BACnet Protocol Guide
TotalSense Series

Senva Sensors
1825 NW 167th Place
Beaverton, OR 97006

TotalSense™ Series

154-0043-0F

Rev.	Release Date	By	Description of Change	ECR
0A		NAK	Initial Release	---
0B	9/23/2021	NJS	Adding system config points	---
0C	6/7/2022	NJS	Updates for engineering CI release	---
0D	9/21/2022	NJS	Updates for CO and O3 release	---
0E	3/8/2023	NJS	Adding PB over comms	---
0F	1/8/2024	NJS	Updates for new feature release	---

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See Also:

152-0401 TotalSense Installation Instructions

154-0042 TotalSense Display Navigation Guide

154-0044 TotalSense Modbus Protocol Guide

Protocol Implementation Conformance Statement

Date	5/13/2021
Vendor Name	Senva Sensors
Product Name	TotalSense Air Quality Sensor
Product Model Number	AQ2W-XXXXXX (See catalog for model numbering)
Firmware Revision	VSBHP 14.10
Application Software Version	1.2.x
BACnet Protocol Revision	14
Product Description	Low Voltage Air Quality Sensor
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, 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
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

Configuration

Congratulations on installing your new Senva BACnet TotalSense Series indoor air quality monitor! The *BACnet Protocol Guide* assumes the first stage of installation is complete, with the TotalSense connected to your local RS485 network and powered.

See "TotalSense Installation Manual" for setup.

Device information can be configured or referenced using the below table.

Property	Min/Max	Default	Read	Functionality
OBJECT_IDENTIFIER (DEVICE INSTANCE)	0 / 4194302	655xxx	R/W	Set from factory to 655xxx where xxx is the last 3 digits of the serial number of the device.
OBJECT_NAME	N/A	Device Name	R/W	The device allocates 64 bytes for string values.
DESCRIPTION	N/A	Device Description	R/W	The device allocates 64 bytes for string values.
LOCATION	N/A	Device Location	R/W	The device allocates 64 bytes for string values.
PROFILIE_NAME	N/A	665-Device-AQ2	read only	
MODEL_NAME	N/A	Varies	read only	Set from factory to complete part number.
VENDOR_NAME	N/A	Senva Inc.	read only	
APPLICATION_SOFTARE_VERSION	N/A	Varies	read only	Set from factory.
FIRMWARE_REVISION	N/A	VSBHP 14.10	read only	
MAX_MASTER	0 / 127	127	R/W	
VENDOR_IDENTIFIER	665	665	read only	
PROTOCOL_VERSION	1	1	read only	
PROTOCOL_REVISION	14	14	read only	

Readings

Register	Description	Min/Max	Units	Read	Functionality
AI1	*Temperature*	-40.0 / 122.0	°F/C	read only	Read current temperature. Units depend on setting in AV2.
AI2	*Relative humidity*	0.0 / 100.0	%RH	read only	Read current relative humidity in %.
AI3	*CO2*	0 / 10000	PPM	read only	Read current CO_2 concentration in PPM.
AI4	*TVOC ug/m3*	0 / 10000	µg/m³	read only	Read current TVOC reading in µg/m³. This value is compensated for ambient temperature and barometric pressure.
AI5	*TVOC PPB*	0 / 10000	PPB	read only	Read current TVOC reading in PPB. This value is compensated for ambient temperature and barometric pressure and assumes an average molecular weight of 46.069 g/mol for conversion, which is based on Ethanol. To adjust this value, see AV8 to adjust scaling factor.
AI6	*PM 1.0 ug/m3*	0 / 1000.0	µg/m³	read only	Read current concentration of particles sized 0.3-1.0 µg/m³.
AI7	*PM 2.5 ug/m3*	0 / 1000.0	µg/m³	read only	Read current concentration of particles sized 0.3-2.5 µg/m³.
AI8	*PM 4.0 ug/m3*	0 / 1000.0	µg/m³	read only	Read current concentration of particles sized 0.3-4.0 µg/m³.
AI9	*PM 10.0 ug/m3*	0 / 1000.0	µg/m³	read only	Read current concentration of particles sized 0.3-10.0 µg/m³.
AI10	*Air quality*	0 = Good 1 = Fair 2 = Poor	no units	read only	Read current air quality status. See "Air Quality Thresholds" section for more information.
AI11	*Slider display*	-40.0 / 122.0	°F/C	read only	Read current setpoint slider position. Minimum and maximum values for scaling can be set in AV9 and AV10 respectively. Units depend on setting in AV2.

