ATMO®
TUBE
PRO

Reviewer's Guide

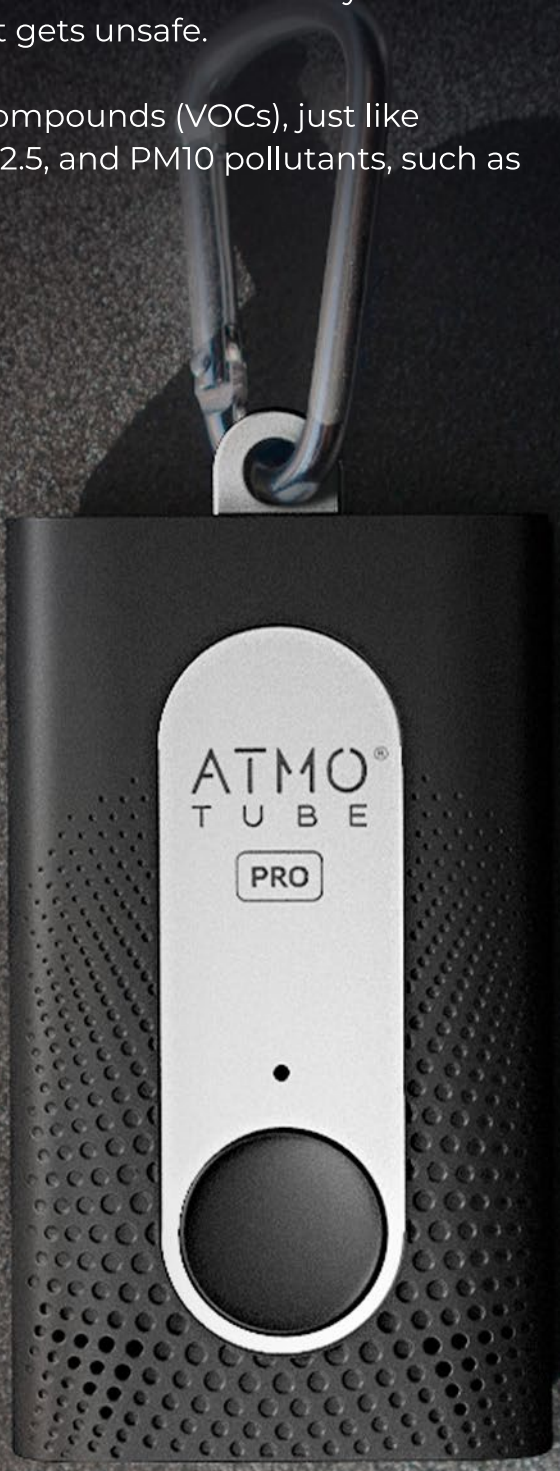
What is Atmotube PRO?

Atmotube PRO is our most advanced solution for both indoor and outdoor air quality tracking.

Atmotube PRO is a wearable, portable device that continuously monitors air quality in real time and alerts you when it gets unsafe.

Atmotube PRO tracks Volatile Organic Compounds (VOCs), just like Atmotube Plus, but also detects PM1, PM2.5, and PM10 pollutants, such as dust, pollen, soot, and mold.

- Volatile Organic Compounds
- Particulate Matter 1µg
- Particulate Matter 2.5µg
- Particulate Matter 10µg
- Humidity
- Temperature
- Atmospheric Pressure
- Altimeter



Why care about PM and VOCs in the air?

The average person takes over 20,000 breaths per day. Most of the time, we never think about WHAT we breathe in and how air quality affects our bodies.

Office equipment, paints and lacquers, cleaning supplies, and furnishings often emit Volatile Organic Compounds (VOCs). These gases can have adverse short and long-term health effects on our respiratory systems. Over time, exposure to VOCs has been linked to an increased risk of heart disease, stroke, liver and brain damage, and even cancer.

Particulate matter is a mixture of tiny particles and droplets made up of dirt, dust, soot, smoke, and liquid compounds that pollute the air. The ingredients can vary by season (for example, soot and smoke from wood fires, which are more common in winter, are a source of particulate matter).
When you inhale particle matter, it can harm your lungs, especially if you already have chronic lung disease or asthma. Particulate matter can even cause heart attacks, lung cancer, and low birth weight in babies. Exposure to this type of air pollution often leads to eye and throat irritation.
Particle matter typically consists of nitrates, sulfates, organic chemicals, metals, and soil or dust particles.

With Atmotube PRO, you can easily monitor the air you breathe and take steps to mitigate dangerous exposure before it's too late.

How do particles affect the human body?

We're sure you have heard about air pollution. It's a major issue worldwide today and is mostly caused by very small particles in the air known as particulate matter (PM).

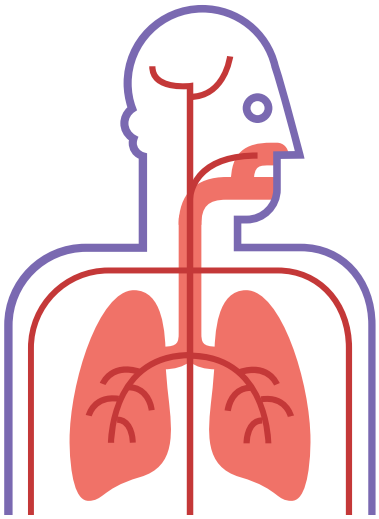
Particulate Matter (PM), also known as soot, is made of microscopic solid particles or liquid droplets that are either emitted directly into the air or formed by pollutants that combine in the atmosphere. PM is usually measured in three size ranges, which are the most harmful to health: PM10, PM2.5, and PM1.

PM10 or coarse dust particles refer to particles with a diameter less than or equal to 10 microns in size. They are about 30 times smaller than the width of a human hair and are small enough to evade our defensive nose hairs and get inhaled into our lungs. Sources of this PM10 include crushing/grinding operations, and dust stirred up by vehicles. Pollen, mold, and plant and insect particles are also considered PM10. Finally, the evaporation of sea spray can also produce large particles in coastal areas.
Dangerous level: 125 µg/m3 (microgram per cubic meter) or more.

