BACnet Protocol Guide
AQ Series

Senva Sensors
9290 SW Nimbus Ave
Beaverton, OR 97008

154-0012-0E

Rev.	Release Date	Description of Change	ECR
0A	10/10/2014	Initial Release	---
0B	10/13/2014	Updated PICS for firmware revision 1.0.1	---
0C	10/30/2014	Updated PICS for firmware revision 1.0.3	---
0D	4/17/2015	Updated PICS for firmware revision 1.0.4	---
0E	2/12/2016	Updated PICS for firmware revision 1.0.5	---

Contents

References:

152-0160   AQ Series Analog Installation Instructions

152-0161   AQ Series BACnet Installation Instructions

154-0011   AQ Series User's Guide

Protocol Implementation Conformance Statement

Date	Friday, February 12th, 2016
Vendor Name	Senva Sensors
Product Name	AQW
Product Model Number	AQW-XXXXXXX (see catalog for model numbering)
Firmware Revision	1.0.5
Application Software Version	Feb 12 2016, 12:29:52
BACnet Protocol Revision	14
Product Description	Wall-mount air quality sensor, measuring temperature, relative humidity, and/or CO2 concentration.
BACnet Standardized Device Profile	BACnet Application Specific Controller (B-ASC)
List of BACnet Interoperability Building Blocks Supported	DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DM-RD-B
Segmentation Capability	No Support
Standard Object Types Supported	See following. Optional implementations are **marked**.
Data Link Layer Options	MS/TP Master (9600, 19200, 38400, 57600, 76800, 115200)
Device Address Binding	No Support
Networking Options	No Support
Character Sets Supported	ISO 10646 (UTF-8)
Communications Gateway	No Support
Network Security Options	Non-Secure Device

Auto Configuration

IMPORTANT: The device will not activate the BACnet interface until the baud rate and the MS/TP MAC address are configured. If an active RS485 network is not available, configure the device using the *Setup Menu* (documented in the *User's Guide*).

Access the auto configuration wizard by removing the front cover and pressing the ▼, ◆, and ▲ buttons for one second. After the wizard activates, the display will show **CFG**.

The wizard automatically advances between each step after a few seconds. Pressing the ◆ button also advances the wizard.

br   The baud rate value can usually be detected from existing network activity. If no baud rate could be detected, the display will show *??*. If necessary, use ▼ and ▲ to change the baud rate before advancing.

Adr   The device detects the smallest free MAC address on the local MS/TP subnet from existing network activity. If the installation requires a specific MAC address, use ▼ and ▲ to override the detected address. If the wizard detects that the selected MAC address conflicts with another device, it automatically advances to the next smallest free MAC address.
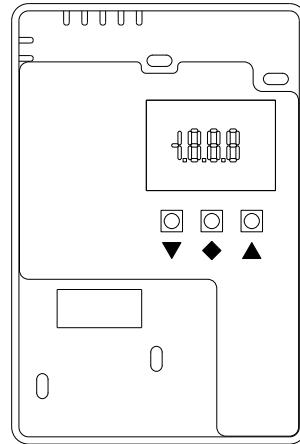
After the wizard completes, the device saves the baud rate and MS/TP MAC address. Additionally, the device adds 665000 to the selected MAC address and saves the resulting sum as the device object ID. If the object ID conflicts with another device on the network, use *id.1*, *id.2*, and *id.3* in the *Setup Menu* to set a unique object ID.

The BACnet interface becomes active immediately after the wizard completes. To re-configure the baud rate and MAC address, use the *Setup Menu* or run the wizard again.

Device

- Object Identifier **W**
- Object Name **W** 30 characters maximum
- Object Type R
- System Status R
- Vendor Name R
- Vendor Identifier R
- Model Name R
- Firmware Revision R
- Application Software Version R
- **Location** **W** 30 characters maximum
- **Description** **W** 30 characters maximum
- Protocol Version R
- Protocol Revision R
- Protocol Services Supported R
- Protocol Object Types Supported R
- Object List R
- Max APDU Length Accepted R
- Segmentation Supported R
- APDU Timeout R
- Number of APDU Retries R
- **Max Master** **W** 1 – 127
- **Max Info Frames** **W** 1 – 65535
- Device Address Binding R
- Database Revision R
- **Serial Number** **R**
- **Last Restart Reason** **R**
- Property List R

- **Device Features** **R** Proprietary, ID 6650

This read-only property, of type "bit string", lists the hardware features associated with the device model. Each '1' in the value represents a feature that is present, and each '0' represents a disabled feature. BACnet objects corresponding to disabled features should not be accessed.

