

*Geosystem* soarability



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## Sniffer4D<sup>v2</sup>

Multi-gas Detection & Mapping System

For Drones & Ground Vehicles

# Sniffer4D v2



## Multi-gas Detection & Mapping System for Drones & Ground Vehicles

Sniffer4D consists of a multi-gas detection hardware and powerful analytic software. This system is able to measure and visualize real-time 3D gas concentration distributions. By providing timely & actionable information, Sniffer4D helps first responders, oil & gas industry, environmental agencies, and researchers improve work efficiency, mitigate risks, and reduce costs.

**Geosystem**

# Typical Applications



Quickly scan through an area and obtain its hyper-local air pollution distribution in 3D. The results can be used to pin down exact locations of suspected fugitive emission sources, to understand how air pollution are transported, and so on.



In an event of an emergency, before putting the health and safety of your team at risk, fly Sniffer4D into the scene to quickly identify the types and spreads of toxic gases, and define a safety perimeter.



Efficiently gather distribution information of certain gases in oil & gas plants. Use the information to locate suspected leakage spots, and to identify the spread of harmful substances.



Fly Sniffer4D into ship plumes and it can automatically estimate the Fuel Sulfur Content (FSC) of the ships using its built-in inversion algorithm.

# One-stop Workflow

From data collection to result delivery.

## Parameters (configurable, up to 9)

PM2.5 PM10 SO<sub>2</sub> CO NO<sub>2</sub> O<sub>2</sub> O<sub>3</sub> VOCs  
LEL / CH<sub>4</sub> CO<sub>2</sub> H<sub>2</sub>S NH<sub>3</sub> HCl H<sub>2</sub> Cl<sub>2</sub> PH<sub>3</sub>  
Gas Sampling Wind Speed & Direction Radiation  
Other Customized Parameters...

## ● Sense Up to 9 Gases at a Time

Sniffer4D is able to obtain up to 9 gas concentration distributions at one time. Users can flexibly choose or alter their sensor configurations that suit their applications and budgets.

### Examples:

- PM, O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, VOCs for ambient air monitoring;
- VOCs, CH<sub>4</sub>, CO, Cl<sub>2</sub>, O<sub>2</sub>, NO<sub>2</sub>, H<sub>2</sub>S for HAZMAT response;
- VOCs, CH<sub>4</sub>, H<sub>2</sub>S, SO<sub>2</sub> for oil & gas plant leak detection.

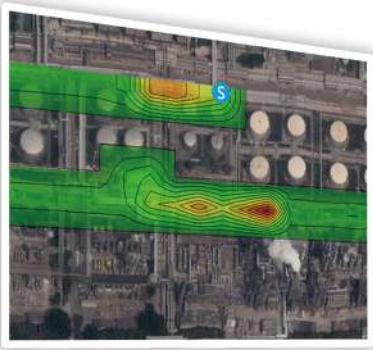


## ● See Your Real-time Data, Anywhere

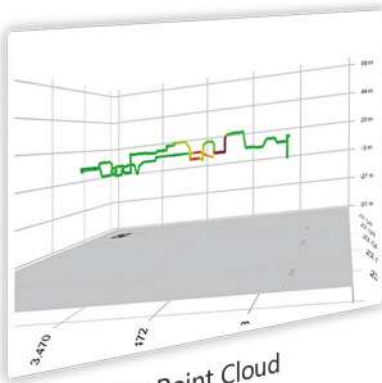
Sniffer4D's built-in cellular connectivity & US-based Cloud server enable secure real-time data transmission with unlimited range to decision makers in different locations.

## Advanced Real-time Visualization

Sniffer4D Mapper software visualizes and analyzes data from one or more Sniffer4Ds in real time, providing intuitive & insightful information for decision makers.



