

User Manual R1.0
Santacary Technology Co., Ltd.
HL-O Desktop O₂ Gas Monitor



INTRODUCTION

Santacary HL-O is a precise desktop gas monitor for monitoring Oxygen (O₂) in the ambient air and in the work place. It has been designed to protect the safety of peoples in dangerous work places. The HL-O will continuously display the ambient concentration of oxygen and activate its audible and visual alarms whenever the preset set points are exceeded. It is used exclusively for monitoring and cannot be used for measuring oxygen concentrations. The monitor is a personal safety device. It is users' responsibility to respond properly to the alarm.

In addition to monitoring the oxygen, the Santacary HL-O can also measure the ambient temperature and the relative humidity.

HL-O can be widely used in the car, touring car, garage, food/fruits/goods container, petrochemical, power plant, telecom, medicine, mine, heavy industry, army, food industry, gas industry, and other confined spaces for personal safety.

Please read this manual carefully before use. This operation manual will provide you with all the necessary information for the correct use of your HL-O oxygen monitor.

FEATURES

- Desktop O₂ gas monitor
- O₂ gas monitor range: 0 ~ 30.0% vol. Resolution: 0.1% vol.
- Using world top brand electrochemical oxygen sensor
- Support ambient fresh air calibration (20.9% vol.)
- Audible and visual alarm
- Two levels of instantaneous alarm
- With temperature and humidity measurement

THEORY OF OPERATION

The Santacary HL-O desktop O₂ gas monitor uses two-electrode electrochemical technology, operating by the diffusion principle, for determining the concentration of oxygen in air samples. In diffusion mode, the air penetrates the grille on one side and back of the monitor into the interior. Normal air movements are enough to carry the sample to the sensor.

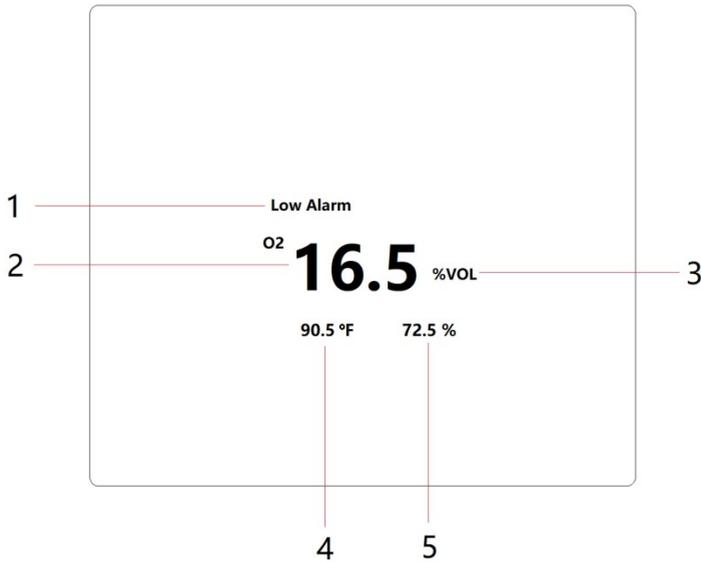
UNIT DESCRIPTION

Device

1. Display panel
2. Power button
3. Grille
4. 5VDC Power socket



Display



1. Alarm Status (None/Low Alarm/High Alarm)
2. Oxygen concentration in % vol.
3. Oxygen concentration unit
4. Air Temperature
5. % Relative Humidity

OPERATION

1. Turn On/Turn Off Monitor

1) When the monitor is turned off, press Power button to turn on the unit.

2) When the monitor is turned on, press Power button for 2 seconds to turn off the unit.

When the unit is first turned on, it performs 60 seconds countdown for monitor initial warm up, then enters normal display with current O₂ concentration (% vol.), temperature (°C or °F), and humidity (%RH)

readings displayed. If the monitor is not used for a long time, the warm up time of oxygen sensor needs more than 5 minutes.

