



# Technical Specifications

## ARVE SENSE Pro

SWISS AIR QUALITY SYSTEM

Product Overview  
Specifications  
Particulate Matter - PM2.5 / PM10  
Carbon Dioxide - CO<sub>2</sub>  
Total Volatile Organic Compounds - TVOCs  
Temperature and Humidity  
Sensor Overview



# ARVE SENSE Pro

The ARVE SENSE Pro is a Swiss-engineered air quality monitoring system designed for accuracy, reliability, and simplicity. It measures:

- CO<sub>2</sub> – with NDIR sensor
- Particulate Matter (PM<sub>2.5</sub> & PM<sub>10</sub>) – with laser scattering
- Humidity & Temperature – with CMOS sensor
- TVOCs – with advanced MOX multi-pixel sensor

## Features

- Multi-room monitoring (up to 100 m<sup>2</sup>)
- Wi-Fi connectivity & easy setup
- Smart integration with Home Assistant, Swiss-Air-Autopilot, and Virus Transmission Risk Index (VTRI)
- 24/7 operation with enterprise-level security



## General

|                        |                                                                                                            |
|------------------------|------------------------------------------------------------------------------------------------------------|
| Installation           | Wall-mounted or table top                                                                                  |
| Dimensions (L x W x D) | 143.5mm x 60mm x 27.5mm                                                                                    |
| Weight                 | 165 grams (total with USB cable and holder)                                                                |
| Operating Temperature  | 25 °C to 70 °C                                                                                             |
| Power Consumption      | 1.6 Watt                                                                                                   |
| Input Voltage          | 5 VDC, 1A (5.5mm USB power supply) - Only use ARVE SENSE Pro with the original ARVE cable and power supply |
| Screen Display         | No                                                                                                         |

## Connectivity

|                                |                                        |
|--------------------------------|----------------------------------------|
| Wi-Fi (Setup using mobile app) | 802.11 b/g/n                           |
| Bluetooth                      | Bluetooth V4.2 BR/EDR and Bluetooth LE |
| Antennas                       | Built-in (2.4 Ghz Wi-Fi, Bluetooth)    |

## Data Storage and Logging

|                    |                                                 |
|--------------------|-------------------------------------------------|
| Log Interval       | 10 seconds                                      |
| Data Push Interval | 10 seconds                                      |
| Onboard Memory     | 16 MB                                           |
| Message Data Rate  | 6 KB per Minute; 0.005 Mbit/s; 265 Mb per Month |

## User Interface

|                        |                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------|
| ARVE Account           | Contact <a href="mailto:support@arveair.com">support@arveair.com</a> for account registration |
| Web Dashboard          | Support all major browsers                                                                    |
| Mobile App             | ARVE air                                                                                      |
| Minimum OS Requirement | iOS 11.0 or later (64-bit devices)                                                            |



# PM Sensor Specification

- Optical laser scattering sensor technology
- Unique long-term stability
- Advanced particle size binning
- Superior accuracy in mass-concentration sensing
- Fully calibrated output

| PARAMETERS                                   | CONDITIONS                                                   | VALUES                                                                             |
|----------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------|
| Mass concentration accuracy <sup>1</sup>     | 0 to 100 µg/m <sup>3</sup><br>100 to 1'000 µg/m <sup>3</sup> | ±10 µg/m <sup>3</sup><br>±10 %                                                     |
| Mass concentration range                     | -                                                            | 0 to 1'000 µg/m <sup>3</sup>                                                       |
| Mass concentration resolution                | -                                                            | 1 µg/m <sup>3</sup>                                                                |
| Mass concentration size range <sup>2</sup>   | PM0.5<br>PM2.5<br>PM4<br>PM10                                | 0.3 to 1.0 µm<br>0.3 to 2.5 µm<br>0.3 to 4.0 µm<br>0.3 to 10.0 µm                  |
| Number concentration range                   | 1.6 Watt                                                     | 0 to 3'000 /cm <sup>3</sup>                                                        |
| Number concentration size range <sup>2</sup> | PM0.5<br>PM1.0<br>PM2.5<br>PM4<br>PM10                       | 0.3 to 0.5 µm<br>0.3 to 1.0 µm<br>0.3 to 2.5 µm<br>0.3 to 4.0 µm<br>0.3 to 10.0 µm |

1 Deviation to TSI DustTrak<sup>TM</sup> DRX Aerosol Monitor 8533 reference. PM2.5 accuracy is verified for every sensor after calibration using a defined potassium chloride particle distribution.

2 PM<sub>x</sub> defines particles with a size smaller than “x” micrometers (e.g., PM2.5 = particles smaller than 2.5 µm).