Register	Description	Min/Max	Units	Read	Functionality
AI12	*Occupancy*	0 = Unoccupied 1 = Occupied	no units	read only	Read current status of PIR occupancy sensor. This value will stay in the occupied state after a motion event for the period specified in AV12.
AI13	*Ambient light*	0 / 100	foot candles	read only	Read current ambient light value in foot candles.
AI14	*Relay contacts state*	0 = OPEN 1 = CLOSED	no units	read only	Read current state of setpoint relay. Relay settings can be adjusted in AV15-AV20.
AI15	*Dewpoint*	-40.0 / 122.0	°F/C	read only	Read current dew point temperature. Units depend on setting in AV2.
AI16	*Pressure*	0.00 / 35.44	inHg	read only	Read current barometric pressure in inHg. This reading is only available on units that include either CO_2 or VOC sensors.
AI25	*PM0.5 Particle Count*	0/1000.0	#/cm^3	read only	Read Current counts for particles size 0.3 to 0.5.
AI26	*PM1.0 Particle Count*	0/1000.0	#/cm^3	read only	Read Current counts for particles size 0.3 to 1.0.
AI27	*PM2.5 Particle Count*	0/1000.0	#/cm^3	read only	Read Current counts for particles size 0.3 to 2.5.
AI28	*PM4.0 Particle Count*	0/1000.0	#/cm^3	read only	Read Current counts for particles size 0.3 to 4.0.
AI29	*PM10.0 Particle Count*	0/1000.0	#/cm^3	Read only	Read Current counts for particles size 0.3 to 10.0.
AI30	*PM Avg Particle Size*	0/10.00	um	Read only	Read Current average size of particle that the device has measured.
AI31	*CO Reading*	0.0/200.0	ppm	Read only	Read the Current CO readings
AI33	*O3 Reading*	0/5000	ppb	Read only	Read the Current O3(ozone) readings
AI35	*User BTN Active State*	0/1	No units	Read only	0 = No button activity since timeout period. 1= Button was pressed within the timeout period.

Diagnostics

Register	Description	Min/Max	Read	Functionality
AI17	*System status*	0 / 255	read only	0x01 = EEPROM hardware fault (Consult factory) 0x02 = EEPROM data corruption (Consult factory) 0x04 = EEPROM write error (Consult factory) 0x08 = Device is currently using factory defaults (Consult factory) 0x10 = Sensor error (see individual sensor status to more info). **Bolded** statuses will trigger this error.
AI18	*Temp sensor status*	0 / 255	read only	**0x01** = Sensor hardware fault (Consult factory) **0x02** = Sensor Data error (Consult factory)
AI19	*RH sensor status*	0 / 255	read only	**0x01** = Sensor hardware fault (Consult factory) **0x02** = Sensor Data error (Consult factory)
AI20	*CO2 sensor status*	0 / 255	read only	**0x01** = Sensor hardware fault (Consult factory) **0x02** = Sensor Data error (Consult factory) 0x04 = Sensor not ready (Consult factory) 0x40 = Temperature compensation not applied (No action necessary. Default value 25°C is used for temp compensation). 0x80 = Pressure compensation not applied (No action necessary. Default value 25°C is used for pressure compensation.
AI21	*TVOC sensor status*	0 / 255	read only	**0x01** = Sensor hardware (I2C) fault (Consult factory) **0x02** = Sensor data error **0x04** = Sensor other hardware error **0x08** = Sensor not ready (training) 0x10 = Temperature compensation not applied 0x20 = Humidity compensation not applied
AI22	*PM sensor status*	0 / 255	read only	**0x01** = Sensor communication error (Consult factory) **0x02** = Sensor Data Error (Consult factory) 0x04 = Sensor not ready (Consult factory) 0x08 = Sensor fan speed warning (Consult factory) 0x10 = Sensor fan failure (Consult factory) 0x20 = Sensor laser failure (Consult factory)
AI23	*Pressure sensor status*	0 / 255	read only	**0x01** = Sensor hardware fault (Consult factory) **0x02** = Sensor Data error (Consult factory) 0x04 = Sensor not ready (Consult factory)
AI24	*PID Output Power*	0.0/100.0%	read only	Read current output percentage of the PID output.
AI32	*CO Status*	0/255	R	**0x01** = Sensor communication error (Consult factory) **0x02** = Sensor Data Error (Consult factory) 0x04 = Sensor Error 0x08 = Sensor not ready (Consult factory) 0x10 = Sensor End of Life 0x20 = Calibration Expired 0x40 = Temperature compensation not applied

