor 1 - Maintenance alarm |  |
| bit 3 |  | AL132 - Circuit 2 - Compressor 2 - Maintenance alarm |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | AL135 - Supply ventilation - Maintenance alarm |  |
| bit 7 |  | AL136 - Circuit 1 - Low pressure alarm from pressure switch |  |
| bit 8 |  | AL137 - Circuit 2 - Low pressure alarm from pressure switch |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[10] | 110 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | AL146 - Unit in absorption limit |  |
| bit 2 |  | AL147 - Unit in a state of emergency |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | AL151 - Leak detector - Fault alarm |  |
| bit 7 |  | AL152 - Leak detector - Maintenance scheduled within 30 days |  |
| bit 8 |  | AL153 - Leak detector - Maintenance alarm |  |
| bit 9 |  | AL154 - Leak detector alarm |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | AL159 - Fire/smoke alarm |  |
| bit 15 |  | AL160 - Valve driver 1 - Communication error alarm |  |
| BMS.BMS\_VAR\_LIST[11] | 111 |  | 03 |
| bit 0 |  | AL161 - Valve driver 2 - Communication error alarm |  |
| bit 1 |  | AL162 - CPY humidifier - Generic alarm |  |
| bit 2 |  | AL163 - CPY humidifier - Generic warning |  |
| bit 3 |  | AL164 - CPY humidifier - Communication error alarm |  |
| bit 4 |  | AL165 - Leak detector - Communication error alarm |  |
| bit 5 |  | AL166 - Inverter 1 - Communication error alarm |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | AL170 - Circuit 1 - Low superheat alarm |  |
| bit 10 |  | AL171 - Circuit 2 - Low superheat alarm |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[12] | 112 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | Not used |  |
| bit 2 |  | Not used |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | AL183 - Cooling setpoint lower than heat pump |  |
| bit 7 |  | AL184 - Circuit 1 - Defrost ended for maximum time |  |
| bit 8 |  | AL185 - Circuit 2 - Defrost ended for maximum time |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | AL191 - Achieved maximum number of fast restart in 1 hour |  |
| bit 15 |  | AL192 - Achieved maximum number of fast restart in 24 hours |  |
| BMS.BMS\_VAR\_LIST[13] | 113 |  | 03 |
| bit 0 |  | AL193 - Circuit 1 - Partialization of low pressure |  |
| bit 1 |  | AL194 - Circuit 2 - Partialization of low pressure |  |
| bit 2 |  | Not used |  |
| bit 3 |  | Not used |  |
| bit 4 |  | AL197 - Circuit 1 - Partialization of high pressure |  |
| bit 5 |  | AL198 - Circuit 2 - Partialization of high pressure |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | AL201 - Min/Max voltage |  |
| bit 9 |  | Not used |  |
| bit 10 |  | AL203 - Circuit 1 - Low evaporating pressure |  |
| bit 11 |  | AL204 - Circuit 2 - Low evaporating pressure |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[14] | 114 |  | 03 |
| bit 0 |  | AL209 - External alarm |  |
| bit 1 |  | AL210 - EEPROM error alarm |  |
| bit 2 |  | AL211 - Internal clock error alarm |  |
| bit 3 |  | AL212 - Internal memory access error alarm |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[15] | 115 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | Not used |  |
| bit 2 |  | Not used |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[16] | 116 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | Not used |  |
| bit 2 |  | Not used |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | AL247 - Circuit 1 - Compressor 1 - Out of envelope |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | AL250 - Heater 1 - Thermal overload alarm |  |
| bit 10 |  | AL251 - Heater 2 - Thermal overload alarm |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |
| BMS.BMS\_VAR\_LIST[17] | 117 |  | 03 |
| bit 0 |  | Not used |  |
| bit 1 |  | AL258 - Boiler - Generic alarm |  |
| bit 2 |  | AL259 - Burner - Generic alarm |  |
| bit 3 |  | Not used |  |
| bit 4 |  | Not used |  |
| bit 5 |  | Not used |  |
| bit 6 |  | Not used |  |
| bit 7 |  | Not used |  |
| bit 8 |  | Not used |  |
| bit 9 |  | Not used |  |
| bit 10 |  | Not used |  |
| bit 11 |  | Not used |  |
| bit 12 |  | Not used |  |
| bit 13 |  | Not used |  |
| bit 14 |  | Not used |  |
| bit 15 |  | Not used |  |

## List of BACnet/IP variables (Accessory)

For the variables published in the BACnet protocol, proceed with the auto discovery property of the protocol itself, or with the help of the attached EDE files.