0. RS485 Protocol
1. Analog Outputs (always disabled)
2. Temperature Sensor
3. Humidity Sensor
4. CO_2 Sensor
5. Set Point Slider
6. Push Button
7. Relay Output
8. LCD Screen
9. Internal Thermistor

Analog Inputs

- Object Identifier R
- Object Name R
- Object Type R
- Present Value **W** Only writable when Out Of Service is TRUE
- Status Flags R
- Event State R
- **Reliability** **W** Only writable when Out Of Service is TRUE
- Out of Service **W**
- **Update Interval** **R**
- Units of Measure R
- **Minimum Present Value** **R**
- **Maximum Present Value** **R**
- **Resolution** **R**
- Property List R

AI 0 **Temperature**

Returns the current ambient temperature. This value is an average of ambient temperature readings (see *AI 1*).   The averaging time is configurable (see *AV 7*).

AI 1 **Temperature (unsmoothed)**

Returns the most recent ambient temperature reading. The value is compensated according to the user calibration (see *AV 5* and *AV 6*). On models with the Humidity Sensor feature, the humidity sensor module provides ambient temperature readings. On other models, the internal thermistor provides ambient temperature readings.

AI 2 **Minimum Temperature**

Returns the lowest ambient temperature recorded since this value was reset. This value is reset when written, and when the device restarts.

AI 3 **Maximum Temperature**

Returns the highest ambient temperature recorded since this value was reset. This value is reset when written, and when the device restarts.

AI 4 **Relative Humidity**

Returns the current relative humidity. This value is an average of relative humidity readings (see *AI 5*).   The averaging time is configurable (see *AV 10*).

This object is only valid in models with the Humidity Sensor feature.

AI 5   Relative Humidity (unsmoothed)

Returns the most recent relative humidity reading. The value is compensated according to the user calibration (see *AV 8* and *AV 9*).

This object is only valid in models with the Humidity Sensor feature.

AI 6   Minimum Relative Humidity

Returns the lowest relative humidity recorded since this value was reset. This value is reset when written, and when the device restarts.

This object is only valid in models with the Humidity Sensor feature.

AI 7   Maximum Relative Humidity

Returns the highest relative humidity recorded since this value was reset. This value is reset when written, and when the device restarts.

This object is only valid in models with the Humidity Sensor feature.

AI 8   Dew Point Temperature

Returns the current dew point temperature. This value is an average of dew point temperature calculations (see *AI 9*).   The averaging time is configurable (see *AV 13*).

This object is only valid in models with the Humidity Sensor feature.

AI 9   Dew Point Temperature (unsmoothed)

Returns the most recent dew point temperature calculation. The value is compensated according to the user calibration (see *AV 11* and *AV 12*). Because the calculation takes the ambient temperature and relative humidity readings as input, the respective user compensation values (see *AV 5*, *AV 6*, *AV 8*, and *AV 9*) also affect the calculated result. This object is only valid in models with the Humidity Sensor feature.

AI 10   Minimum Dew Point Temperature

Returns the lowest dew point temperature recorded since this value was reset. This value is reset when written, and when the device restarts.

This object is only valid in models with the Humidity Sensor feature.

AI 11   Maximum Dew Point Temperature

Returns the highest dew point temperature recorded since this value was reset. This value is reset when written, and when the device restarts.

This object is only valid in models with the Humidity Sensor feature.

AI 12   CO2 Concentration

Returns the current CO2 concentration. This value is an average of CO2 concentration readings (see *AI 13*).   The averaging time is configurable (see *AV 16*).

This object is only valid in models with the CO2 Sensor feature.

AI 13   **CO2 Concentration (unsmoothed)**

Returns the most recent CO2 concentration reading. The value is compensated according to the user calibration (see *AV 14* and *AV 15*).

This object is only valid in models with the CO2 Sensor feature.

AI 14   **Minimum CO2 Concentration**

Returns the lowest CO2 concentration recorded since this value was reset. This value is reset when written, and when the device restarts.

This object is only valid in models with the CO2 Sensor feature.

AI 15   **Maximum CO2 Concentration**

Returns the highest CO2 concentration recorded since this value was reset. This value is reset when written, and when the device restarts.

This object is only valid in models with the CO2 Sensor feature.

AI 16   **User Set Point**

Returns the current set point value. On models with the Set Point Slider feature, the user changes the set point by adjusting the slider position. On other models, the user changes the set point by pressing the $\triangledown$ and $\triangle$ buttons. The range is configurable (see *AV 20* and *AV 21*).