# CO<sub>2</sub> Sesnsor Specification

- NDIR CO<sub>2</sub> sensor technology
- Dual-channel detection for superior stability
- Measurement range: 400 ppm – 10'000 ppm
- Accuracy: ± (30 ppm + 3%)
- Fully calibrated and linearized

| PARAMETERS                                | CONDITIONS                                                           | VALUES            |
|-------------------------------------------|----------------------------------------------------------------------|-------------------|
| CO <sub>2</sub> measurement range         | -                                                                    | 0 – 40'000 ppm    |
| Accuracy <sup>1</sup>                     | 400 ppm – 10'000 ppm                                                 | ± (30 ppm + 3%MV) |
| Repeatability <sup>2</sup>                | 400 ppm – 10'000 ppm                                                 | ±10ppm            |
| Response time <sup>3</sup>                | τ63%                                                                 | 20s               |
| Accuracy drift over lifetime <sup>4</sup> | 400 ppm – 10'000 ppm<br>ASC field-calibration algorithm<br>activated | ±50ppm            |

1 Deviation to a high-precision reference in the calibrated range (400 – 10'000 ppm) of the sensor. Full accuracy is restored ASC recalibration features. Accuracy is based on tests with gas mixtures having a tolerance of ± 1.5%.

2 RMS error of consecutive measurements at constant conditions.

3 Time for achieving 63% of a respective step function.

4 CO<sub>2</sub> concentrations < 400 ppm may result in sensor drifts when ASC is activated. For proper function of ASC field-calibration algorithm sensor has to be exposed to air with CO<sub>2</sub> concentration 400 ppm regularly.



# TVOCs Sensor Specification

- CMOS multi-pixel gas sensor technology
- Unmatched robustness against contaminating gases presents in real-world applications
- Outstanding long-term stability and low drift
- Measurement range: 0 – 60'000 ppb TVOC

| PARAMETERS                     | CONDITIONS                                                                  | VALUES                                                           |
|--------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|
| Measurement range <sup>1</sup> | Ethanol signal<br>H2 signal                                                 | 0 ppm <sup>2</sup> to 1000 ppm<br>0 ppm to 1000 ppm              |
| Specified range                | Ethanol signal<br>H2 signal                                                 | 0.3 ppm to 30 ppm<br>0.5 ppm to 3 ppm                            |
| Accuracy <sup>3</sup>          | Ethanol signal<br>H2 signal                                                 | typ.: 15% of measurement value<br>typ.: 10% of measurement value |
| Output range                   | Range:<br>0 ppb – 2008 ppb<br>2008 ppb – 11110 ppb<br>11110 ppb – 60000 ppb | Resolution:<br>1 ppb<br>6 ppb<br>32 ppb                          |

1 Exposure to ethanol and H2 concentrations up to 1000 ppm have been tested.

2 ppm: parts per million. 1 ppm = 1000 ppb (parts per billion)

3 90% of the sensors will be within the typical accuracy tolerance, >99% are within the maximum tolerance.



# Temperature and Humidity Sensor Specifications

- CMOS sensor technology
- High reliability and long-term stability
- High signal-to-noise ratio
- Fully calibrated, linearized, and temperature compensated output
- Very fast measurement time

| PARAMETERS        | CONDITIONS | VALUES                        |
|-------------------|------------|-------------------------------|
| Measurement range | -          | -40 to 125 °C<br>0 to 100 %RH |
| Accuracy          | -          | ±0.2 °C<br>±2 %RH             |
| Long Term Drift   | max        | <0.03 °C/yr<br><0.25 %RH/yr   |

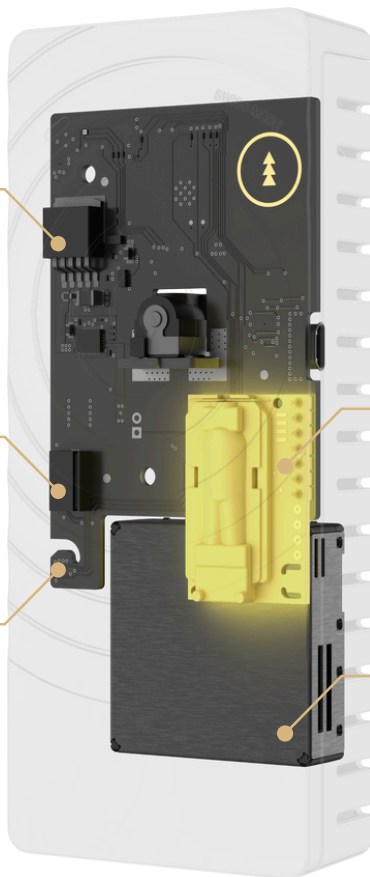


# Sensor Overview

TVOCs  
MOX Multi-Pixel Gas Sensor

Temperature  
CMOS Sensor

Humidity  
CMOS Sensor



TCO<sub>2</sub>  
NDIR Sensor

PM2.5 / PM10  
Laser Scattering Sensor





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