

## INDOOR AIR QUALITY MONITOR

### User Manual



Read the instructions carefully before use. Please keep this manual for future reference.

The Quaelis 24 (product reference 23657) indoor air quality monitor has been designed for continuous monitoring and analysis of indoor air pollution, temperature and relative humidity of the room. Indoor use only.

#### Technical data:

- Large colour LCD screen (7.8 x 5.5 cm) with very good contrast.
  - Measurement of major pollutants:
- Volatile organic compounds (VOC) Semiconductor sensor.  
Particulate Matter PM2.5 and very fine particles PM1.0. Laser sensor.

Temperature and humidity measurements.

For Particulate Matter and VOCs: the measurements are updated instantly (when there is a change).

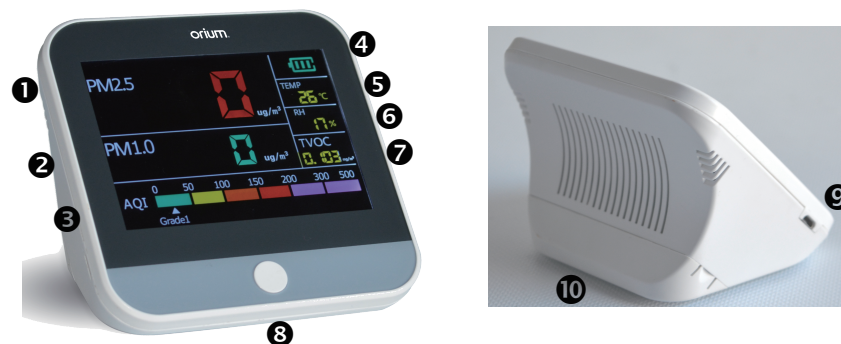
It may take up to one minute to update the temperature and humidity level.

- Mesures de la température et du taux d'humidité.

**Warning:** In the event of rapid and significant changes in temperature or environment, the update time takes several minutes to stabilise.

- Power supply: battery 2200 mAh rechargeable via USB cable 5V 1A (supplied).

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- 1 : Display of the PM2.5 measurement.
- 2 : Display of the PM1.0 measurement.
- 3 : AQI (Air Quality Index) colour index.
- 4 : Battery indicator.
- 5 : Display of the temperature measurement in Celsius
- 6 : Display of the relative humidity of the room.
- 7 : Display of the COV measurement.
- 8 : ON/OFF button. Make a long press to switch on or off.
- 9 : Micro-USB charging port.
- 10 : Rechargeable battery compartment.

Regarding the battery: Dispose of properly: observe the regulations and recycling instructions. Open the battery compartment on the underside of the unit (press either side of the battery cover to open). Then remove the battery. Replace with the following type of accumulator: 2200 mAh model 18650, and be sure to observe the polarity when installing the battery.

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Unpack the device and make sure all the accessories are present.

#### Technical data:

Measurement range	PM1.0 and PM2.5	0 to 999 µg/M3.
	Volatile organic compounds (VOC)	0.001 to 9.999 mg/M3.
	Temperature	0°C to +50°C.
Accuracy	Humidity	20% to 90% RH.
	PM1.0 and PM2.5	+/- 10%
	Volatile organic compounds (VOC)	+/- 10%
Sensitivity/ Resolution	Temperature	+/- 5%
	Humidity	+/- 5%
	PM1.0 et PM2.5	1 µg
	Volatile organic compounds (VOC)	0.001 mg/M3.
	Temperature	1°C
	Humidity	1%

#### Positioning the air quality monitor

Due to the effects of packaging and shipping, the device must be placed in a well-ventilated area for 2 hours to clear the sensors before use. To ensure proper operation of the unit, place the monitor on a piece of furniture surface in a location that allows the sensors to remain unobstructed. Keep the device well away from any direct source of pollution, liquids, heat sources, flammable products, and magnetic fields.

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#### Connect the indoor air quality monitor.

Peel off the screen protection film. Insert the micro USB end of the cable supplied into the micro USB jack (9) and the other end of the cable into a powered USB port (computer, 230 V adapter...).

Press and hold down the ON button (8) to turn on the display and a 200 second countdown will appear at the slot (7) during the warm-up and self-adjustment time of the unit.

**Important:** Do not make any adjustments during countdown. The monitor makes a faint noise. This is normal and is caused by the sensor cooling fan during use. The noise stops when the monitor is turned off.

After the countdown, the monitor displays all measurements (1) (2) (3) (5) (6) (7).

The icon (4) indicates the progress of the battery charge. The battery is fully charged when this indicator remains steady. Charging time is approximately three hours.

#### Display of and recommendations on air quality.

The monitor can measure Particulate Matter (PM1.0 and PM2.5) and the accumulation of various Volatile Organic Compounds (VOCs).

*Particulate Matter come from indoor or outdoor sources and can be natural in origin (e.g. bacteria, pollen) or the result of human activity (e.g. combustion heating, transport).*

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Everyone is exposed to fine particulate matter (PM1.0 and PM2.5) and PM1.0 is the most harmful because it is finer and more easily absorbed into the human body. But some people are more sensitive than others to particulate pollution: children, the elderly, people with allergies, asthmatics, the breathing deficient.

*Volatile Organic Compounds are pollutants derived from hydrocarbons, solvents, exhaust gases, furniture, ceilings, paints, glues, and other products.*

Total volatile organic compound rates (TVOC) express total detected values of multiple pollutants.