PM2.5 or fine particles are 2.5 micrometers in diameter or smaller. Fine particles are produced from all types of combustion, including motor vehicles, power plants, residential wood burning, wildfires, agricultural burning, and some industrial processes. While PM10 ends up in your lungs, PM2.5 is more dangerous as it can transfer from your lungs into your bloodstream. From your bloodstream, it can end up anywhere in your body, thereby making it "the invisible killer".
Dangerous level: 90 µg/m3 or more.

PM1 is particulate matter with a diameter smaller than 1 micron – is a major subset of PM2.5. These are extremely fine particles that are even more likely to reach
deeper into the respiratory system than PM2.5. PM1 is the by-product of emissions from factories, vehicular pollution, construction activities, and road dust. It is not dispersed and stays suspended in the air that you breathe.
Dangerous level: 61 µg/m3 or more.

THE SMALLER THE PARTICLES, THE MORE DANGEROUS THEY ARE



Atmotube: a closer look

CARABINER MOUNT

Elegant and functional solution for carabiner clip

RGB LED

Multicolored LED shows different statuses of Atmotube PRO

BUTTON

The button gives you an opportunity to see current Air Quality Score indication on the LED

AIRFLOW MESH

This is where Atmotube PROgets the Air from

ON-DEVICE NOTIFICATION

The color of Atmotube's LED indicates the current Air Quality Score (AQS), from red (extremely poor) to blue (very clean). Press the button once and the LED will

- GOOD
- MODERATE
- POLLUTED
- VERY POLLUTED
- SEVERELY POLLUTED

Setting up Atmotube PRO

1 Connect Atmotube to any USB power source with the supplied USB Type-C cable. The orange LED means Atmotube is turned on and charging.

Atmotube start measuring 4 minutes after it's turned on.

Note: Atmotube is fully charged once the LED changes from orange to green.

2 Install the Atmotube app. It's free on the Google Play store.
It supports devices running iOS 9+ and Android 4.3+ with Bluetooth LE support.

