ObservAir® Series

See the air we share

A modular, network-ready sensor that enables lab-grade air quality monitoring at any scale.

Seamlessly integrates across mobile and stationary sampling platforms to create unprecedented views of the air we share.

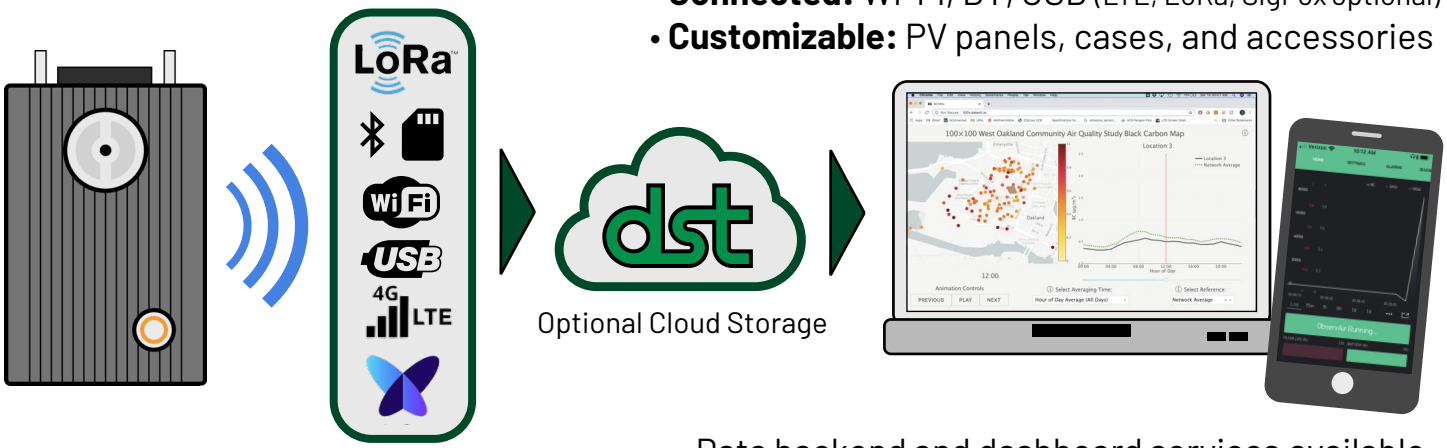
Our **patented technology** (US10,495,573) delivers exceptional accuracy, even in harsh operating environments.

Air quality sensing that configures to *your* needs

- **Aerosol Black Carbon**
- **Up to 2 gases (optional):** CO, NO_2, SO_2, H_2S, O_3, ethanol
- **Environmental conditions:** Temperature and Humidity
- **Location (optional GPS)**

Using our **propietary process,** each ObservAir is 'trained' to withstand environmental pertubations.

- **Compact:** 120 x 80 x 45mm
- **Convenient:** Integrated mobile and web apps
- **Connected:** Wi-Fi, BT, USB (LTE, LoRa, SigFox optional)
- **Customizable:** PV panels, cases, and accessories



Data backend and dashboard services available.

Distributed Sensing Technologies
Email: info@dstech.io **Phone:** (646) 596-3845

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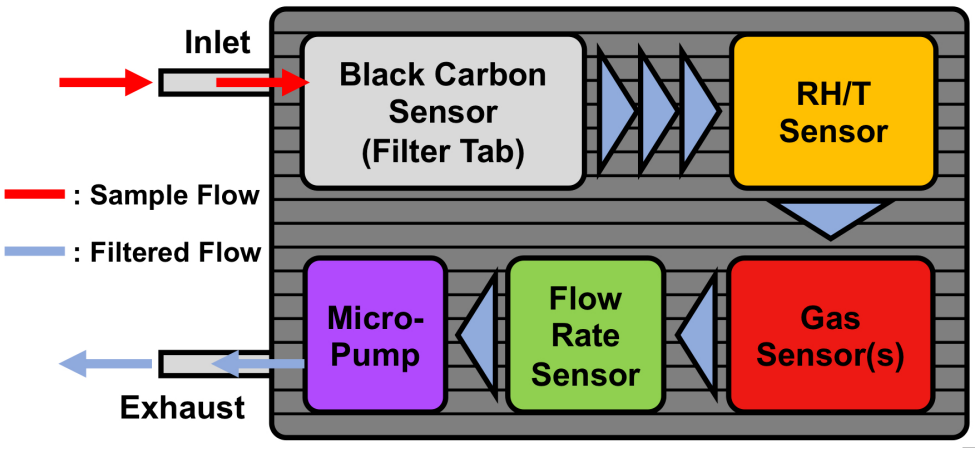
Technical Overview



The ObservAir's micropump draws air through the fibrous aerosol filter. As particulate matter accumulates on the filter, the **aerosol absorption photometer** measures the rate of 880 nm light attenuation and calculates **black carbon** concentrations. Downstream, a **relative humidty and temperature (RH/T)** sensor monitors environmental conditions and **electrochemical cells** measure up to **two gaseous pollutants** simultaneously.