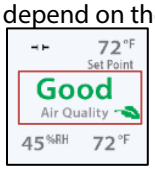
Register	Description	Min/Max	Read	Functionality
AI34	*O3 Status*	0/255	R	**0x01** = Sensor communication error (Consult factory) **0x02** = Sensor Data Error (Consult factory) 0x04 = Sensor Error 0x08 = Sensor not ready (Consult factory) 0x10 = Temperature compensation not applied 0x02 = Humidity compensation not applied

Settings

Register	Description	Min/Max	Units	Default Value	Read	Functionality
AV1	*Temp Offset*	-9/9	°F	0	R/W	Adjust T reading by up to 9°F (or 5°C).
AV2	*Temp Unit*	0=F 1=C	No units	0	R/W	Select whether display shows degrees Fahrenheit or Celsius. This will also determine the scale of the reading in AI1.
AV3	*RH Offset*	-5.0/5.0	%RH	0	R/W	Adjust RH reading by up to 5%.
AV4	*CO2 Offset*	-250/250	PPM	0	R/W	Offset CO_2 reading by ±250 PPM.
AV5	*CO2 autocal enable*	0=disabled 1=enabled	None	1	R/W	Enable or disable ABC function for CO_2 sensor calibration. It is not recommended to disable this unless you are using a dual channel CO_2 element.
AV6	*CO2 Autocal Baseline*	400 / 1499	PPM	400	R/W	This sets the baseline value for the automatic baseline calibration. This should correspond to expected "unoccupied" levels of CO_2.
AV7	*CO2 Autocal Period*	1 / 15	Days	14	R/W	This sets the period for which ABC will calculate its unoccupied level and calibrate.
AV8	*TVOC scale*	0.000 / 10.000	No units	1.000	R/W	This value can be used to adjust the TVOC reading. The standard readings are based on an Ethanol equivalent. See "TVOC Molecular Weights" section for more information.
AV9	*Slider display min*	-40.0 / 122.0	°F/C	50	R/W	Value shown when slider is at lowest position for display purposes only. This will not affect the slider resistive output. This will also set the minimum value for the AI11 reading.
AV10	*Slider display max*	-40.0 / 122.0	°F/C	95	R/W	Value shown when slider is at highest position for display purposes only. This will not affect the slider resistive output. This will also set the maximum value for the AI11 reading.

Register	Description	Min/Max	Units	Default Value	Read	Functionality
AV11	*PIR Motion event sensitivity*	10 / 100	No units	80	R/W	Sensor sensitivity can be adjusted from 0-100. The default of 80 achieves the specified distance and degree. If nuisance triggers occur or a further sensing distance is required, this value can be decreased and increased accordingly. See TotalSense Installation Manual for a visual representation of this sensitivity value.
AV12	*PIR Occupied delay*	1 / 120	Minutes	10	R/W	This is the number of minutes the occupancy state will remain active after each motion event is detected. This applies to the "occupancy" BACnet and Modbus point as well as the output relay state, if set to PIR in AV15.
AV13	*PM clean interval*	0 / 8760	hours	168	R/W	Timed automatic clean cycle of PM element. To disable auto-clean, set to 0.
AV14	*PM command*	0 / 2	no units	0	R/W	Write 1 to execute fan manual clean operation Write 2 to execute PM sensor reset
AV15	*Relay source*	0=None 1=CO2 2=Humidity 3=Temp 4=TVOC µg/m^3 5=PM 6=Occupancy 7=Air Quality 8 = CO 9 = Ozone	no units	0	R/W	Which measurement will activate setpoint relay
AV16	*Relay polarity*	0 = N.O. 1 = N.C.	no units	0	R/W	A N.O. (normally open) relay will be in the open state until it is activated, i.e., turn-on threshold is met, at which time it will close. A N.C. (normally closed) relay will be in the closed state until it is activated, at which time it will open.