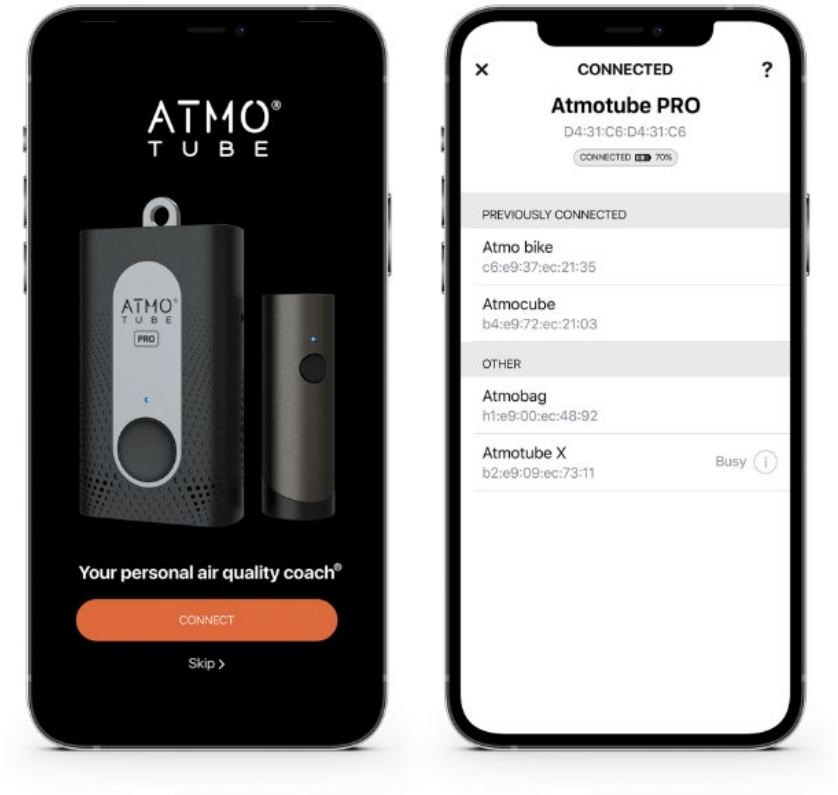
Download to Android

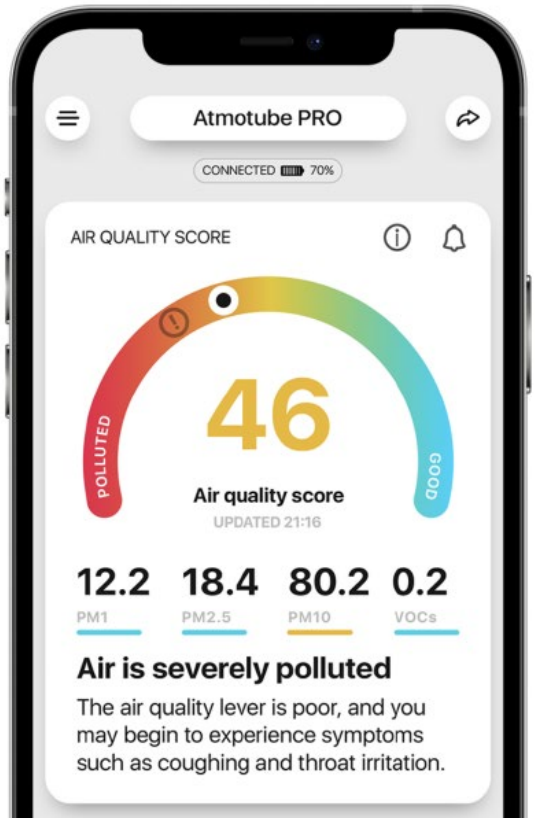
Download to iOS

How to use Atmotube PRO

3 Once you open the app, press Connect.

4 Choose your Atmotube from the list of devices and you are all set.

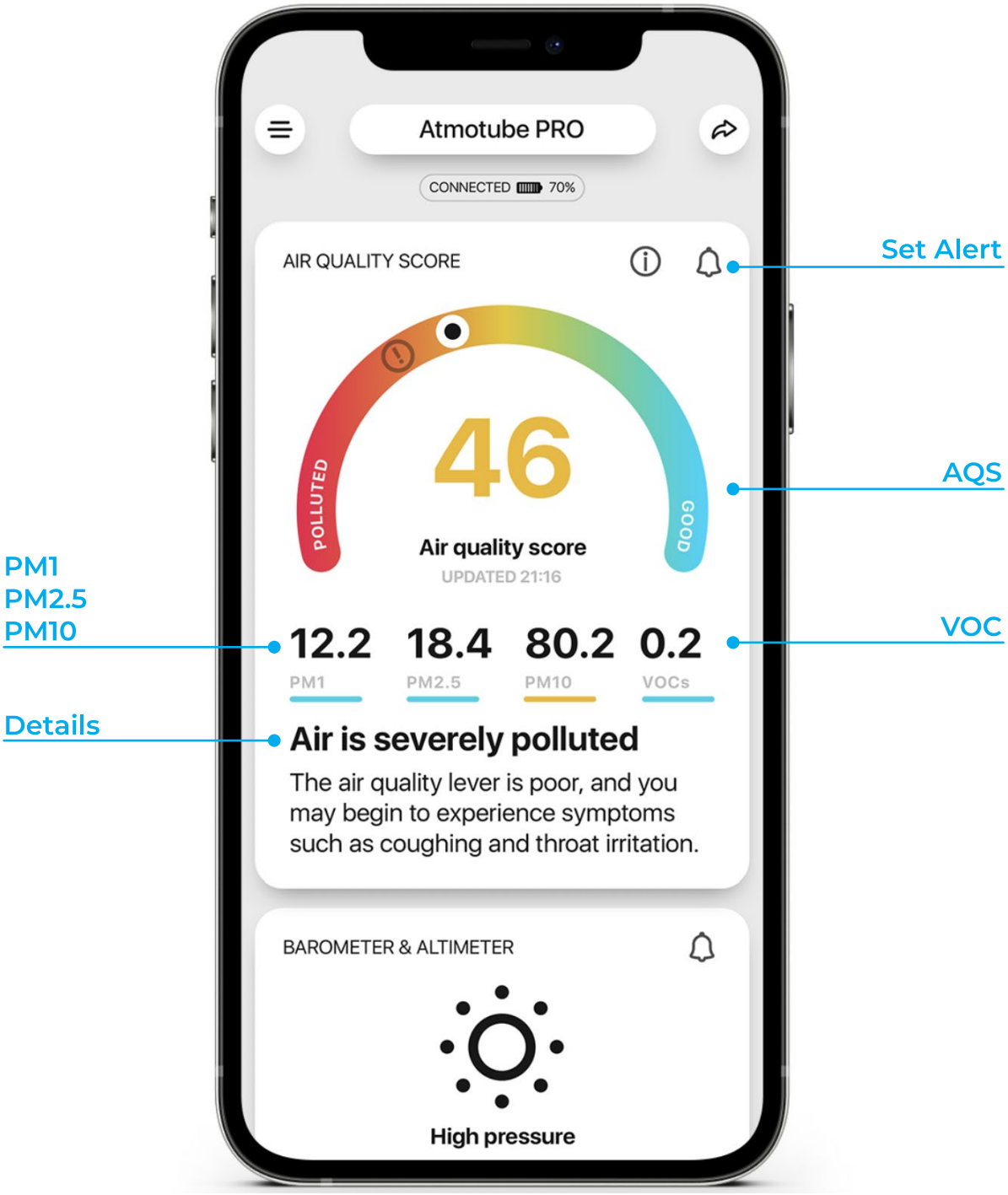




5 Observe the air quality score. The device starts measuring air quality immediately but will get more accurate after the first 12 hours. Proper calibration takes time.

How to use Atmotube PRO

The Air Quality Score (AQS) is the first thing you see in the app. It provides an instantaneous reading of air quality near the device which combines VOCs and PM. The AQS varies between 0 (extremely poor) to 100 (very clean).



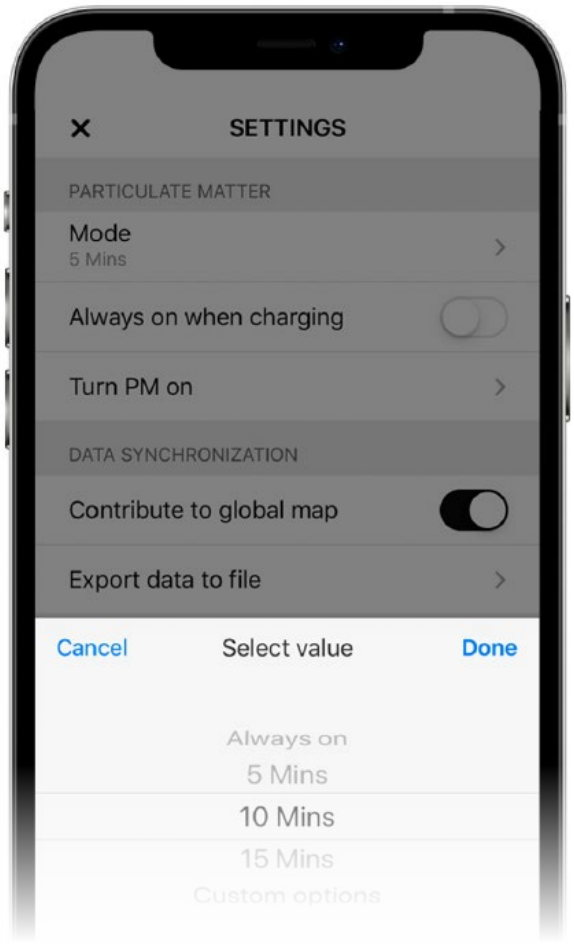
Modes of Atmotube PRO

Your Atmotube PRO enters "10 Mins" mode by default to optimize battery life.