AI 17   **Minimum User Set Point**

Returns the lowest user set point value recorded since this value was reset. This value is reset when written, and when the device restarts.

AI 18   **Maximum User Set Point**

Returns the highest user set point value recorded since this value was reset. This value is reset when written, and when the device restarts.

Analog Values

- Object Identifier   R
- Object Name   R
- Object Type   R
- Present Value   **W**   Range varies by object instance
- Status Flags   R
- Event State   R
- Out of Service   R
- Units of Measure   R
- **Minimum Present Value**   **R**
- **Maximum Present Value**   **R**
- **Resolution**   **R**
- Property List   R

AV 0   MAC Address

Sets the device MS/TP address. The MAC address must be in a valid MS/TP master address, between 0 and 127. The device will reply to the Write-Property APDU using with the original MAC address. If the change is successful, all subsequent APDUs must be transmitted to the new MAC address. For an easy way to initialize the MAC address when the device is first installed, see *Auto Configuration* (page 5).

This parameter is equivalent to ⱯdⲒ in the *Setup Menu*.

Default: Not configured. This parameter is saved in the device configuration.

AV 1   Device Uptime

Returns the time since the last device restart, in seconds. Read only.

AV 2   Device Restart Count

Returns the number of times the device has restarted. Read only.

AV 3   Display Contrast

Sets the contrast of the LCD screen. Larger values make the screen darker. The contrast can be adjusted between 0% and 100%, and the ideal value depends on ambient lighting conditions in the installed location.

This parameter is equivalent to ⎓OⲒ in the *Setup Menu*.

Default: 50%. This parameter is saved in the device configuration.

AV 4   Display Rotate Time

If multiple measurements are selected for display (see MSV 0), sets the number of seconds that each will be displayed before switching. The display is continuously refreshed during each measurement's display interval. If a measurement is selected, but the corresponding sensor

option is not installed, that measurement will be skipped in the rotation. If a measurement is unreliable (e.g. the respective sensor module was removed), the display will show "---".

This parameter is equivalent to d5t in the *Setup Menu*.

Default: 10 seconds. This parameter is saved in the device configuration.

AV 5   Temperature Calibration Slope

See *AV 6*.

Default: 1.0. This parameter is saved in the device configuration

AV 6   Temperature Calibration Offset

Together with the slope (see *AV 5*), allows user compensation of raw temperature readings.

$$T_{user} = AV_5 \cdot T_{raw} + AV_6$$

This parameter is equivalent to t.oF in the *Setup Menu*.

Default: 0.0 °F (0.0 °C). This parameter is saved in the device configuration.

AV 7   Temperature Response Time

Sets the averaging time of the ambient temperature measurement (see *AI 0*), in whole seconds. Averaging is implemented as a first order exponential filter. The response time is defined at 90% step. Setting a response time of 0 seconds disables the filter.

This parameter is equivalent to t.rt in the *Setup Menu*.

Default: 30 seconds. This parameter is saved in the device configuration.

AV 8   Relative Humidity Calibration Slope

See *AV 9*.

Default: 1.0. This parameter is saved in the device configuration.

AV 9   Relative Humidity Calibration Offset

Together with the slope (see *AV 8*), allows user compensation of raw relative humidity readings.

$$RH_{user} = AV_8 \cdot RH_{raw} + AV_9$$

This parameter is equivalent to h.oF in the *Setup Menu*.

Default: 0 %RH. This parameter is saved in the device configuration.

AV 10   Relative Humidity Response Time

Sets the averaging time of the relative humidity measurement (see *AI 4*), in whole seconds. Averaging is implemented as a first order exponential filter. The response time is defined at 90% step. Setting a response time of 0 seconds disables the filter.

This parameter is equivalent to h.rt in the *Setup Menu*.

Default: 30 seconds. This parameter is saved in the device configuration.

AV 11   Dew Point Calibration Slope

See *AV 12*.

Default: 1.0. This parameter is saved in the device configuration.

AV 12   Dew Point Calibration Offset

Together with the slope (see *AV 11*), allows user compensation of dew point temperature calculation.

$$DP_{user} = AV_{11} \cdot DP_{raw} + AV_{12}$$

Default: 0.0 °F (0.0 °C). This parameter is saved in the device configuration.