The monitor starts taking measurements when power on and updates readings every 2 seconds. In the condition of operating environment change, it takes 15 seconds to respond for O₂, and 30 minutes for humidity.

Note:

Always ensures that the grille is not blocked and open to the atmosphere.

Note:

Do not put the monitor close to faces in case that exhalation affects O₂ levels.

2. Fahrenheit and Celsius switching

Press Power button shortly to switch two temperature units: °F and °C.

3. Ambient Air Calibration (20.9%) for O₂

This monitor can implement ambient air calibration (20.9%) when needed (such as annually).

By pressing the Power button shortly for 6 times, the monitor enters into Ambient Air Calibration operation. The prompt sentence "Fresh Air Calibration 20.9% O₂" will be shown as in the following figure.



If the Power button is pressed shortly within 6 seconds, the HL-O will perform an automatic fresh ambient air calibration (20.9% O₂). Otherwise, the monitor will cancel calibration and return to normal display.

ALARM

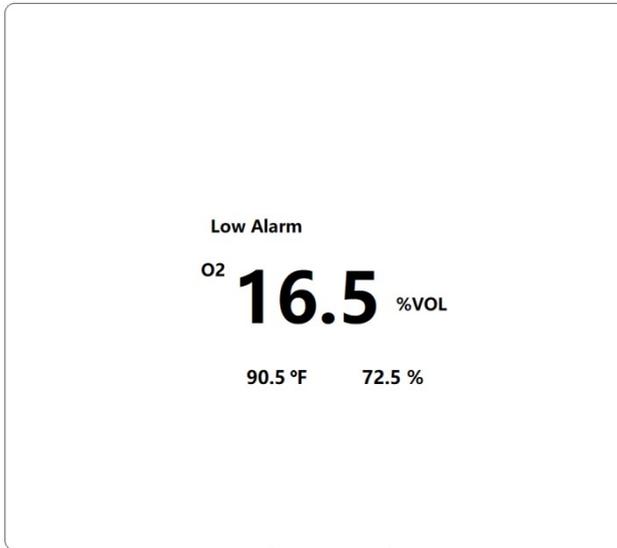
Low Alarm and High Alarm

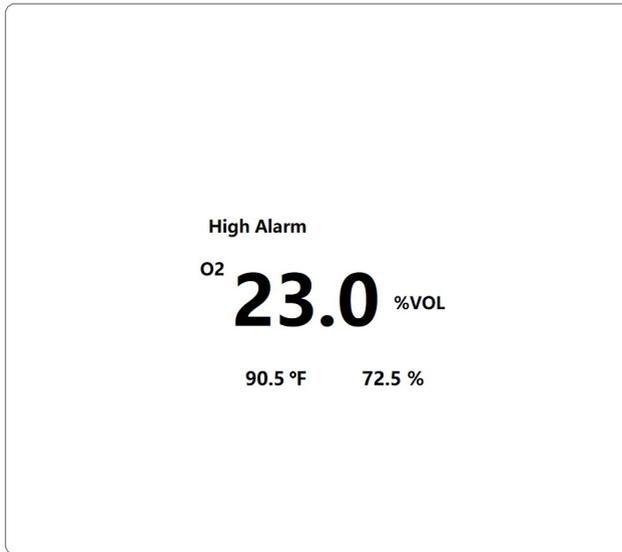
HL-O has two alarm set points: Warning (O₂: 23.5%, high alarm) and Danger (O₂: 19.5%, low alarm). The danger alarm is sounded for oxygen deficiency and the warning alarm is sounded for oxygen enrichment. These set points are factory set and cannot be changed. HL-O is equipped with audio and visual alarms to alert you when the ambient gas concentration exceeds one of the two alarm set points. When oxygen value is less than the defined low alarm set point (Danger alarm at 19.5%), the audio alarm will sound at 3 beeps/sec.

When oxygen value exceeds the defined high alarm set point (Warning alarm at 23.5%), the audio alarm will sound at 2 beeps/sec.