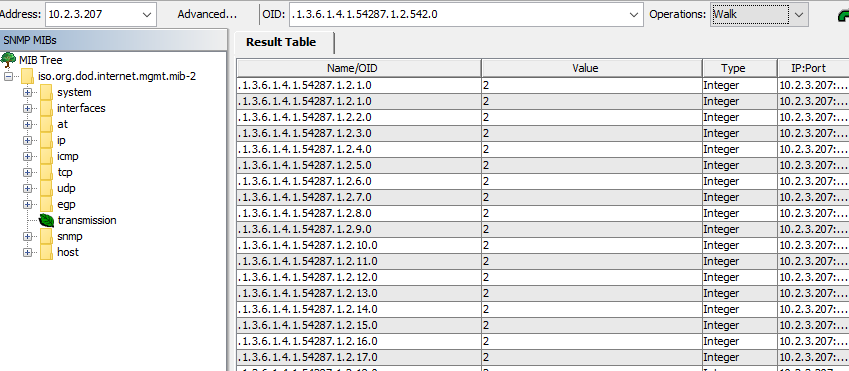
Usage example:



## List of SNMP variables (Accessory)

For the variables published in the SNMP protocol, proceed with the Walk operation on OID .1.3.6.1.4.1.54287.1.2 of the protocol itself, or with the help of the attached .mib file.

Usage example:



## LonWorks

### Generality

For communication with the LonWorks protocol, the unit requires an optional card to be inserted in the controller's "BMS card" port. Code

