

Change History:

Latest Issue	Description
2023-02-22	Original document created
2024-10-18	Add and re-order parameters
2025-04-07	Corrected/Changed Register Address for GPS Heading (50 → 4A) and AQI (52 → 4C); Corrected PM4 units from $\mu\text{g}/\text{m}^4 \rightarrow \mu\text{g}/\text{m}^3$

MODBUS Register Map for AirSENCE

Register Address (Hex)	Variable name	No. of Registers	Data Type	Instructions
00	Device Address	1	Int	- Valid device addresses are 1-255 decimal. Factory default is 240. - Slave ID 0 is reserved
01	Baud Rate	1	Int	- Register Value 9 indicates 9600 bps - Register Value 19 indicates 19200 bps - Register Value 38 indicates 38400 bps - Register Value 115 indicates 115200 bps Default is 19200
02	Data Format	1	Int	Default register value is 0 (8-N-1) format. Please check Data Format section for detail configuration instructions.
03	Serial Number	7	String	Device ID number
0A	CO	2	Float	Value of CO Concentration in ppb
0C	NO	2	Float	Value of NO Concentration in ppb
0E	NO ₂	2	Float	Value of NO ₂ Concentration in ppb
10	O ₃	2	Float	Value of O ₃ Concentration in ppb
12	SO ₂	2	Float	Value of SO ₂ Concentration in ppb
14	H ₂ S	2	Float	Value of H ₂ S Concentration in ppb
16	CO ₂	2	Float	Value of CO ₂ Concentration in ppm
18	VOC	2	Float	Value of VOC Concentration in ppb
1A	NH ₃	2	Float	Value of NH ₃ Concentration in ppb
1C	CH ₄	2	Float	Value of CH ₄ Concentration in ppb



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Modbus Memory Map

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1E	Temp OB	2	Float	Value of On-Board Temperature in °C
20	Hum OB	2	Float	Value of Ambient humidity in %RH
22	Pressure OB	2	Float	Value of On-Board Pressure in hPa
24	Temp AMB	2	Float	Value of Ambient Temperature in °C
26	Hum AMB	2	Float	Value of Ambient humidity in %RH
28	Pressure AMB	2	Float	Value of Atmospheric Pressure in hPa
2A	PM1.0	2	Float	Value of PM 1.0 Concentration in µg/m ³
2C	PM2.5	2	Float	Value of PM 2.5 Concentration in µg/m ³
2E	PM10	2	Float	Value of PM 10 Concentration in µg/m ³
30	PM4	2	Float	Value of PM 4 Concentration in µg/m ³
32	Noise LEQ	2	Float	Value of Average Noise (LEQ) in Db
34	Noise MAX	2	Float	Value of Maximum Noise (MAX) in dB
36	Wind Gust	2	Float	Value of Wind Gust in m/s
38	Wind Speed	2	Float	Value of Wind Speed in m/s
3A	Wind Direction	2	Float	Value of Wind Direction in °
3C	Rain Fall	2	Float	Value of Rainfall in mm
3E	LUX	2	Float	Value of illuminance in LUX
40	UV	2	Float	Value of UV Index
42	Latitude	2	Float	Value of GPS Location (Latitude) in °
44	Longitude	2	Float	Value of GPS Location (Longitude) in °
46	Elevation	2	Float	Value of GPS Location (Elevation) in m
48	Speed	2	Float	Value of GPS Speed
4A	Heading	2	Float	Value of GPS Direction
4C	AQI/AQHI	1	Int	Value of AQI

Data Format

The Data Format in register 2 is selectable via the Modbus Commands. The selectable data formats are as follows. The default value is 0 that means 8-N-1 format.

Data Bits	Parity	Stop Bit	Format	Register Value
8	None	1	8-N-1	0
8	Even	1	8-E-1	1
8	Odd	1	8-O-1	2
8	None	2	8-N-2	3

MODBUS RTU Format

Address	Function Code	Starting Register Hi	Starting Register Lo	No. Of Registers Hi	No. Of Registers Lo	CRC Lo	CRC Hi
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Byte	Modbus	Range	Reference
1 st	Slave Address	1-255	Unique Modbus Slave Address
2 nd	Function Code		03- Read Multiple Holding Registers 04- Read Multiple Input Registers 06- Write Single Holding Registers 16- Write Multiple Holding Registers
3 rd	Starting Register Hi	00	Currently Not Used (00)
4 th	Starting Register Lo	00-FF (Hex)	Address of Starting register
5 th	No. Of Registers Hi	00	Currently Not Used (00)
6 th	No. Of Registers Lo		No. of 16-Bit Registers
7 th	CRC Lo	00-FF (Hex)	CRC Lo Byte
8 th	CRC Hi	00-FF (Hex)	CRC Hi Byte