<table>
<tr><th>Register</th><th>Description</th><th>Min/Max</th><th>Units</th><th>Default Value</th><th>Read</th><th>Functionality</th></tr>
<tr><td>AV17</td><td>Relay on threshold</td><td>0.00 / 100.00</td><td>percent</td><td>varies</td><td>R/W</td><td>Based on full scale range of the selected sensor, set the value above which the relay will activate. For example, if CO_2 is selected, its full available range is 0-10,000 PPM, so a setpoint of 800 PPM would correspond to an 8.00% threshold setting. For temperature, the full range is -40 to 122°F, so a setpoint of 70°F would correspond to a threshold value of 68%. Use this equation to determine threshold setting for temp in °F: (T+40)/162*100. This setting is ignored for PIR and G/F source selections. Display will show the calculated value as you adjust this setting. The below shows the values that are set by default when each source is selected as well as the calculated value for each.
<table>
<tr><th>Source Selection</th><th>Range</th><th>Default Turn-on Threshold</th><th>Calculated Turn-on value</th><th>Default Turn-off Threshold</th><th>Calculated Turn-off value</th></tr>
<tr><td>CO2</td><td>0-10,000 PPM</td><td>8.0%</td><td>800 PPM</td><td>7.0%</td><td>700 PPM</td></tr>
<tr><td>RH</td><td>0-100% RH</td><td>60%</td><td>60% RH</td><td>55%</td><td>55% RH</td></tr>
<tr><td>Temp*</td><td>-40 - 122 °F</td><td>74%</td><td>80°F</td><td>73%</td><td>78°F</td></tr>
<tr><td>TVOC</td><td>0-10000 µg/m^3</td><td>4.0%</td><td>400 µg/m^3</td><td>3.5%</td><td>350 µg/m^3</td></tr>
<tr><td>CO</td><td>0-200 PPM</td><td>50%</td><td>100PPM</td><td>40%</td><td>80PPM</td></tr>
<tr><td>Ozone</td><td>0-500 PPM</td><td>20%</td><td>100PPM</td><td>16%</td><td>80PPM</td></tr>
</table></td></tr>
<tr><td>AV18</td><td>Relay off threshold</td><td>0.00 / 100.00</td><td>percent</td><td>Varies</td><td>R/W</td><td>Based on full scale range of the selected sensor, set the value below which the relay will de-activate. For example, to deactivate relay when CO_2 setting reaches 790, set this threshold value to 7.90%. This value must be set lower than the relay on threshold.</td></tr>
<tr><td>AV19</td><td>Relay min on time</td><td>1 / 240</td><td>seconds</td><td>60</td><td>R/W</td><td>When relay activates, it will not deactivate until this time has lapsed, regardless of the turn-off setting. The relay will deactivate only when this time has expired AND the turn-off threshold is met.</td></tr>
</table>

