

# Oxygen



## Where is it found?

Oxygen (O<sub>2</sub>) is an essential gas that makes up approximately 20.9% of the volume of atmospheric air at sea level. It is fairly evenly distributed throughout the troposphere and is vital for biological processes such as cellular respiration.

It is also present in many chemical compounds and plays a role in natural oxidation reactions, such as combustion and the decomposition of organic matter. Additionally, it dissolves in bodies of water, where it is crucial for aquatic life.

## Why measure it?

Measuring oxygen levels is key to ensuring safe and healthy conditions in industrial, urban, and natural environments. Concentrations below 19.5% may indicate oxygen-deficient atmospheres that are potentially hazardous to human life, while high levels above 23.5% significantly increase the risk of ignition and explosion, especially in the presence of flammable materials.

Abnormal concentrations can also signal combustion processes, gas leaks that displace oxygen, or ventilation system failures. From an environmental perspective, monitoring oxygen helps assess air quality and the dynamics of atmospheric exchange.

## O<sub>2</sub> cartridge

The oxygen cartridge includes a high-precision electrochemical sensor designed to measure typical concentrations in ambient air—around 20.9%—as well as small deviations caused by industrial processes, gas displacement, or other atmospheric changes.

This cartridge is highly stable, equipped with an advanced algorithm for temperature and humidity compensation, and can operate for over four years under non-extreme conditions. Over time, a slight drift may occur, which can be easily corrected using the remote calibration tool available on the Kunak Cloud platform.

Type	Electrochemical	Limit of Detection (LOD) <sup>(7)</sup>	-
Unit of measurement	%	Repeatability <sup>(8)</sup>	-
Measurement range <sup>(1)</sup>	0 - 30 %	Response time <sup>(9)</sup>	< 10 sec
Resolution <sup>(2)</sup>	0.01%	Typical accuracy <sup>(11) (12)</sup>	±0.3 %
Operating temp. range <sup>(3)</sup>	-30 to 50°C	Typical precision R <sup>2</sup> <sup>(10)</sup>	NA
Operating RH range <sup>(4)</sup>	0 to 99 %RH (short periods)	Typical slope <sup>(10)</sup>	NA
Recommended RH range <sup>(4)</sup>	5 a 95 %RH	Typical intercept (a) <sup>(10)</sup>	NA
Operating life <sup>(5)</sup>	> 4 years	DQO - Typical U(exp) <sup>(13)</sup>	NA
Guarantee range <sup>(6)</sup>	50 %	Typical Intra-model variability <sup>(14)</sup>	0.1 %

\* See notes on page 24