2D Isoline Map



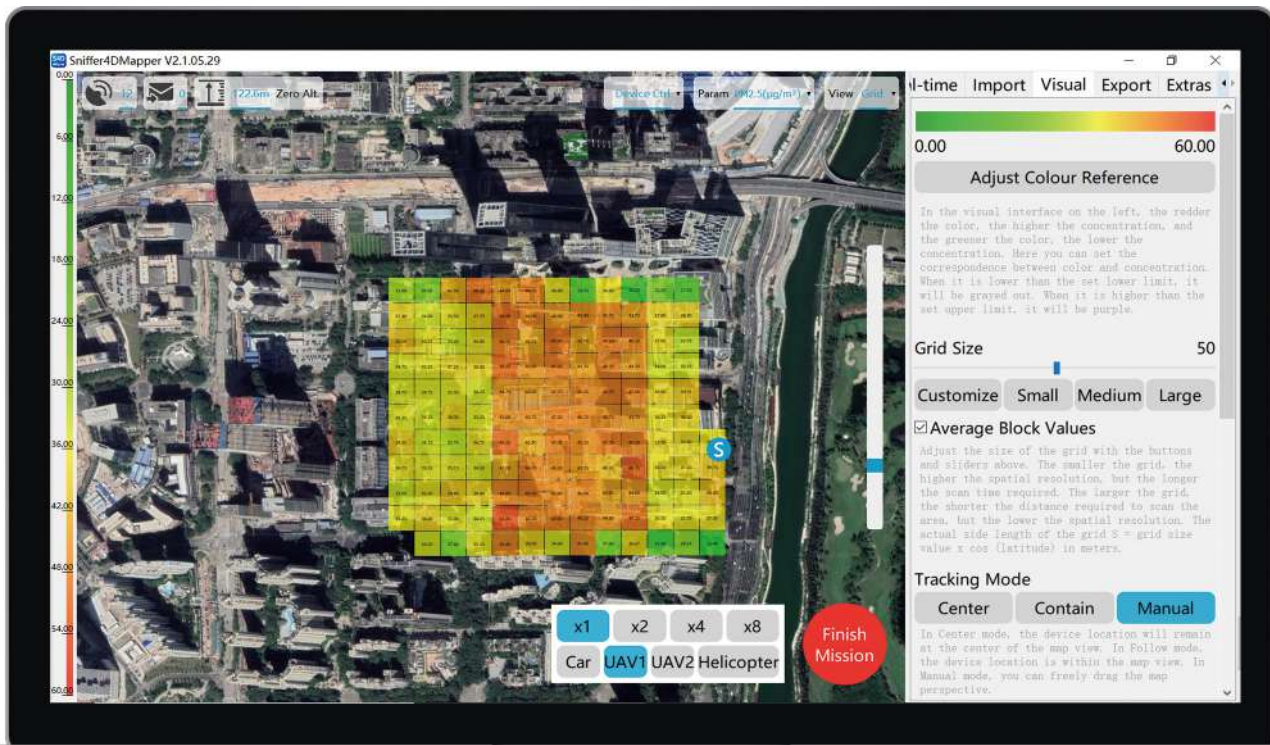
3D Point Cloud



2D Grid Map



# More Software Features



- \* Display real-time gas concentration values and temporal graphs;
- \* Display Sniffer4D's working status (e.g. GPS satellite number, a litude);
- \* Automatically retrieve data collected by Sniffer4D during communication interruption back to the software;
- \* Display real-time video feed from drone;
- \* Support connecting to multiple Sniffer4Ds at the same time;
- \* Display real-time UAS camera view;
- \* Support screen recording during missions;
- \* Calculate estimated Fuel Sulfur Content (FSC);
- \* Import historical mission files;
- \* Import & display orthophoto;
- \* Import geo-tagged photos;
- \* Calibrate Sniffer4D;
- \* Show demo missions;
- \* Automatic update.