AV 13   Dew Point Response Time

Sets the averaging time of the dew point calculation (see *AI 8*), in whole seconds. Averaging is implemented as a first order exponential filter. The response time is defined at 90% step. Setting a response time of 0 seconds disables the filter.

Default: 30 seconds. This parameter is saved in the device configuration.

AV 14   CO2 Calibration Slope

See AV 15.

Default: 1.0. This parameter is saved in the device configuration.

AV 15   CO2 Calibration Offset

Together with the slope (see *AV 14*), allows user compensation of raw CO2 concentration readings. If CO2 auto-calibration is enabled (see *AV 17*), the auto-calibration algorithm compensates the raw reading before the user compensation.

$$CO2_{user} = AV_{14} \cdot CO2_{raw} + AV_{15}$$

This parameter is equivalent to **CoF** in the *Setup Menu*.

Default: 0 PPM. This parameter is saved in the device configuration.

AV 16   CO2 Response Time

Sets the averaging time of the CO2 concentration measurement (see *AI 12*), in whole seconds. Averaging is implemented as a first order exponential filter. The response time is defined at 90% step. Setting a response time of 0 seconds disables the filter.

This parameter is equivalent to **Crt** in the *Setup Menu*.

Default: 30 seconds. This parameter is saved in the device configuration.

AV 17   CO2 Auto Calibration Period

Sets the CO2 auto calibration period, in whole days.

The maximum period is 60 days. Setting the period to 0 days disables auto calibration.

This parameter is equivalent to **ACd** in the *Setup Menu*. See the *User Guide* for a description of the auto-calibration algorithm.

Default: 14 days. This parameter is saved in the device configuration.

AV 18 **CO2 Auto Calibration Target**

Sets the CO_2 auto-calibration target.

This parameter is equivalent to *ACt* in the *Setup Menu*. See the *User Guide* for a description of the auto-calibration algorithm.

Default: 400 PPM. This parameter is saved in the device configuration.

AV 19 **CO2 Auto Calibration Window**

Sets the CO_2 auto-calibration window range.

This parameter is equivalent to *ACr* in the *Setup Menu*. See the *User Guide* for a description of the auto-calibration algorithm.

Default: 200 PPM. This parameter is saved in the device configuration.

AV 20 **User Set Point Minimum Value**

Controls the minimum set point the user can configure. If the set point is controlled by a slider, this parameter maps to the bottom of the slider's travel, even when the Maximum Value (see *AV 21*) is smaller. The units of this value are configurable (see MSV 3).

This parameter is equivalent to *S.lo* in the *Setup Menu*.

Default: 50°F. This parameter is saved in the device configuration.

AV 21 **User Set Point Maximum Value**

Controls the maximum set point the user can configure. If the set point is controlled by a slider, this parameter maps to the top of the slider's travel, even when the Minimum Value (see *AV 20*) is larger. The units of this value are configurable (see *MSV 3*).

This parameter is equivalent to *Shi* in the *Setup Menu*.

Default: 95°F. This parameter is saved in the device configuration.

AV 22 **User Set Point Increment**

Controls the minimum increment of the user set point. When changed by a slider, the set point value is always rounded to the nearest increment. When changed by the $\triangledown$ and $\triangle$ buttons, the set point value always increases or decreases by the increment value. For best results, set the increment value no smaller than 1.0% of the set point range.

This parameter is equivalent to *S.in* in the *Setup Menu*.

Default: 1.0°F. This parameter is saved in the device configuration.

AV 23 **Internal Relay Program Threshold**

When the relay comparison polarity (see *MSV 5*) is active high, the relay (see *BO 0*) will activate when the measured value is greater than the threshold. When the polarity is active low, the relay will activate when the measured value is lower than the threshold.

This parameter is equivalent to *Pth* in the *Setup Menu*.

Default: 800. The units vary with the current selected measurement source (see *MSV 4*). This parameter is saved in the device configuration.

AV 24   Internal Relay Program Hysteresis

When the relay comparison polarity (see *MSV 5*) is active high, the turn-off threshold is found by subtracting the hysteresis from the turn-on threshold. When the relay comparison polarity is active low, the turn-off threshold is found by adding the hysteresis to the turn-on threshold.

This parameter is equivalent to *ГhУ* in the *Setup Menu*.

Default: 100. The units vary with the current selected measurement source (see *MSV 4*). This parameter is saved in the device configuration.

AV 25   Internal Relay Program Priority

Sets the priority of the internal relay comparison. The priority must be set between 6 (the BACnet Minimum On/Off Priority) and 16 (the Minimum priority). The comparison between the selected internal relay comparison source (see *MSV 4*) and the threshold (see AV 24) is output at this priority. If the comparison source is not set to "Disabled", the device ignores commands at this priority.