Air pollution measurement species	**Standard:** Black carbon (BC) aerosol			
	Optional: CO, NO_2, SO_2, H_2S, O_3, ethanol (up to 2)			
Principle of operation	**Black carbon:** Filter-based light absorption (880 nm)			
	Gases: Electrochemical cells			
Communications	**Standard:** Wi-Fi, Bluetooth, USB			
	Optional: LTE, LoRa, SigFox (choose one)			
Sample air flow rate	50 to 200 ccm			
Sample interval	2 to 60 seconds			
Power consumption	1.2 W (at 100 ccm flow rate)			
Battery life	≥ 24 hours (at 100 ccm flow rate)			
Filter life (BC_{avg} = 1µg/m^3)	**Flow rate (ccm)**	50	125	200
	Filter life (days)	6.3	2.5	1.6
Data storage	Removable SD card (4Gb card provided)			
Operating conditions	Temperature: 5 to 40°C; RH: 15 to 80%			
Dimensions/Weight	120 x 80 x 45 mm / 600 grams			
Charging	5V DC at 2.1A max (microUSB charger provided)			

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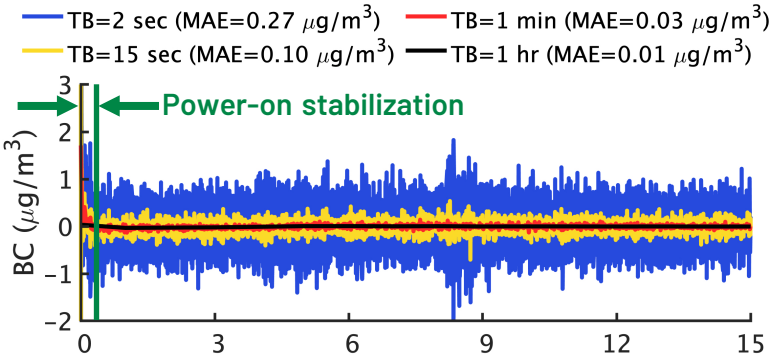
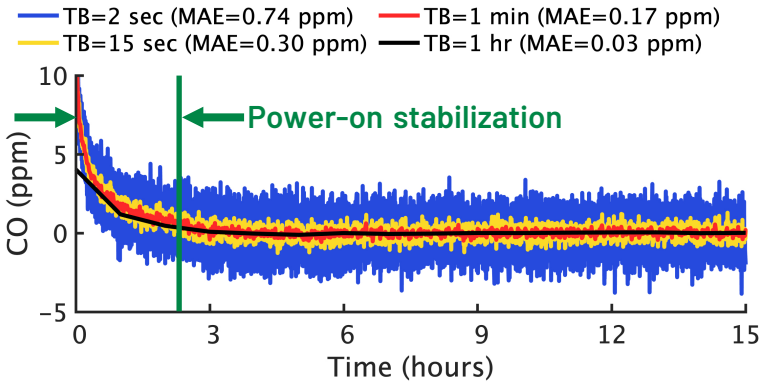
Measurement Performance

	Black Carbon Aerosol	Gases						Environmental		Sample Flow Rate
		CO	NO_2	SO_2	H_2S	O_3	Ethanol	Relative Humidity	Temp.	
Measurement Range	0 - 500 µg/m³	0 - 500 ppm	0 - 20 ppm	0 - 20 ppm	0 - 50 ppm	0 - 20 ppm	0 - 200 ppm	0 - 80 %	0 - 40 °C	50 - 200 ccm
Limit of detection	0.05 µg/m³	2 ppm	0.1 ppm	0.3 ppm	0.3 ppm	0.1 ppm	0.2 ppm	N/A	N/A	5 ccm
Resolution	0.001 µg/m³	0.1 ppm	0.1 ppm	0.1 ppm	0.1 ppm	0.1 ppm	0.1 ppm	0.1 %RH	0.1 °C	0.1 ccm
Accuracy	± 5%*	± 3%	± 5%	± 3%	± 2%	± 2%	± 2%	± 1.5 %RH	± 0.2 °C	± 5%
Precision	± 3%	± 2%	± 5%	± 3%	± 2%	N/A	± 2%	0.2 %RH	0.15 °C	± 3%
90% response time (sec)	8	< 30	< 30	< 30	< 30	< 30	< 60	10	> 2	2
Minimum power-on stabilization (min)	30	60	60	60	60	60	30	< 1	< 1	<1

*Relative to existing aerosol absorption photometers

- ObservAir performance is characterized at a sample flow rate of 100 ccm and 1-minute timebase.
- Power-on stabilization time depends on ambient conditions (colder = longer stabilization).
- Baseline noise is evaluated as the **mean absolute error (MAE)** achieved while sampling clean ('zero') air. See black carbon (BC) and carbon monoxide (CO) concentration data below.





Average Baseline Noise				
Timebase (TB)	2 sec	15 sec	1 min	1 hr
BC (µg/m³)	0.3	0.1	0.05	0.01
CO (ppm)	0.8	0.3	0.2	0.1
NO_2 (ppm)	0.5	0.2	0.1	0.05
SO_2 (ppm)	0.1	0.03	0.02	0.01
H_2S (ppm)	0.3	0.3	0.3	0.3
O_3 (ppm)	0.1	0.1	0.1	0.1
ethanol (ppm)	0.2	0.2	0.2	0.2
Temperature (°C)	0.01			
RH (%)	0.01			
Flow rate (ccm)	0.5			

For BC, baseline noise is also inversely proportional to sample flow rate (e.g., noise at 125 ccm is ~25% lower than cited above). This is not true for gas measurements.

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