YOU CAN SELECT ONE OF THE FOLLOWING MODES IN THE APP:

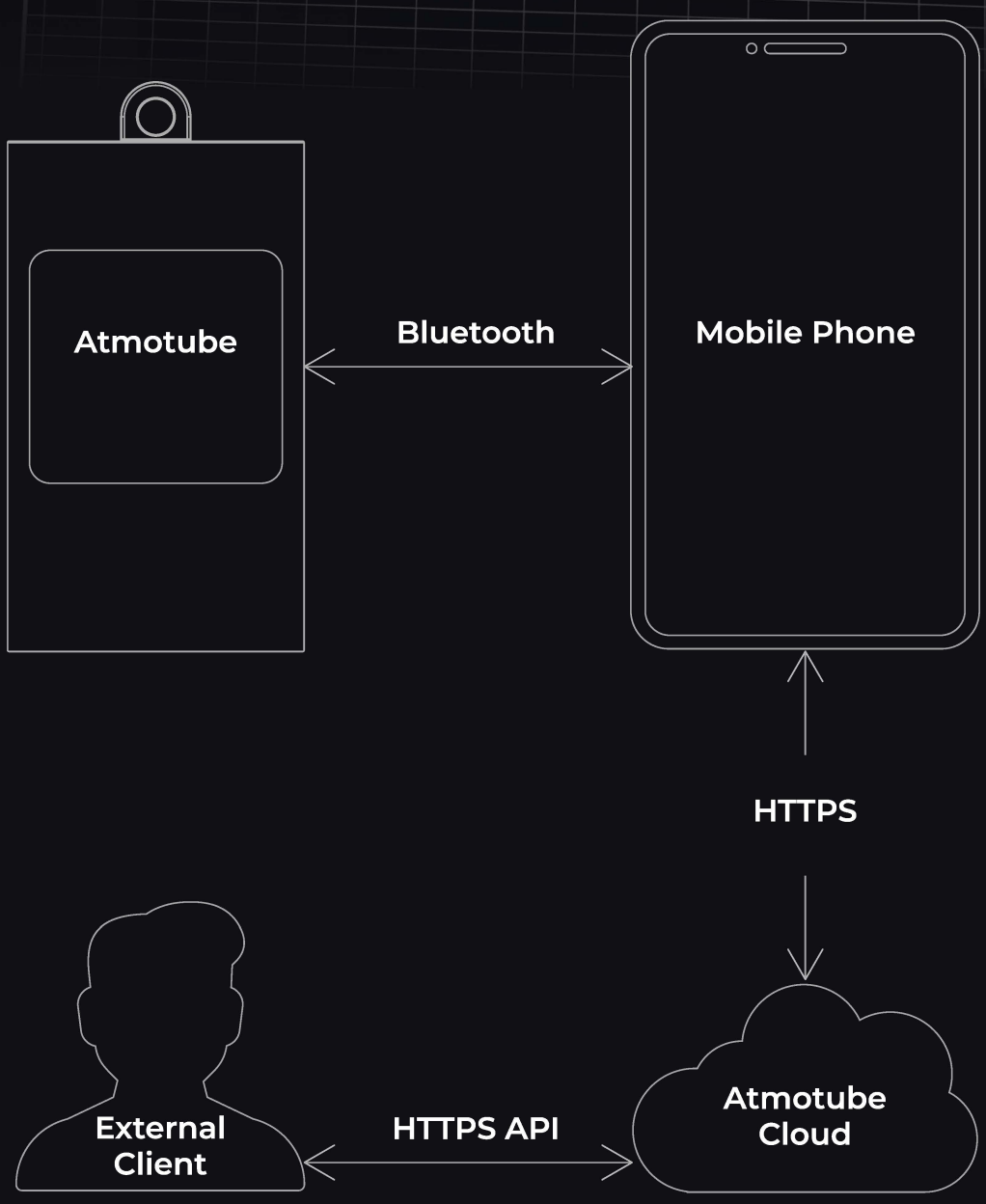
Always ON	1 day
5 Mins	4 days
10 Mins	8 days
15 Mins	12 days

You can also create your own custom Modes in Advanced PM settings.
It's recommended to use "Always ON" Mode while on the go to get immediate data on all changes in the air.
While at home or in the office, you can use 5, 10 or 15 min Mode, since the environment will probably not change that often.



Connect Atmotube to the Cloud

If you are a research center or university you can request access to the Atmotube cloud API directly and obtain a key to access data for your device MAC address or serial number