Default: 14. This parameter is saved in the device configuration.

AV 26   Temperature Override Value

Sets an alternate value for display in place of the ambient temperature sensor reading. Writing any numeric value automatically sets the override enable (see *BV 1*) to ACTIVE. Writing NULL automatically sets the override enable to INACTIVE.

Default: 32.0 °F (0.0 °C). This parameter is reset when the device restarts.

AV 27   Relative Humidity Override Value

Sets an alternate value for display in place of the relative humidity sensor reading. Writing any numeric value automatically sets the override enable (see *BV 2*) to ACTIVE. Writing NULL automatically sets the override enable to INACTIVE.

This parameter is only applicable to models with the Humidity Sensor.

Default: 0 %RH. This parameter is reset when the device restarts.

AV 28   Dew Point Temperature Override Value

Sets an alternate value for display in place of the dew point temperature calculation. Writing any numeric value automatically sets the override enable (see *BV 3*) to ACTIVE. Writing NULL automatically sets the override enable to INACTIVE.

This parameter is only applicable to models with the Humidity Sensor.

Default: 32.0 °F (0.0 °C). This parameter is reset when the device restarts.

AV 29   CO2 Concentration Override Value

Sets an alternate value for display in place of the CO_2 concentration sensor reading. Writing any numeric value automatically sets the override enable (see *BV 4*) to ACTIVE. Writing NULL automatically sets the override enable to INACTIVE.

This parameter is only applicable to models with the CO_2 Sensor.

Default: 0 PPM. This parameter is reset when the device restarts.

Binary Inputs

- Object Identifier   R
- Object Name   R
- Object Type   R
- Present Value   **W**   Only writable when Out Of Service is TRUE
- Status Flags   R
- Event State   R
- **Reliability**   **W**   Only writable when Out Of Service is TRUE
- Out of Service   **W**
- Polarity   R
- **Inactive Text**   **R**
- **Active Text**   **R**
- **Change of State Count**   **W**   Any write resets the count to '0'
- **Elapsed Active Time**   **R**
- Property List   R

BI 0   **User Push Button**

Returns the state of the user push button, if installed. For effect, the button must be read by an external controller. It does not affect any states or processes within the device.

Binary Outputs

- Object Identifier   R
- Object Name   R
- Object Type   R
- Present Value   W
- Status Flags   R
- Event State   R
- **Reliability**   **W**
- Out of Service   **W**
- Polarity   R
- **Inactive Text**   **R**
- **Active Text**   **R**
- **Change of State Count**   **W**   Any write resets the count to '0'
- **Elapsed Active Time**   **R**
- **Minimum Off Time**   **W**   0 – 65536 seconds
- **Minimum On Time**   **W**   0 – 65536 seconds
- Priority Array   R
- Relinquish Default   **W**
- Property List   R

BO 0   Relay Output

Sets the state of the relay. This object implements the BACnet binary output command prioritization algorithm.

An internal comparison result may be output at a configurable command priority (see *AV 25*). The command output at the configured priority is continuously calculated by comparing a specified measurement (see *MSV 4*) with a fixed threshold value (see *AV 23*). If the specified measurement is invalid (or set to "Disabled"), and all priorities are relinquished by writing NULL, the Relinquish Default value is output.

Binary Values

- Object Identifier   R
- Object Name   R
- Object Type   R
- Present Value   W
- Status Flags   R
- Event State   R
- Out of Service   R
- **Inactive Text**   **R**
- **Active Text**   **R**
- Property List   R

BV 0   Identify Device

Displays the device MAC address instead of the normal measurement rotation. The MAC address display overrides the normal display for long as this value remains ACTIVE.

Default: INACTIVE. This parameter is reset when the device restarts

BV 1   Temperature Override Enable

Selects the value source when the ambient temperature is displayed. When ACTIVE, selects the override value (AV 26). When INACTIVE, selects the smoothed sensor reading (AI 0).

Default: INACTIVE. This parameter is reset when the device restarts.

BV 2   Relative Humidity Override Enable

Selects the value source when the relative humidity is displayed. When ACTIVE, selects the override value (AV 27). When INACTIVE, selects the smoothed sensor reading (AI 4).

This object is only present in models with the Humidity Sensor feature.

Default: INACTIVE. This parameter is reset when the device restarts.