Register	Description	Min/Max	Units	Default Value	Read	Functionality
AV20	*Relay min off time*	1 / 240	seconds	60	R/W	When relay de-activates, it will not activate again until this time has lapsed, regardless of the turn-on setting. The relay will re-activate only when this time has expired AND the turn-on threshold is met.
AV21	*Display PM size*	0 = 0.3-1.0 1 = 0.3-2.5 2 = 0.3-4.0 3 = 0.3-10.0	Micro-meters	1	R/W	Select which particulate size to show on display units.
AV22	*Display center*	0 = None 1 = Temperature 2 = Humidity 3 = CO2 4 = Air Quality 5 = TVOC µg/m^3 6 = TVOC ppb 7 = PM 8 = Temp Setpoint 9 = CO 10 = O3	None	4	R/W	Choose the value to show in the center of the OLED display (Display models only). The below is an example of the Air Quality" setting. If PM is selected, the particle size displayed will depend on the setting in AV21. 
AV23	*Display upper left*	0 = None 1 = Relay Icon	None	0	R/W	Choose whether to show the relay state icon on the top left of the OLED display (Display models only).
AV24	*Display upper right*	0 = None 1 = Temperature 2 = Humidity 3 = CO2 5 = TVOC µg/m^3 6 = TVOC ppb 7 = PM 8 = Temp Setpoint 9 = CO 10 = O3	None	1 or 0	R/W	Choose the value to show in the upper right of the OLED display (Display models only). Default depends on whether temperature element is included.
AV25	*Display lower left*	0 = None 1 = Temperature 2 = Humidity 3 = CO2 5 = TVOC µg/m^3 6 = TVOC ppb 7 = PM 8 = Temp Setpoint 9 = CO 10 = O3	None	2 or 0	R/W	Choose the value to show in the lower left of the OLED display (Display models only). Default depends on whether humidity element is included.

Register	Description	Min/Max	Units	Default Value	Read	Functionality
AV26	*Display lower right*	0 = None 1 = Temperature 2 = Humidity 3 = CO2 5 = TVOC µg/m^3 6 = TVOC ppb 7 = PM 8 = Temp Setpoint 9 = CO 10 = O3	None	3 or 0	R/W	Choose the value to show in the lower right of the OLED display (Display models only). Default depends on whether CO2 element is included.
AV27	*AQ Ring brightness*	0 / 100	no units	100	R/W	Adjust value to increase or decrease brightness of AQ Ring (on AQ Ring devices only).
AV28	*Good-Fair*	0 / 100	no units	70	R/W	Adjust this value to change the threshold below which the display or AQ Ring will show a "fair" rating.
AV29	*Fair-Poor*	0 / 100	no units	40	R/W	Adjust this value to change the threshold at or below which the display or AQ Ring will show a "Poor" rating.
AV30	*VOC Mode*	0/1	No units	0	R/W	0 = Normal operation mode 1 = Training mode (48 hours)
AV31	*Factory reset*	1234 *	no units	0		Write value 1234 to this register to set all customer accessible values to factory defaults. Device will reboot after factory restore has completed.
AV32	*Protocol*	0 = Modbus 1 = BACnet	no units		Read only	Read from device DIP switches. See installation Manual for details.
AV33	*MAC address*	0 / 127	no units		Read only	Read from device DIP switches. See installation Manual for details.
AV34	*Baud rate*	0 = 9600 1 = 19200 2 = 38400 3 = 57600 4 = 76800 5 = 115200	no units		Read only	Read from device DIP switches. See installation Manual for details.
AV35	*Data/Parity/Stop*	0 = 8N1 1 = 8N2 2 = 8O1 3 = 8E1	no units		Read only	Read from device DIP switches. See installation Manual for details.
AV55	*Display Lock*	0 = Disabled 1 = Enabled	No units	0	R/W	Choose to lock the settings Menu. This will override the menu lock setting in the device GUI display settings and the device will remain locked until this setting is changed through comms.

Register	Description	Min/Max	Units	Default Value	Read	Functionality
AV56	*PIR Display Wake-Up*	0 = Disabled 1 = Enabled	No units	0	R/W	Will use the PIR motion sensor to wake up the device display when a motion event is detected
AV57	*Screensaver Timeout*	1/120	minutes	1	R/W	Sets the time in minutes the screen will stay active until the screensaver turns on
AV60	*CO Calibration Expiration*	0/365	days	365	Read Only	A count down in days until the CO sensor needs calibration.
AV61	*CO Sensor End of Life*	0/1825	days	1825	Read Only	A count down in days of the CO sensors total lifetime.
AV62	*Ozone Calibration expiration*	0/365	Days	0	Read only	Shows number of days left on the Ozone calibration.
AV63	*BTN State Hold Time*	1/600	Seconds	10	R/W	Number of seconds that the button state is active after button is pressed.
AV64	*Ozone Sensor end of life*	0/1825	Days	1825	Read only	Number of days until the Ozone sensor is end of life.
AV65	*Temp Setpoint*	-40.0/122.0	F/C	72	Read only	Setpoint used when slider is not equipped.