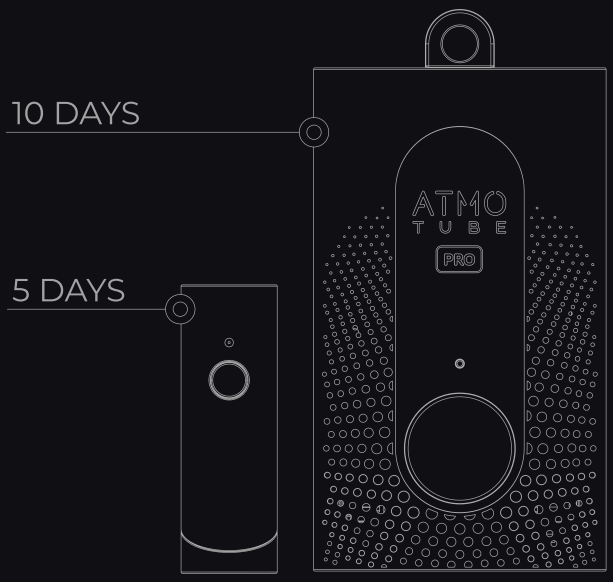
Blog artcile about API

Data analysis

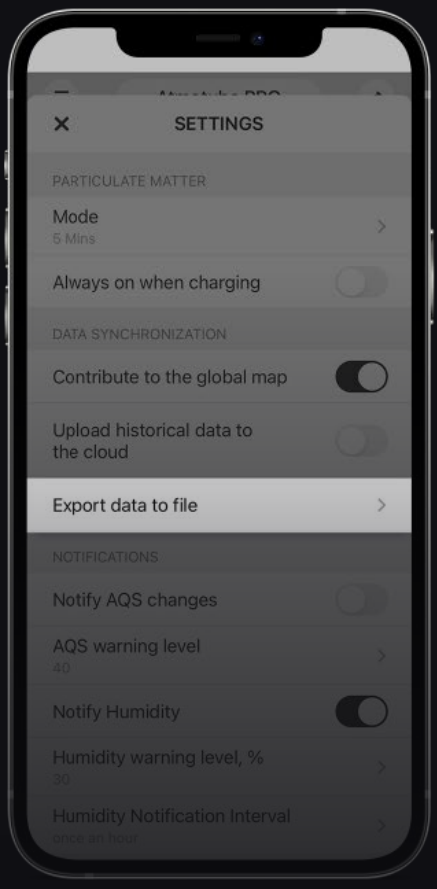
If you need to dive deeper into analysis, all your gathered data can always be exported in basic CSV format. Download the example.

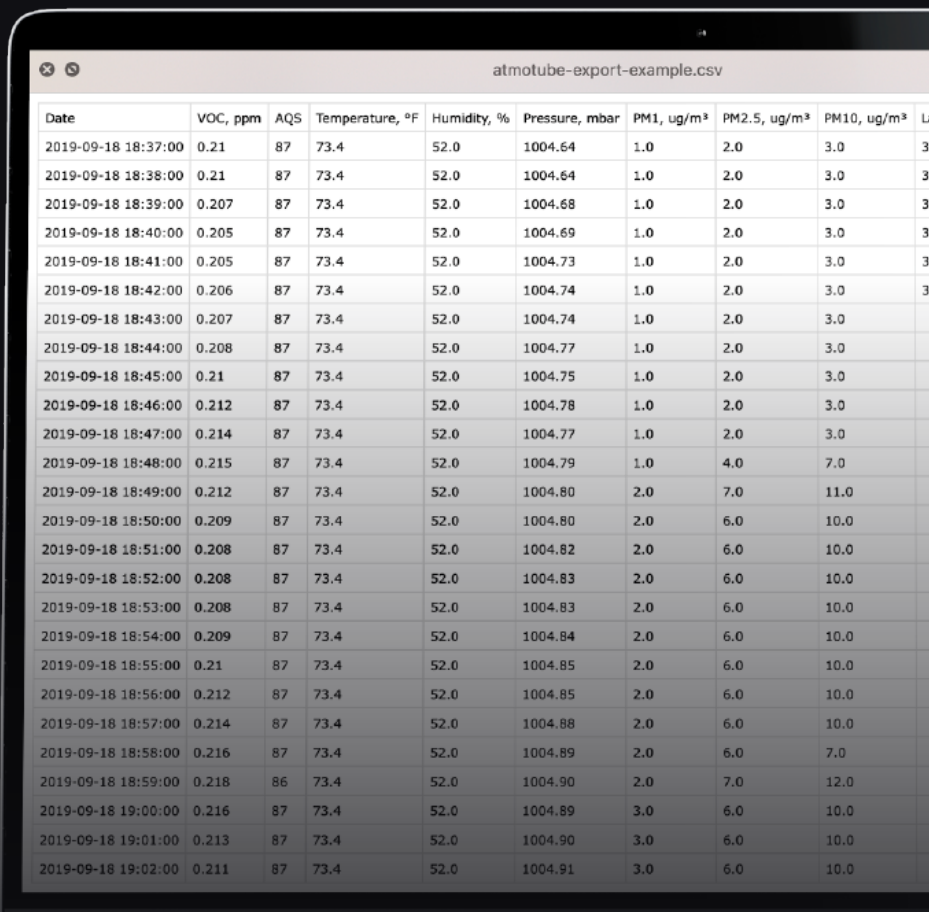
The internal memory of the Plus model can store data for up to 5 days, while the PRO model stores it up to 10.

At least once every 5 days for the Plus and 10 days for the PRO, the user needs to back up the device's data by synchronizing it with the mobile app. Once the user connects the device with the app, the data automatically transfers from the device to the smartphone. For smartphones, the only limitation on data volume is the phone's available storage.



How to open a CSV file?