Factory Alarm Set points

Gas	Low	High
O ₂	19.5% vol.	23.5% vol.





ATTENTION!

If a Warning or Danger alarm is triggered while using the instrument as a monitor, leave the area immediately. Remaining on site under such circumstances can cause serious damage to health or can even lead to death.

PLACEMENT

HL-O can not only be placed on the desktop, but also be pasted onto the wall for use. Use double-sided adhesive to stick the back of this monitor. Note that the thickness of the double-sided adhesive is more than 3mm to reserve air flow space for the rear grille. The wall mount placement method is referred to the following figure.

Double sided adhesive for pasting on wall



Install the HL-O at a location and height in the room where you want to test the air quality. Be aware that O₂ concentration can vary dramatically from one location to another within the same house.

MATERIALS SUPPLIED

- HL-O desktop O₂ gas monitor
- Carry case
- DC 5V 1.0A adapter
- English user manual

SPECIFICATIONS

Oxygen Sensor Specification:

Measurement Range	0 ~ 30.0% vol. O ₂
Resolution	0.1% vol.
Sample Method	Diffusion
Temperature Range	-20 to 50°C (-4°F ~ 122°F)

Humidity Range	5 to 95%RH
Baseline Drift (-10-50°C)	<1% change in output @ 3 months
Response time	<15 seconds from 20.9% to 0% O ₂

Temperature Specification

Temperature Range	-10.0~60.0°C (14~140°F) display
Display Resolution	0.1°C (0.1°F)
Display Options	°C/°F switchable
Accuracy	±0.5°C (±0.9°F)
Response Time	5~30 seconds (device must equilibrate with environment)

RH Specification

Measurement Range	0.0~99.9%RH
Display Resolution	1%RH
Accuracy	±4.5%RH
Response Time	<8 seconds for 63% of step change

General Specification

Operating	-10°C to 50°C (14°F to 122°F), 5~95% RH non-condensing
Storage	-10°C to 60°C (14°F to 140°F), <99% RH non-condensing
Power Supply	5.0VDC 1.0A
Dimensions	77x77x33mm (3.03x3.03x1.3")
Weight	85grams (3.0oz.) without adapter

Out of range of operating conditions will impact the accurate of O₂ measurement.

MAINTENANCE

To maintain the monitor in good operating condition, perform the following basic maintenance as required.

1. Calibrate and inspect the monitor at regular intervals.
2. Clean the exterior with a soft damp cloth. Do not use solvents, soaps, or polishes.
3. Do not immerse the monitor in liquids.

Troubleshooting

If a problem occurs, refer to the solutions provided in below table. If the problem persists, contact Santacary Technology Co., Ltd..

Problem	Possible cause	Solution
The monitor can't power on	Power adapter isn't well plugged.	Please check whether the power adapter is well plugged.
	Damaged or defective monitor	Contact Santacary Technology Co., Ltd.
The monitor enters alarm immediately when activated	Sensor needs to stabilize	If the monitor is not used for long time, the warm up time of oxygen sensor needs more than 5 minutes.
	Sensor requires calibration	Calibrate the sensor
	Hazardous environment	Leave the area immediately. Deactivate and reactivate the monitor

		in a safe area that is free of hazardous gas.
Monitor does not accurately measure O ₂ gas.	Sensor requires calibration	Calibrate the sensor.
	Monitor is colder/hotter than O ₂ gas temperature	Allow the monitor to attain ambient temperature before use
	Air grilles are blocked	Make sure that the air grilles are ventilated

WARRANTY

The HL-O is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers normal operation and does not cover misuse, abuse, alteration, neglect, improper maintenance.

Proof of purchase is required for warranty. Warranty is void if the monitor has been opened.

CONTACT US

Santacary Technology Co., Ltd.
 Zhaobei Building B, the 7th Industrial Road 97#,
 Shekou, Shenzhen, 518067,
 Guangdong, China
 Email: info@santacary.com