**Thus the comfort indices for PM2.5 are defined according to the following measures:**

	Exposure threshold	Short-term actions recommended	Long-term actions recommended
PM2.5	25 µg/M3 <sup>(1)</sup> average exposure in a 24-hour period. 10 µg/M3 <sup>(1)</sup> average year-round exposure	Ventilate the room (only if there is no outside peak in Particulate Matter pollution). Limit heating during winter Wear a mask	Install a permanent ventilation system. Distribute ambient air detoxifying plants (azalea, ficus, palm): 1 plant/10m <sup>2</sup> room area. Identify and reduce all sources of possible pollution (moulds, allergens, mites, etc). Regularly remove dust on floors and furniture with a vacuum cleaner.

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(1) An exposure threshold is defined by the World Health Organization (WHO): as 25µg/m<sup>3</sup> for a 24-hour exposure to PM2.5 and 10 µg/m<sup>3</sup> for a 24-hour exposure to PM10.

Source: Benchmark values for the management of airborne particles in enclosed spaces: published by French Public Health Commission, 2013.

The values detected by the monitor can often be higher than the exposure threshold. For this reason, each threshold is coupled to a specific exposure time. If the measured values regularly exceed these limits, a professional diagnosis is advisable to identify the source of the pollutants.

**Warning:** Concerning Particulate Matter, the regulatory or recommended values focus mainly on PM2.5. Thus, the World Health Organization (WHO) has defined exposure thresholds for PM2.5 particles. **But PM1.0 is overlooked when it comes to exposure thresholds and guide values.** Nonetheless, PM1.0 is the most harmful of the three, their very small size allowing them to penetrate the human body. For this reason, the indoor air quality monitor includes this category in its measurements, especially for people sensitive to particles. We therefore recommend that PM1.0 measurements be monitored to ensure they remain lower than those of PM2.5.

And the AQI (Air Quality Index) is a six-colour worldwide reference scale for assessing air quality:

AQI	Air quality/pollution display	Air quality/pollution display	Warning
0-50	Good	Air quality is satisfactory and there is little or no air pollution of risk.	None

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51-100	Moderate	Air quality is acceptable. However, some pollutants pose a health risk to a people who are unusually sensitive to air pollution.	Active children and adults, and people with respiratory diseases such as asthma, should limit prolonged outdoor exertion.
101-150	Unhealthy for sensitive groups	Members of sensitive groups may experience [negative] health effects. The rest of the population is unlikely to feel any effect.	Active children and adults, as well as people with respiratory diseases such as asthma, should limit prolonged outdoor exertion.
151-200	Unhealthy	Anyone can start to experience health effects. Members of sensitive groups may experience more serious health effects.	Active children and adults and those suffering from respiratory diseases, such as asthma, should avoid prolonged outdoor exercise. Everyone, especially children, should limit prolonged outdoor efforts.
201-300	Very Unhealthy	Health warnings related to emergency conditions. The entire population is likely to be affected.	Active children and adults and people with respiratory diseases such as asthma, should limit prolonged outdoor exertion. Everyone, especially children, should limit outdoor exertion.

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AQI	Air quality/pollution display	Air quality/pollution display	Warning
300 +	Hazardous	Health alert: Potential health effects for the entire population.	Outdoor exercise is not recommended for everyone.

No threshold is defined for exposure to VOCs. However, the following measurement ranges can be used as a reference for the interpretation of air quality:

TVOC rate (mg/m3)	Air Quality	Short-term actions	Long-term actions recommended
0-0.21	Good	Continue with air renewal.	
0.22-0.56	Acceptable	Ventilate the room	Install a permanent ventilation system.
0.57-2.1	Modest	Ventilate the room	
2.2 - 3.5	Bad	Leave the room	Identify possible sources of pollution (furniture, ceiling, floor and wall coverings, home improvement work, painting, etc.) to limit particle emissions.
3.6 - 5.25	Critical		
5.26 - 9.99	Bad (danger)	Limit heating during winter	

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**Important:** The actions to be taken are indicative only.

#### Conditions of use and safety:

Use the indoor air quality monitor for its intended purpose. Do not modify the product or repair it yourself. Use only the cables and connectors supplied with the product. The manufacturer is not liable for damages relating to the product if it is improperly used or maintained. Keep away from children.

#### Maintenance / safety:

Do not use cleaning products containing caustic or abrasive agents.

#### Problem solving:

Defects found	Checks/solutions
The monitor does not turn on.	Make sure the battery is charged or charging. Press the ON button.
The battery fails to charge.	Make sure the charger is correctly connected. Makes sure the USB port of the power source (computer, mains adapter, etc.) is receiving current. Check that the battery is correctly inserted. Change the battery.

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The screen turns off automatically.	The battery is flat. Charge the battery.
Measurements seem to be frozen or wrong.	If the measurement display still seems to be frozen or wrong, turn the monitor off, wait a few minutes, then turn it back on and place it in a well-ventilated area or outdoors for 30 minutes to clear the sensors. Follow the positioning instructions for the monitor as described in the manual. Sensors can lose their sensitivity over time.

NB : End-of-life electrical or electronic products can have a negative impact on the environment and human health. Do not discard them with your household waste: recycle them via collection facilities provided. Batteries must never go to landfill or incineration. They must be disposed of following local chemical waste regulations. This product complies with the WEEE and RoHS directive. Please observe national and local regulations when discarding this device.



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