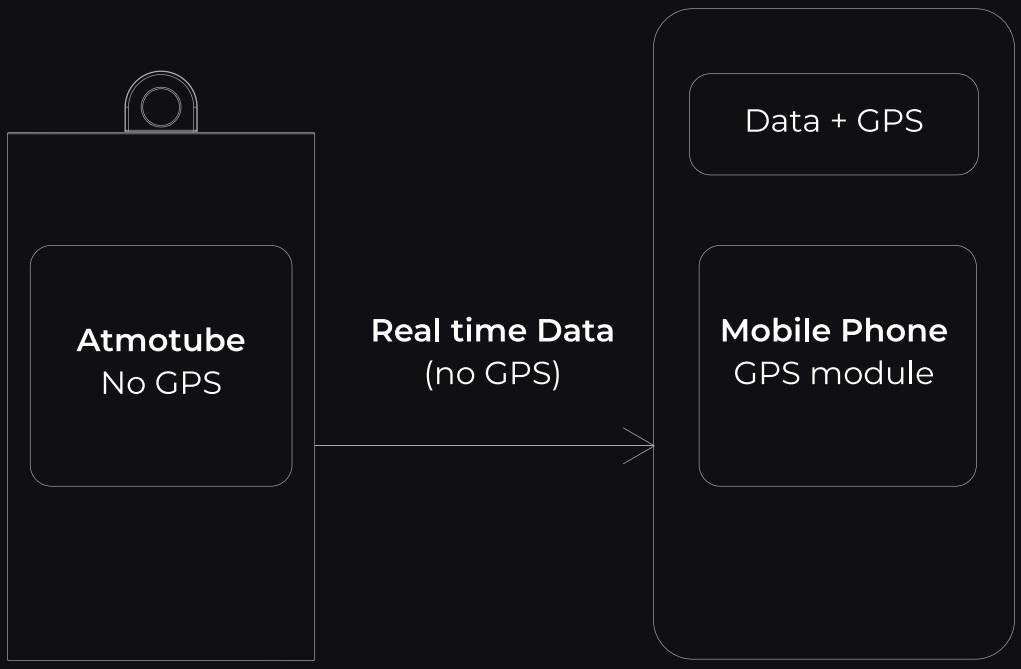
atmotube-export-example.csv

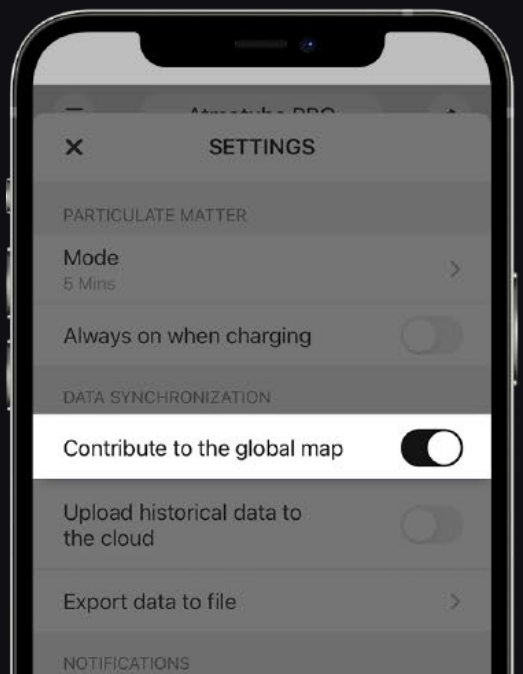
Date	VOC, ppm	AQS	Temperature, °F	Humidity, %	Pressure, mbar	PM1, ug/m³	PM2.5, ug/m³	PM10, ug/m³	L
2019-09-18 18:37:00	0.21	87	73.4	52.0	1004.64	1.0	2.0	3.0	3
2019-09-18 18:38:00	0.21	87	73.4	52.0	1004.64	1.0	2.0	3.0	3
2019-09-18 18:39:00	0.207	87	73.4	52.0	1004.68	1.0	2.0	3.0	3
2019-09-18 18:40:00	0.205	87	73.4	52.0	1004.69	1.0	2.0	3.0	3
2019-09-18 18:41:00	0.205	87	73.4	52.0	1004.73	1.0	2.0	3.0	3
2019-09-18 18:42:00	0.206	87	73.4	52.0	1004.74	1.0	2.0	3.0	3
2019-09-18 18:43:00	0.207	87	73.4	52.0	1004.74	1.0	2.0	3.0	
2019-09-18 18:44:00	0.208	87	73.4	52.0	1004.77	1.0	2.0	3.0	
2019-09-18 18:45:00	0.21	87	73.4	52.0	1004.75	1.0	2.0	3.0	
2019-09-18 18:46:00	0.212	87	73.4	52.0	1004.78	1.0	2.0	3.0	
2019-09-18 18:47:00	0.214	87	73.4	52.0	1004.77	1.0	2.0	3.0	
2019-09-18 18:48:00	0.215	87	73.4	52.0	1004.79	1.0	4.0	7.0	
2019-09-18 18:49:00	0.212	87	73.4	52.0	1004.80	2.0	7.0	11.0	
2019-09-18 18:50:00	0.209	87	73.4	52.0	1004.80	2.0	6.0	10.0	
2019-09-18 18:51:00	0.208	87	73.4	52.0	1004.82	2.0	6.0	10.0	
2019-09-18 18:52:00	0.208	87	73.4	52.0	1004.83	2.0	6.0	10.0	
2019-09-18 18:53:00	0.208	87	73.4	52.0	1004.83	2.0	6.0	10.0	
2019-09-18 18:54:00	0.209	87	73.4	52.0	1004.84	2.0	6.0	10.0	
2019-09-18 18:55:00	0.21	87	73.4	52.0	1004.85	2.0	6.0	10.0	
2019-09-18 18:56:00	0.212	87	73.4	52.0	1004.85	2.0	6.0	10.0	
2019-09-18 18:57:00	0.214	87	73.4	52.0	1004.88	2.0	6.0	10.0	
2019-09-18 18:58:00	0.216	87	73.4	52.0	1004.89	2.0	6.0	7.0	
2019-09-18 18:59:00	0.218	86	73.4	52.0	1004.90	2.0	7.0	12.0	
2019-09-18 19:00:00	0.216	87	73.4	52.0	1004.89	3.0	6.0	10.0	
2019-09-18 19:01:00	0.213	87	73.4	52.0	1004.90	3.0	6.0	10.0	
2019-09-18 19:02:00	0.211	87	73.4	52.0	1004.91	3.0	6.0	10.0	

GPS coordinates

We have public free Global Map available on https://map.atmotube.com/en/

Atmotube PRO does not have an embedded GPS module. To store GPS data, a mobile phone should be near the device at all times. If the mobile phone is not connected to Atmotube, the air quality data will be stored without GPS coordinates.





To contribute to the Global Map a user has to enable the option in settings. User data will be periodically uploaded to our secure cloud, and then aggregated on the air quality map. User accounts are not linked with data on the map.

Can the device be used with multiple smartphones at the same time?

Atmotube maintains Bluetooth connection with only one device at a time.