MICA050A SCHEDA SERIALE LON FTT-10 PCO10000F0

### SNVT table variables

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | In/Out | | SNVT Type (SNVT idx) | Description | Variable name |
| nvoLastAlarmAct | Out | | SNVT\_Count (8) | Last alarm active | BMS.BMS\_VAR.INTEGER.VAL\_001 |
| nviCommands | In | | SNVT\_Count (8) |  | BMS.BMS\_VAR.INTEGER.VAL\_002 |
| bit 0 |  | |  | 0 = Switch off unit, 1 = Switch on unit |  |
| bit 1 |  | |  | 0 = Summer mode, 1 = Winter mode |  |
| bit 2 |  | |  | 0 = Switch off heaters, 1 = Switch on heaters |  |
| bit 3 |  | |  | 0 = Switch off post hot gas, 1 = Switch on post hot gas |  |
| bit 4 |  | |  | 0 = Switch off humidification, 1 = Switch on humidification |  |
| bit 5 |  | |  | Not used |  |
| bit 6 |  | |  | Not used |  |
| bit 7 |  | |  | Not used |  |
| bit 8 |  | |  | Not used |  |
| bit 9 |  | |  | Not used |  |
| bit 10 |  | |  | Not used |  |
| bit 11 |  | |  | Not used |  |
| bit 12 |  | |  | Not used |  |
| bit 13 |  | |  | Not used |  |
| bit 14 |  | |  | Not used |  |
| bit 15 |  | |  | Not used |  |
| nvoCommands | Out | | SNVT\_Count (8) |  | BMS.BMS\_VAR.INTEGER.VAL\_002 |
| bit 0 |  | |  | 0 = Switch off unit, 1 = Switch on unit |  |
| bit 1 |  | |  | 0 = Summer mode, 1 = Winter mode |  |
| bit 2 |  | |  | 0 = Switch off heaters, 1 = Switch on heaters |  |
| bit 3 |  | |  | 0 = Switch off post hot gas, 1 = Switch on post hot gas |  |
| bit 4 |  | |  | 0 = Switch off humidification, 1 = Switch on humidification |  |
| bit 5 |  | |  | Not used |  |
| bit 6 |  | |  | Not used |  |
| bit 7 |  | |  | Not used |  |
| bit 8 |  | |  | Not used |  |
| bit 9 |  | |  | Not used |  |
| bit 10 |  | |  | Not used |  |
| bit 11 |  | |  | Not used |  |
| bit 12 |  | |  | Not used |  |
| bit 13 |  | |  | Not used |  |
| bit 14 |  | |  | Not used |  |
| bit 15 |  | |  | Not used |  |
| nvoDigOut\_1\_16 | Out | | SNVT\_State (83) |  |  |
| bit 0 |  | |  | c.pCO - Digital output 1 | BMS.BMS\_VAR.BINARY.VAL\_1 |
| bit 1 |  | |  | c.pCO - Digital output 2 | BMS.BMS\_VAR.BINARY.VAL\_2 |
| bit 2 |  | |  | c.pCO - Digital output 3 | BMS.BMS\_VAR.BINARY.VAL\_3 |
| bit 3 |  | |  | c.pCO - Digital output 4 | BMS.BMS\_VAR.BINARY.VAL\_4 |
| bit 4 |  | |  | c.pCO - Digital output 5 | BMS.BMS\_VAR.BINARY.VAL\_5 |
| bit 5 |  | |  | c.pCO - Digital output 6 | BMS.BMS\_VAR.BINARY.VAL\_6 |
| bit 6 |  | |  | c.pCO - Digital output 7 | BMS.BMS\_VAR.BINARY.VAL\_7 |
| bit 7 |  | |  | c.pCO - Digital output 8 | BMS.BMS\_VAR.BINARY.VAL\_8 |
| bit 8 |  | |  | c.pCO - Digital output 9 | BMS.BMS\_VAR.BINARY.VAL\_9 |
| bit 9 |  | |  | c.pCO - Digital output 10 | BMS.BMS\_VAR.BINARY.VAL\_10 |
| bit 10 |  | |  | c.pCO - Digital output 11 | BMS.BMS\_VAR.BINARY.VAL\_11 |
| bit 11 |  | |  | c.pCO - Digital output 12 | BMS.BMS\_VAR.BINARY.VAL\_12 |
| bit 12 |  | |  | c.pCO - Digital output 13 | BMS.BMS\_VAR.BINARY.VAL\_13 |
| bit 13 |  | |  | c.pCO - Digital output 14 | BMS.BMS\_VAR.BINARY.VAL\_14 |
| bit 14 |  | |  | c.pCO - Digital output 15 | BMS.BMS\_VAR.BINARY.VAL\_15 |
| bit 15 |  | |  | c.pCO - Digital output 16 | BMS.BMS\_VAR.BINARY.VAL\_16 |
| nvoDigOut\_17\_18 | Out | | SNVT\_State (83) |  |  |
| bit 0 |  | |  | c.pCO - Digital output 17 | BMS.BMS\_VAR.BINARY.VAL\_17 |
| bit 1 |  | |  | c.pCO - Digital output 18 | BMS.BMS\_VAR.BINARY.VAL\_18 |
| bit 2 |  | |  | c.pCOe 1 - Digital output 1 | BMS.BMS\_VAR.BINARY.VAL\_19 |
| bit 3 |  | |  | c.pCOe 1 - Digital output 2 | BMS.BMS\_VAR.BINARY.VAL\_20 |
| bit 4 |  | |  | c.pCOe 1 - Digital output 3 | BMS.BMS\_VAR.BINARY.VAL\_21 |
| bit 5 |  | |  | c.pCOe 1 - Digital output 4 | BMS.BMS\_VAR.BINARY.VAL\_22 |