Analog Output

Register	Description	Min/Max	Units	Read	Functionality
AV36	Analog Source	0 = None 1 = CO2 2 = Humidity 3 = Temperature 4=VOC 5 = PM 6 = Slider Temp 7 = PID-Temp 8 = PID-CO2 9 = PID-Slider Temp 10 = CO 11 = Ozone	None	R/W	Sets the source of the analog output channel.
AV37	Analog V min	0/10	Volts	R/W	This value corresponds to the lowest point on an analog scale. For a 0-10V signal, set to 0V. For a 2-10V signal, set to 2V.
AV38	Analog V max	0/10	Volts	R/W	This value corresponds to the highest point on an analog scale. For a 0-10V signal, set to 10V. For a 0-5V signal, set to 5V.
AV39	Analog mA min	0/20	mA	R/W	This value corresponds to the lowest point on an analog scale. For a 4-20mA signal, set to 4mA. For a 0-20mA signal, set to 0mA.
AV40	Analog mA max	0/20	mA	R/W	This value corresponds to the highest point on an analog scale. For a 0-20mA or 4-20mA signal, set to 20mA.

PID Settings

Register	Description	Min/Max	Units	Read	Functionality
AV41	PID CO2 setpoint	0/10000	ppm	R/W	Sets the CO2 setpoint for the PID controlled analog output.
AV42	PID Temp Setpoint	-40/122	F/C	R/W	Sets the Temperature set point for the PID controlled analog output.
AV43	PID Kp	-100 /100	None	R/W	Sets the Proportional gain PID coefficient.
AV44	PID Ki	0/100	None	R/W	Sets the Integral gain PID coefficient.
AV45	PID Kd	0/100	None	R/W	Sets the Derivative gain PID coefficient.
AV46	PID Invert	0 = Not Inverted 1 = Inverted	None	R/W	This setting will invert the overall error signal (R - SP instead of (SP - R).
AV66	AQI PID Setpoint	0/100	%	R/W	Can use this to control a PID loop based on the calculated air quality index.

Air Quality Thresholds

If Air Quality is selected, the device will monitor each CO2, TVOC, PM, RH, and Temp sensor present and will display accordingly. The device will calculate an average air quality based on up to 5 sensors and display good, fair, or poor accordingly. The device will come populated with the Senva recommended Good-Fair-Poor thresholds, but they can be changed with the following points, or in the device menu.

Register	Description	Min/Max	Units	Default Values	Read	Functionality
AV67	AQI CO2 Poor quality	0/10000	PPM	2000	R/W	Threshold where CO2 quality becomes Poor
AV68	AQI CO2 Good quality	0/10000	PPM	800	R/W	Threshold where CO2 quality becomes Good
AV69	AQI VOC Poor quality	0/32000	Ug/m3	3000	R/W	Threshold where VOC quality becomes Poor
AV70	AQI VOC Good quality	0/32000	Ug/m3	300	R/W	Threshold where VOC quality becomes Good
AV71	AQI PM Poor quality	0/1000	Ug/m3	55	R/W	Threshold where PM quality becomes Poor
AV72	AQI PM Good quality	0/1000	Ug/m3	12	R/W	Threshold where PM quality becomes Good
AV73	AQI CO Poor quality	0/200	PPM	25	R/W	Threshold where CO quality becomes Poor
AV74	AQI CO Good quality	0/200	PPM	0	R/W	Threshold where CO quality becomes Good
AV75	AQI O3 Poor quality	0/5000	PPB	100	R/W	Threshold where Ozone quality becomes Poor
AV76	AQI O3 Good quality	0/5000	PPB	0	R/W	Threshold where Ozone quality becomes Good