# Designed for Drones & Ground Vehicles



## Sniffer4D + Multirotors

Normally mounted on the top of the multirotor to stay away from propellers' downwash



## Sniffer4D + Fixed Wings

Placed inside the payload compartment and use snorkels for air exchange



## Sniffer4D + Ground Vehicles

Mounted on the roof top or windscreen, ideally away from the exhaust

Size  
157 \* 103 \* 87mm

Weight  
400 - 500g

IPX2  
Rated

Cellular  
Connectivity

Anti-EMI  
Aluminum Casing

Internal Suspension  
Mechanism

Active  
Air Intake

Data Retrieval  
Algorithm

Automatic Data  
Backup in the  
SD Card

Agile & flexible. Designed to work under motion, vibration, and EMI. Cellular connectivity enables real-time data transmission with unlimited range. Data retrieval algorithm and automatic data backup ensure data integrity to the highest level.



# Designed for Simplicity



## Plug & Play

With built-in cellular connectivity & GNSS, all you need to do is to plug in a power cable to make Sniffer4D work.



## Status LEDs

Sniffer4D's 6 status LEDs enable users to quickly understand its working status, boosting your work efficiency.



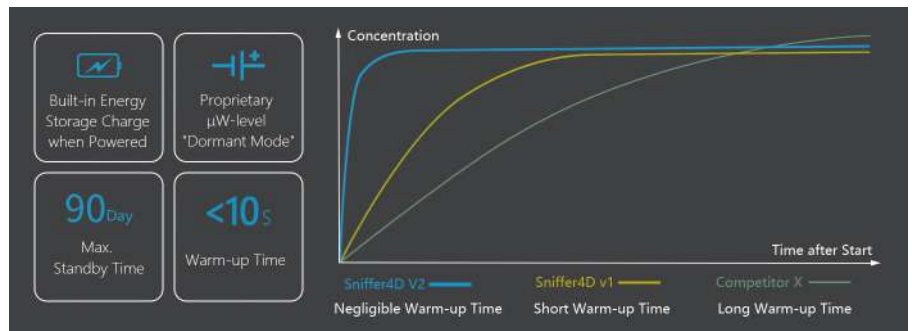
## Front & Back Warning Lights

Sniffer4D's high-brightness warning lights can change their color under different gas concentrations, notifying on-site personnel about the risks.



## Seamless Drone Integration

Sniffer4D shows its real-time data on the DJI Pilot screen through DJI Payload SDK. Deep integration with other drone platforms is also possible via Sniffer4D's API.



## Negligible Warm-up Time

When Sniffer4D disconnects from power, it automatically enters "dormant mode\*", in which the most crucial sensing components still remain working. Therefore, when Sniffer4D is powered up, almost no more warm-up time is needed for the sensors, helping users to race against time.

\*Only available for certain sensing modules.

# Verified Data Quality



Proprietary ultra-low noise signal processing electronics



State-of-the-art sensing components



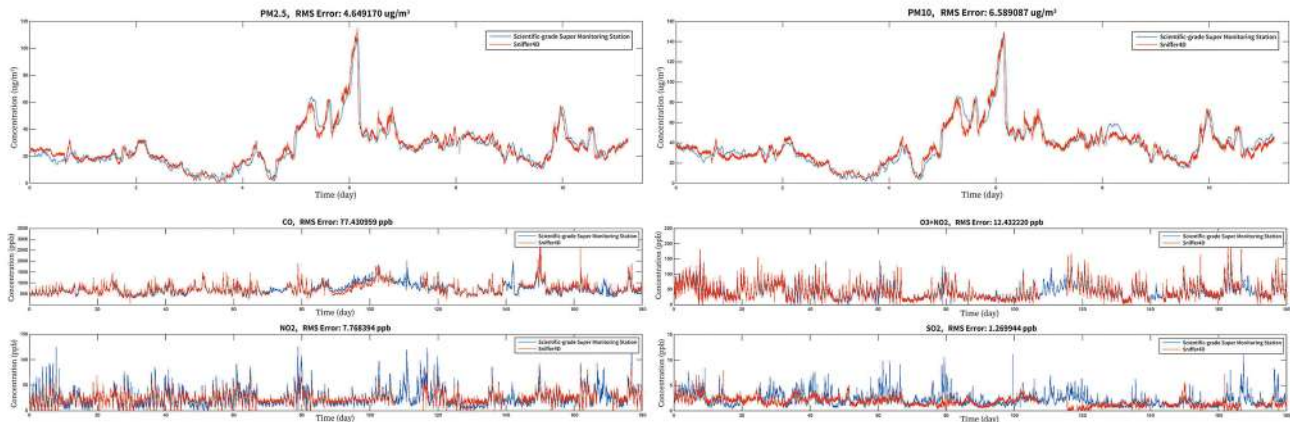
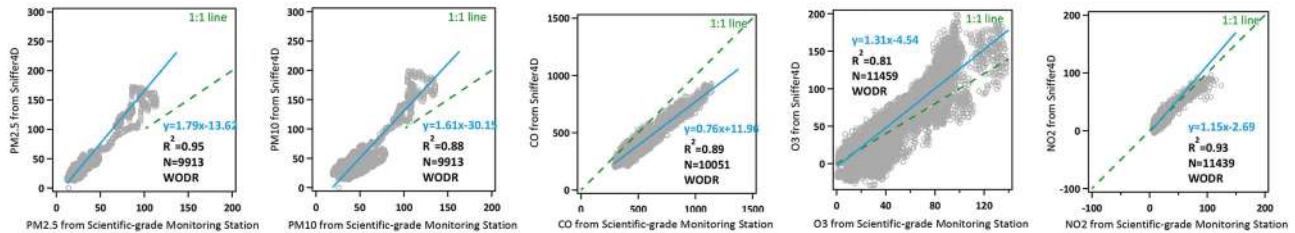
Proprietary environmental and bias compensation algorithms