You can use Atmotube with more than one smartphone (one at a time) with the following considerations:

If Atmotube is connected to one smartphone, it is completely invisible to other smartphones.
When several smartphones are nearby, disable Bluetooth on those you currently are not using so that they do not accidentally connect to Atmotube.
Atmotube data history can be synced only once. After syncing history data is marked as “synced” and cannot be retrieved by the other smartphone.

When you inhale particle matter, it can harm your lungs, especially if you already have chronic lung disease or asthma. Particulate matter can even cause heart attacks, lung cancer, and low birth weight in babies. Exposure to this type of air pollution often leads to eye and throat irritation.
Particle matter typically consists of nitrates, sulfates, organic chemicals, metals, and soil or dust particles.

With Atmotube PRO, you can easily monitor the air you breathe and take steps to mitigate dangerous exposure before it’s too late.

Can I use Atmotube PRO without a smartphone?

Yes, you can. Atmotube PRO has an internal memory for storing data for up to 10 days. When you press the button on the front of the device, the LED light turns on. Based on the color, you will know what the current Air Quality Score (AQS) is.

Please note that after 10 days, you need to sync your phone with the device. Otherwise, you may lose data older than 10 days.

AQS ranges from 0 (severely polluted air) to 100 (very clean) points.

81-100	GOOD
61-80	MODERATE
41-60	POLLUTED
21-40	VERY POLLUTED
0-20	SEVERELY POLLUTED

How it works

Atmotube PRO is equipped with 3 types of sensors:
1. Laser-based PM sensor
2. MEMS tVOC sensor
3. Combined digital sensor for humidity, temperature and barometric pressure

Here is how Atmotube PRO works: there is a tiny fan inside, which is engineered for optimal air flow. It takes the air in and pushes it through several chambers equipped with sensors. The sensors then take readings of the air as it passes through. Collected data is sent to your smartphone in real-time or stored in the device's internal memory for up to 10 days if your smartphone is not around. The internal structure of Atmotube PRO is engineered in such a way that there is no maintenance required for the sensors or fan.

The noise level of the fan is about 20dB (rustling leaves). The fan is ON only during the readings, e.g. when set to the 10 min mode it will be ON for 1 minute and OFF for another 9 minutes.
PM sensor measurement principles are based on laser scattering and make use of innovative contamination resistant technology. This technology, together with high-quality and long-lasting components, enables accurate measurements from first-use and throughout the device's lifetime of more than eight years.

The functionality of our tVOC sensor is based on the conductivity-change of the gas-sensitive MOX semiconductor layers during gas exposure, which can be measured and analyzed. In order to provide accurate readings, the sensor is calibrated during production using a mix of clean air and gas.
Since gases act differently at different temperatures/humidity levels, we utilize our humidity & temperature sensor to compliment tVOC measurements.

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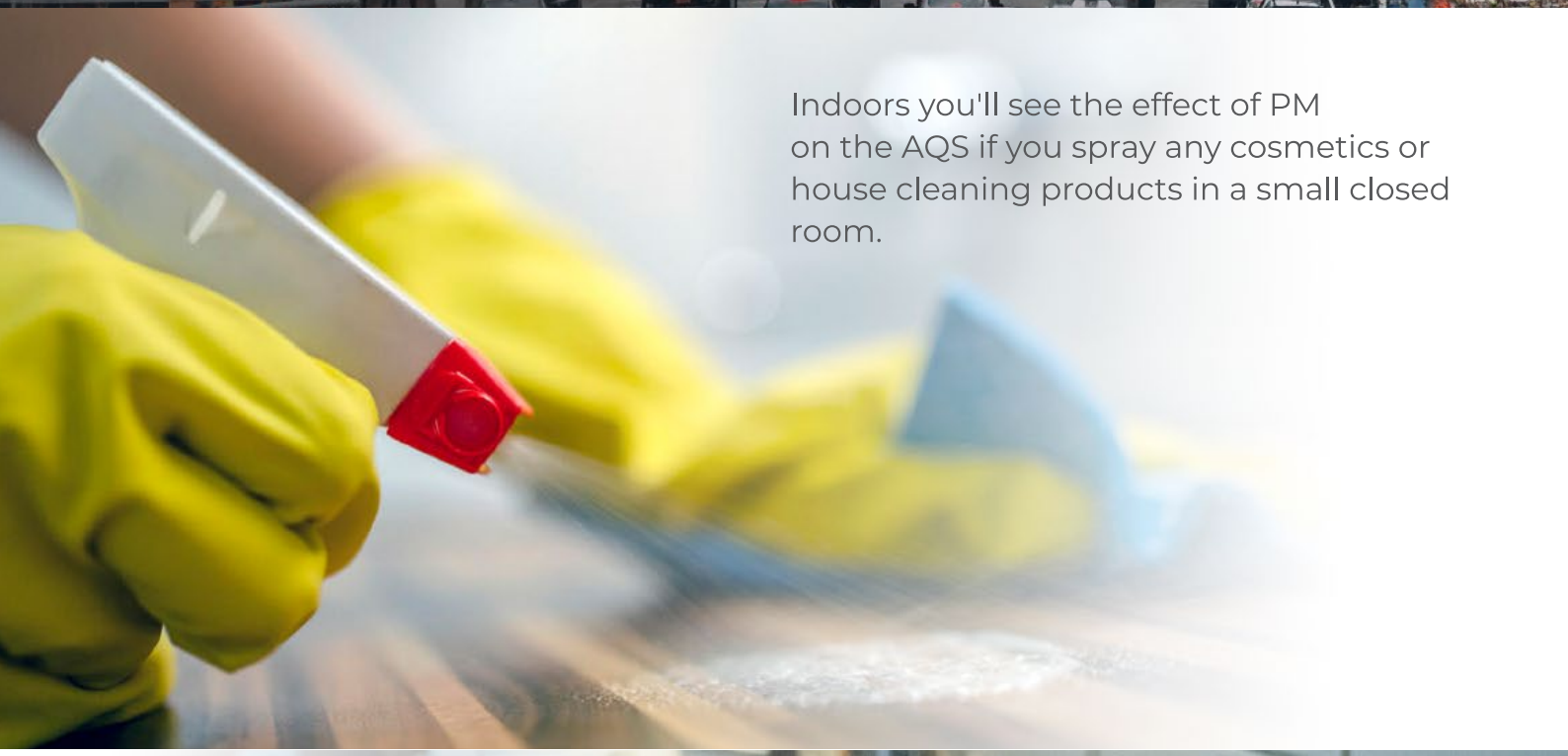
The functionality of our tVOC sensor is based on the conductivity-change of the gas-sensitive MOX semi-conductor layers at gas exposure, which can be measured and analysed. In order to provide accurate readings the sensor gets calibrated on the production in clean air and gases mix.
Since gases act differently at different temperatures / humidity levels, we utilize our humidity & temperature sensor for compensation for tVOC measurements.