| bit 6 |  | |  | c.pCOe 1 - Digital output 5 | BMS.BMS\_VAR.BINARY.VAL\_23 |
| bit 7 |  | |  | c.pCOe 1 - Digital output 6 | BMS.BMS\_VAR.BINARY.VAL\_24 |
| bit 8 |  | |  | c.pCOe 2 - Digital output 1 | BMS.BMS\_VAR.BINARY.VAL\_25 |
| bit 9 |  | |  | c.pCOe 2 - Digital output 2 | BMS.BMS\_VAR.BINARY.VAL\_26 |
| bit 10 |  | |  | c.pCOe 2- Digital output 3 | BMS.BMS\_VAR.BINARY.VAL\_27 |
| bit 11 |  | |  | c.pCOe 2 - Digital output 4 | BMS.BMS\_VAR.BINARY.VAL\_28 |
| bit 12 |  | |  | c.pCOe 2 - Digital output 5 | BMS.BMS\_VAR.BINARY.VAL\_29 |
| bit 13 |  | |  | c.pCOe 2 - Digital output 6 | BMS.BMS\_VAR.BINARY.VAL\_30 |
| bit 14 |  | |  | Not used | BMS.BMS\_VAR.BINARY.VAL\_31 |
| bit 15 |  | |  | Not used | BMS.BMS\_VAR.BINARY.VAL\_32 |
| nvoSupplyAirTemp | | Out | SNVT\_temp\_p (105) | Supply air temperature | BMS.BMS\_VAR.ANALOG.VAL\_001 |
| nvoRetAirTemp | Out | | SNVT\_temp\_p (105) | Return air temperature | BMS.BMS\_VAR.ANALOG.VAL\_002 |
| nvoRetAirHum | Out | | SNVT\_lev\_percent (81) | Return air relative humidity | BMS.BMS\_VAR.ANALOG.VAL\_003 |
| nvoSupStatAisleP | Out | | SNVT\_press\_p (113) | Static pressure of supply channel / Aisle differential pressure | BMS.BMS\_VAR.INTEGER.VAL\_003 |
| nvoExtAirTemp | Out | | SNVT\_temp\_p (105) | External air temperature | BMS.BMS\_VAR.ANALOG.VAL\_006 |
| nvoExtAirHum | Out | | SNVT\_lev\_percent (81) | External air relative humidity | BMS.BMS\_VAR.ANALOG.VAL\_007 |
| nvoRetStatAisleP | Out | | SNVT\_press\_p (113) | Static pressure of return channel / Aisle differential pressure | BMS.BMS\_VAR.INTEGER.VAL\_004 |
| nvoCirc1CondP | Out | | SNVT\_press (30) | Circuit 1 - Condensation pressure | BMS.BMS\_VAR.ANALOG.VAL\_013 |
| nvoCirc1EvapP | Out | | SNVT\_press (30) | Circuit 1 - Evaporation pressure | BMS.BMS\_VAR.ANALOG.VAL\_014 |
| nvoCirc1DschTemp | Out | | SNVT\_temp\_p (105) | Circuit 1 – Compressor 1 -Discharge temperature | BMS.BMS\_VAR.ANALOG.VAL\_015 |
| nvoCirc1SuctTemp | Out | | SNVT\_temp\_p (105) | Circuit 1 - Suction temperature | BMS.BMS\_VAR.ANALOG.VAL\_016 |
| nvoCirc2CondP | Out | | SNVT\_press (30) | Circuit 2 - Condensation pressure | BMS.BMS\_VAR.ANALOG.VAL\_023 |
| nvoCirc2EvapP | Out | | SNVT\_press (30) | Circuit 2 - Evaporation pressure | BMS.BMS\_VAR.ANALOG.VAL\_024 |
| nvoCirc2DschTemp | Out | | SNVT\_temp\_p (105) | Circuit 2 – Compressore 1 -Discharge temperature | BMS.BMS\_VAR.ANALOG.VAL\_035 |
| nvoCirc2SuctTemp | Out | | SNVT\_temp\_p (105) | Circuit 2 - Suction temperature | BMS.BMS\_VAR.ANALOG.VAL\_026 |
| nvoAnalogOutY1 | Out | | SNVT\_lev\_percent (81) | Analog output Y1 | BMS.BMS\_VAR.ANALOG.VAL\_061 |
| nvoAnalogOutY2 | Out | | SNVT\_lev\_percent (81) | Analog output Y2 | BMS.BMS\_VAR.ANALOG.VAL\_062 |
| nvoAnalogOutY3 | Out | | SNVT\_lev\_percent (81) | Analog output Y3 | BMS.BMS\_VAR.ANALOG.VAL\_063 |
| nvoAnalogOutY4 | Out | | SNVT\_lev\_percent (81) | Analog output Y4 | BMS.BMS\_VAR.ANALOG.VAL\_064 |
| nvoAnalogOutY5 | Out | | SNVT\_lev\_percent (81) | Analog output Y5 | BMS.BMS\_VAR.ANALOG.VAL\_065 |
| nvoAnalogOutY6 | Out | | SNVT\_lev\_percent (81) | Analog output Y6 | BMS.BMS\_VAR.ANALOG.VAL\_066 |
| nviSupAirFlowSet | In | | SNVT\_flow\_p (161) | Supply ventilation - Air flow setpoint | BMS.BMS\_VAR.INTEGER.VAL\_005 |
| nviSupPressSet | In | | SNVT\_press\_p (113) | Supply ventilation - Pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_006 |
| nviSupDPressSet | In | | SNVT\_press\_p (113) | Supply ventilation - Delta pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_007 |
| nviRetAirFlowSet | In | | SNVT\_flow\_p (161) | Return ventilation - Air flow setpoint | BMS.BMS\_VAR.INTEGER.VAL\_008 |