BV 3   Dew Point Temperature Override Enable

Selects the value source when the dew point temperature is displayed. When ACTIVE, selects the override value (AV 28). When INACTIVE, selects the smoothed sensor reading (AI 8).

This object is only present in models with the Humidity Sensor feature.

Default: INACTIVE. This parameter is reset when the device restarts.

BV 4   CO2 Concentration Override Enable

Selects the value source when the CO2 concentration is displayed. When ACTIVE, selects the override value (AV 29). When INACTIVE, selects the smoothed sensor reading (AI 12).

This object is only present in models with the CO2 Sensor feature.

Default: INACTIVE. This parameter is reset when the device restarts.

Multi State Values

- Object Identifier R
- Object Name R
- Object Type R
- Present Value **W**
- Status Flags R
- Event State R
- Out of Service R
- Number of States R
- **State Text** **R**
- Property List R

MSV 0   Display Selection

Selects the set of measurements for display. If more than one measurement is selected, each measurement displays in rotation. The Display Rotate Time (see AV 4) controls how long each measurement is displayed before switching.

Possible values:

1. Display Off
2. User Selection
3. Temperature Only
4. Relative Humidity Only
5. Temperature and Relative Humidity
6. CO2 Only
7. Temperature And CO2
8. Relative Humidity and CO2
9. Temperature, Relative Humidity, and CO2
10. Dew Point Only
11. Set Point Only

When the value is "User Selection", the user can change the set of selected measurements with *dSP* in the *User Menu* (see the *User's Guide*). Any other value overrides the user's selection.

This parameter is equivalent to *dSP* in the *Setup Menu*.

Default: User Selection. This parameter is saved in the device configuration.

MSV 1   Display Temperature Units

Defines the units when the device displays ambient temperature or dew point temperature. Also controls the units when editing parameters using the LCD menu system.

Possible values:

1. User Selection
2. Degrees Fahrenheit
3. Degrees Celsius

This parameter does not affect the unit system of temperature values read or written through BACnet (see MSV 2).

When the value is "User Selection", the user can change the temperature display units with °FC in the *User Menu* (see the *User's Guide*). Any other value overrides the user's selection.

This parameter is equivalent to °FC in the *Setup Menu*.

Default: User Selection. This parameter is saved in the device configuration.

MSV 2   BACnet Temperature Units

Controls the units used for reading and writing ambient temperature and dew point temperature values through BACnet objects. The selection can be verified by reading the "Units of Measure" property of any affected object (e.g. *AI 0, Temperature*).

Possible values:

1. Degrees Fahrenheit
2. Degrees Celsius

This parameter does not affect the units of temperatures displayed on the device (see MSV 1). This parameter can only be set through BACnet.

Default: Degrees Fahrenheit. This parameter is saved in the device configuration.

MSV 3   User Set Point Units

Controls the units when the device displays the current set point value. Because set point values are interpreted by the external control system, the device uses the selected units for display only.

Possible values:

1. Disabled
2. No Units (value only)
3. Degrees Fahrenheit
4. Degrees Celsius
5. Relative Humidity (%RH)
6. Parts Per Million (ppm)
7. Pounds per Square Inch (psi)
8. Kilopascals (kPa)
9. Inches of Water Column ("WC)

This parameter is equivalent to SUn in the *Setup Menu*.

Default: Degrees Fahrenheit. This parameter is saved in the device configuration.

MSV 4   Internal Relay Program Source

Selects a measurement source for the internal relay threshold comparison (see BO 0).

Possible values:

1. Disabled
2. Temperature
3. Temperature (unsmoothed)
4. Relative Humidity
5. Relative Humidity (unsmoothed)
6. Dew Point Temperature
7. Dew Point Temperature (unsmoothed)

8. CO2 Concentration
9. CO2 Concentration (unsmoothed)
10. User Set Point

If the selected measurement source is invalid, the internal relay comparison will be disabled. NULL will be written to the corresponding entry in the commandable priority array.

This parameter is equivalent to *rSS* in the *Setup Menu*, with additional options.

Default: CO2 Concentration. This parameter is saved in the device configuration.

MSV 5   Internal Relay Program Polarity

Sets the polarity of the internal relay threshold comparison.

1. Active High
2. Active Low

When the polarity is active high, the relay (see BO 0) will activate when the selected measurement is greater than the threshold value (see AV 23). When the polarity is active low, the relay will activate when the measured value is lower than the threshold value.

This parameter is equivalent to *rPo* in the *Setup Menu*.

Default: Active High. This parameter is saved in the device configuration.