AV77	AQI Temp Range Low	-40.0/122.0	F/C	64	R/W	Low window threshold for good temperature quality
AV78	AQI CO Good quality	-40.0/122.0	F/C	79	R/W	High window threshold for good temperature quality
AV79	AQI Temp Range Low	0/100	%RH	30	R/W	Low window threshold for good humidity quality
AV80	AQI CO Good quality	0/100	%RH	60	R/W	High window threshold for good humidity quality

The average air quality is calculated as follows for the sensors that have been enabled (see table on page 19 to enable and disable each senor):

1. Each reading is rated according to the above thresholds and given an air quality rating. For each sensor, a good rating is given 90%, fair is given 60% and poor is given 0% air quality.
2. The average of all sensors' air quality is calculated.
3. The average air quality is assigned based on the following thresholds. These thresholds can be adjusted in AV28 Good-fair and AV29 fair-poor.
    a. Good ≥ 75
    b. 55 < Fair < 75
    c. Poor ≤ 55

Register	Description	Min/Max	Units	Read	Functionality
AV50	AQ Enable Temp	0 = Disabled 1 = Enabled	None	R/W	These settings are used to enable or disable a sensor being used for the Air Quality calculation. For a sensor to be enabled it must be installed on the device. All sensors will be shipped with present elements enabled in the Air Quality calculation.
AV51	AQ Enable Humidity	0 = Disabled 1 = Enabled	None	R/W	
AV52	AQ Enable CO2	0 = Disabled 1 = Enabled	None	R/W	
AV53	AQ Enable PM	0 = Disabled 1 = Enabled	None	R/W	
AV54	AQ Enable VOC	0 = Disabled 1 = Enabled	None	R/W	
AV58	AQ Enable CO	0 = Disabled 1 = Enabled	None	R/W Int16	
AV59	AQ Enable Ozone	0 = Disabled 1 = Enabled	None	R/W Int16	

VOC Molecular Weights

Senva's TVOC sensor uses an Ethanol reading to determine a raw TVOC value. Additionally, conversion from µg/m^3 uses the molecular weight of Ethanol. To scale based on a different gas baseline, choose the appropriate gas from the list below and enter the scale factor in AV8.

Please note that the sensor is measuring TOTAL VOCs, so adjusting the scale factor will not necessarily result in a gas-specific reading unless, in special cases, that is the only expected VOC present in the area. It is recommended to use the 1.0 scale factor in most cases. The RESET standard suggests calculating TVOC based on the molecular weight of Isobutelyne (scale factor: 1.218).

Data Source: http://aqt-vru.com/emissions/complete-list-of-vocs/

Contamination	Name	Molecular Weight	Scale factor
ACETYLENE	ACETYLEN	26.04	0.565
FORMALDEHYDE	FORMALD	30.03	0.652
METHANOL	MEOH	32.04	0.695
PROPANE	PROPANE	44.1	0.957
ETHANOL	ETOH	46.07	1.000
DIMETHYL ETHER	ME-O-ME	46.07	1.000
METHYL CHLORIDE	CH3-CL	50.49	1.096
1,3-BUTADIENE	13-BUTDE	54.09	1.174
ISOBUTENE	ISOBUTEN	56.11	1.218
N-BUTANE	N-C4	58.12	1.262
ISOBUTANE	2-ME-C3	58.12	1.262
ACETIC ACID	ACETACID	60.05	1.303
ISOPROPYL ALCOHOL	I-C3-OH	60.1	1.305
ETHYLENE GLYCOL	ET-GLYCL	62.07	1.347
ISOPRENE	ISOPRENE	68.12	1.479
BUTANAL	1C4RCHO	72.11	1.565
N-PENTANE	N-C5	72.15	1.566
ISOPENTANE	2-ME-C4	72.15	1.566
HYDROXY ACETONE	HOACET	74.08	1.608
ISOBUTYL ALCOHOL	I-C4-OH	74.12	1.609
BENZENE	BENZENE	78.11	1.695
TOLUENE	TOLUENE	92.14	2.000
M-XYLENE	M-XYLENE	106.17	2.305
O-XYLENE	O-XYLENE	106.17	2.305
P-XYLENE	P-XYLENE	106.17	2.305
TERPENE	TERPENE	136.24	2.957