| nviRetPressSet | In | | SNVT\_press\_p (113) | Return ventilation - Pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_009 |
| nviRetDPressSet | In | | SNVT\_press\_p (113) | Return ventilation - Delta pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_010 |
| nviCoolTempSet | In | | SNVT\_temp\_p (105) | Mechanical cooling / Cascade control - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_118 |
| nviHeatTempSet | In | | SNVT\_temp\_p (105) | Mechanical heating / Auxiliary heating in winter mode - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_119 |
| nviAuxTempSet | In | | SNVT\_temp\_p (105) | Auxiliary heating in summer mode - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_120 |
| nviPHGTempSet | In | | SNVT\_temp\_p (105) | Post hot gas - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_121 |
| nviRelHumSet | In | | SNVT\_lev\_percent (81) | Humidification - Relative humidity setpoint | BMS.BMS\_VAR.ANALOG.VAL\_122 |
| nviAbsHumSet | In | | SNVT\_abs\_humid (160) | Humidification - Absolute humidity setpoint | BMS.BMS\_VAR.INTEGER.VAL\_011 |
| nvoSupAirFlowSet | Out | | SNVT\_flow\_p (161) | Supply ventilation - Air flow setpoint | BMS.BMS\_VAR.INTEGER.VAL\_012 |
| nvoSupPressSet | Out | | SNVT\_press\_p (113) | Supply ventilation - Pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_013 |
| nvoSupDPressSet | Out | | SNVT\_press\_p (113) | Supply ventilation - Delta pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_014 |
| nvoRetAirFlowSet | Out | | SNVT\_flow\_p (161) | Return ventilation - Air flow setpoint | BMS.BMS\_VAR.INTEGER.VAL\_015 |
| nvoRetPressSet | Out | | SNVT\_press\_p (113) | Return ventilation - Pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_016 |
| nvoRetDPressSet | Out | | SNVT\_press\_p (113) | Return ventilation - Delta pressure setpoint | BMS.BMS\_VAR.INTEGER.VAL\_017 |
| nvoCoolTempSet | Out | | SNVT\_temp\_p (105) | Mechanical cooling - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_134 |
| nvoHeatTempSet | Out | | SNVT\_temp\_p (105) | Mechanical heating / Auxiliary heating in winter mode - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_135 |
| nvoAuxTempSet | Out | | SNVT\_temp\_p (105) | Auxiliary heating in summer mode - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_136 |
| nvoPHGTempSet | Out | | SNVT\_temp\_p (105) | Post hot gas - Temperature setpoint | BMS.BMS\_VAR.ANALOG.VAL\_137 |
| nvoRelHumSet | Out | | SNVT\_lev\_percent (81) | Humidification - Relative humidity setpoint | BMS.BMS\_VAR.ANALOG.VAL\_138 |
| nvoAbsHumSet | Out | | SNVT\_abs\_humid (160) | Humidification - Absolute humidity setpoint | BMS.BMS\_VAR.INTEGER.VAL\_018 |
| nvoSupAirFlow | Out | | SNVT\_flow\_p (161) | Supply ventilation air flow | BMS.BMS\_VAR.INTEGER.VAL\_019 |
| nvoRetAirFlow | Out | | SNVT\_flow\_p (161) | Return ventilation air flow | BMS.BMS\_VAR.INTEGER.VAL\_020 |
| nvoCirc1SH | Out | | SNVT\_temp\_p (105) | Superheating circuit 1 | BMS.BMS\_VAR.ANALOG.VAL\_167 |
| nvoCirc2SH | Out | | SNVT\_temp\_p (105) | Superheating circuit 2 | BMS.BMS\_VAR.ANALOG.VAL\_172 |
| nvoSupVentReq | Out | | SNVT\_lev\_percent (81) | Supply ventilation - Request | BMS.BMS\_VAR.ANALOG.VAL\_189 |
| nvoRetVentReq | Out | | SNVT\_lev\_percent (81) | Return ventilation - Request | BMS.BMS\_VAR.ANALOG.VAL\_190 |
| nvoComprReq | Out | | SNVT\_lev\_percent (81) | Mechanical cooling/dehumidification/heating - Request | BMS.BMS\_VAR.ANALOG.VAL\_191 |
| nvoAuxReq | Out | | SNVT\_lev\_percent (81) | Auxiliary heating - Request | BMS.BMS\_VAR.ANALOG.VAL\_192 |
| nvoHumReq | Out | | SNVT\_lev\_percent (81) | Humidification - Request | BMS.BMS\_VAR.ANALOG.VAL\_193 |