Rigorous quality control process

## Advanced Hardware & Algorithm Design

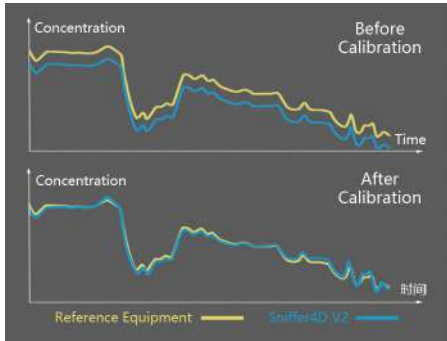
Ensure Sniffer4D's excellent data linearity, repeatability, reliability and short response time.



Industry leading data quality ( $R^2$  0.81-0.95) in co-location test with a scientific grade monitoring station.

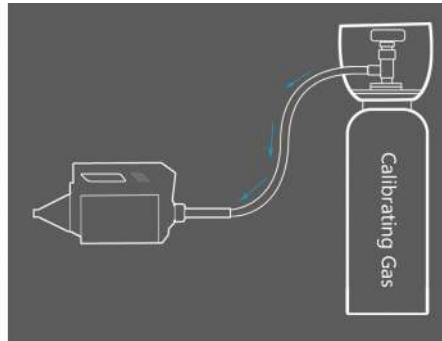
# Flexible & Easy Calibration

Every Sniffer4D is factory calibrated before being shipped out. We recommend re-calibrating the device every 6 months. There are generally 3 ways to calibrate Sniffer4D.



## Data Learning

Compare long-term datasets from Sniffer4D and a local reference monitoring station (placed at the same location) to determine the calibration parameters.



## Calibrating Gas

Inject calibrating gases with known concentrations to determine the calibration parameters.

Local Air Quality			
PM10 $\mu\text{g}/\text{m}^3$	25	PM2.5 $\mu\text{g}/\text{m}^3$	26
NO2 $\mu\text{g}/\text{m}^3$	39	O3 $\mu\text{g}/\text{m}^3$	23
CO $\mu\text{g}/\text{m}^3$	416	SO2 $\mu\text{g}/\text{m}^3$	3

## Quick Adjustment

Use local AQI information to roughly determine the calibration parameters.

# Support Gas Sampling

Start or stop gas sampling via DJI Pilot App or Sniffer4D Mapper. Adaptive to gas sampling bags with different capacities. Automatically stop when the bag is full. Easy integration with DJI M300RTK & DJI M210/M210RTK. Plug & play.



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For more information  
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