See Atmotube PRO in action

We suggest trying the following use cases to see Atmotube in action.

To see changes related to PM, try measuring the air quality near a freeway or any street with heavy traffic. You can also walk along a construction site to see a change in the AQS.



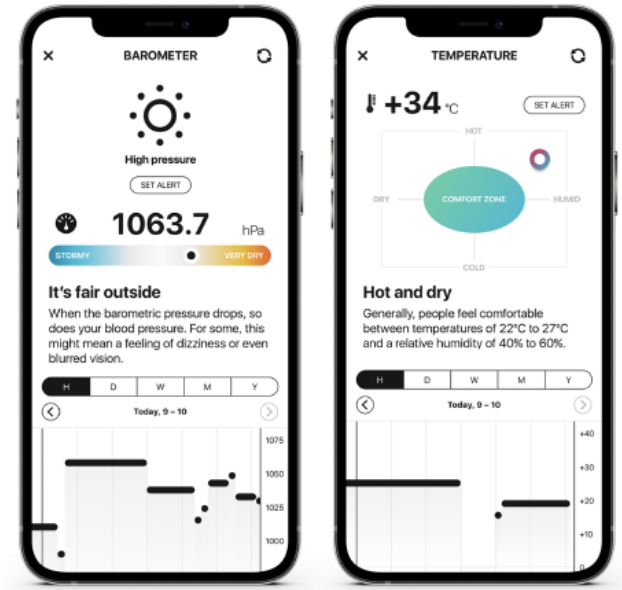
Indoors you'll see the effect of PM on the AQS if you spray any cosmetics or house cleaning products in a small closed room.

Or check the air quality close to a stove while cooking and see how Atmotube reacts.

The Atmotube app

Barometer & Altimeter
Atmotube PRO includes a barometric pressure sensor which provides real-time information and alerts for those who are sensitive to weather changes.

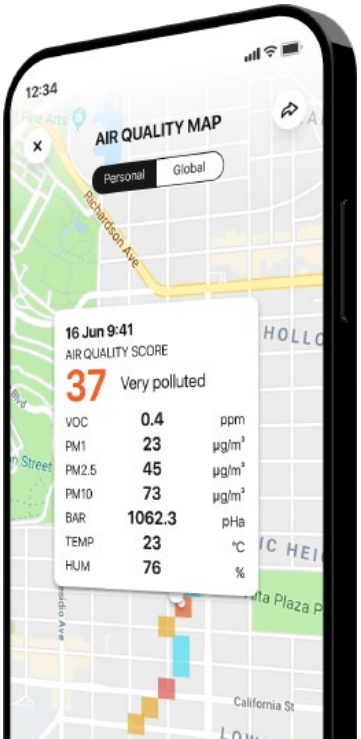
Temperature & Humidity
Atmotube lets you monitor real-time the temperature and humidity so you can stay in your comfort zone and feel better.



Measurements History
Atmotube keeps tracking air quality even when your smartphone is disconnected from the device. Once Atmotube reconnects, your smartphone will download the missing data.

Air Quality Map
With our users' permission, we store anonymous, aggregated environmental data in the cloud to update and share a global air quality map that's free to use.

Each Atmotube contributes to global air pollution awareness in addition to being a potential lifesaver for you and your family.



Tech specs

LED: Multi-color, RGB
Casing: Polycarbonate plastic + Aluminum holder
Radios: Bluetooth Low Energy (BLE 5.0)
Sensors:

- VOC sensor
- PM1/PM2.5/PM10 sensor
- Temperature, Humidity, and Pressure sensor

Ports: USB Type-C
Battery: Non-removable, rechargeable Li-Polymer (2000 mAh)
Weight: 105 grams (3.7 oz)
Dimensions: 86x50x22 mm (3.3x1.9x0.8 inch)

MediaKit

Certifications

MCERTS

The PM sensor utilized in Atmotube PRO is MCERTS certified (MCERTS Performance Standards for Indicative Ambient Particulate Monitors). It is the first PM sensor in the consumer-grade market with this certification.

Learn more >

MCERTS report

AQMD.GOV

Air Quality Sensor Performance Evaluation Center report for PM sensor

Learn more >

AQMD Field Evaluation of Atmotube PRO (preliminary results)

Learn more >

AQMD.GOV report

About the company

A San Francisco-based design-studio, notAnotherOne has 11+ years of experience with research and development, industrial design, and software development for both top tier mobile carriers and well-known technology startups.

notAnotherOne started designing and engineering Atmotube as its first product back in 2014. The mission of the product was to educate people on the air quality around them and help them to take measures against polluted air in a timely manner. In 2015, the product team successfully launched Atmotube on IndieGo-Go, reaching over 338% of their goal.

Since then several generations of Atmotube have been released: Atmotube 2.0, Atmotube PLUS, and Atmotube PRO. At the end of 2019, the production of anti-pollution masks with filters was launched. Currently, Atmotube products are sold all around the world and receive wide support from end-users, various NGOs, and educational institutions. In 2017, Atmotube Plus received the CES award in the "Tech for a Better World" category.

notanotherone.com

For more information, please contact our team at info@atmotube.com