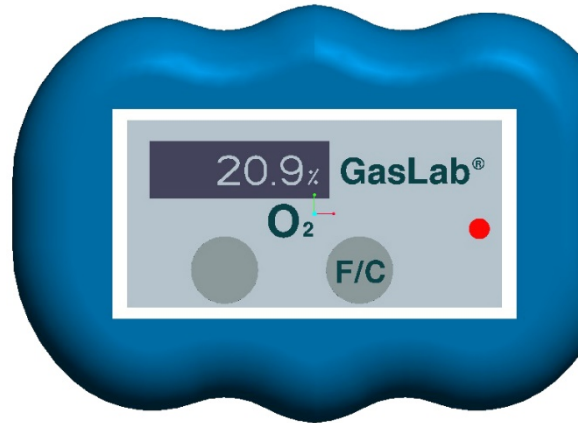# GasLab SAN-102 Micro Oxygen Monitor

User Manual

The GasLab SAN-102 is a wearable, personal safety meter designed to monitor ambient oxygen levels in real time. It is designed to protect workers in confined spaces.

Features

- Audible and visual low / high oxygen level alarm
- Silicone boot and metal clip are light and comfortable to wear
- Electrochemical sensor, no consumable parts
- Includes ambient temperature and % relative humidity sensors
- Lithium-ion rechargeable battery. USB Charging port
- Runs 4+ days per charge

Applications

- **Stored Gases in Confined Spaces.** Industrial use of stored or piped gases creates the possibility that oxygen in breathable air could be displaced by gases such as nitrogen, helium, argon or carbon dioxide resulting in a hazardous condition.
- **Underground Tunnels, Caves or Mines.** Over time oxygen can be displaced by other naturally occurring gases like carbon dioxide, carbon monoxide, ammonia, methane and the oxidation of sulfides resulting in lower oxygen levels than is required for personal safety.
- **Combustion in Confined Spaces.** Combustion first uses up the available oxygen, then produces partial oxidation of carbon (carbon monoxide), hydrogen cyanide, and nitrogen oxides. Hydrogen gas can also be produced and displace oxygen.
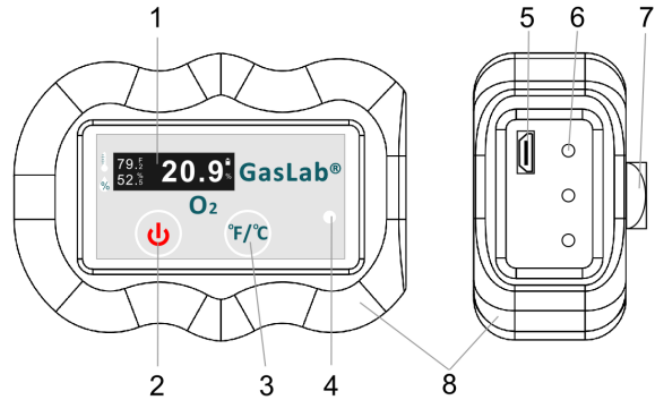
Please take a moment to read these instructions before use. They will provide you with all the necessary information for the correct use of your oxygen monitor.

Theory of Operation

The SAN-102 Oxygen Monitor uses an electrochemical sensor to determine the concentration of oxygen in air samples. Air reaches the sensor by diffusing through the openings on the back of the unit. Normal air movement is enough to carry the sample to the sensor.
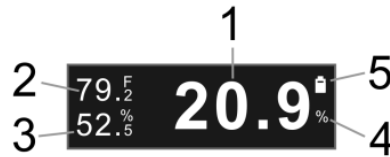
Device

1. OLED display
2. Power button
3. Fahrenheit and Celsius switching button
4. Alarm LED
5. Micro USB charge port
6. Vent
7. Clip
8. Silicone boot

OLED Display

1. Oxygen concentration
2. Air Temperature (°F or °C)
3. % Relative Humidity
4. Oxygen Concentration Units (%)
5. Battery Charge Indicator

OPERATION

Plug the USB cable into the meter and a 120VAC wall adapter. It will take approximately 2 hours to receive a full charge. Once the meter is charged, it can run 4+ days before recharging.

Press the power button to turn on the meter.

When the meter is first turned on, it performs a 10 second countdown for device warm up, then enters normal display with current oxygen level readings displayed. The device starts taking measurements when powered on and updates readings every 3 seconds.

The OLED display will turn off automatically after 120 seconds of inactivity to conserve battery power. However, the sensor will continue to monitor the O2 level. Briefly press the Power button to view the display.

Hold down the Power button for 3 seconds to turn the meter off. This will conserve the battery's charge until you need to use the meter again.

Low and High Oxygen Level Alarm

The SAN-102 is equipped with audible and visual alarms to alert you when the ambient oxygen concentration exceeds either of the two factory preset alarm levels:

- **Danger Low Oxygen Alarm:** 19.5% - LED will flash and audible alarm will sound 3x / sec.
- **Warning High Oxygen Alarm:** 23.5% - LED will flash and audible alarm will sound 2x / sec.

Normal atmosphere contains between 20.8% and 21% oxygen. OSHA defines any atmosphere that contains less than 19.5% oxygen as "oxygen deficient" and any atmosphere that contains more than 23.5 percent oxygen as "oxygen enriched." These levels are factory set and cannot be changed.

Fahrenheit and Celsius Switching

- Press the °F/°C button to switch between the two temperature units.
- Press the Power button briefly to save the temperature setting and return to normal display.

Low Battery Alarm

The meter continuously measures the rechargeable battery's voltage. If it drops to a critical level, the low battery alarm will sound until the battery is recharged or the battery power is depleted.

Note that the meter can continue to monitor oxygen levels while charging.

ATTENTION! - If a Warning or Danger alarm is triggered while using the instrument as a safety monitor, leave the area and seek fresh air immediately. Remaining on site under such circumstances can cause serious impairment or even lead to death.

CLEANING AND STORAGE

The front panel and case can be cleaned with a mild solution of detergent and water. Apply sparingly with a soft cloth and allow drying completely before using. Do not use aromatic hydrocarbons or chlorinated solvents for cleaning.

SPECIFICATIONS

Oxygen Sensor Specifications

Measurement Range	0 to 30.0% vol.
Resolution	0.1% vol.
Temperature Range	-20 to 50°C (-4°F ~ 122°F)
Humidity Range	0 to 99%RH
Baseline Drift (-10-50°C)	<1% change in output @ 3 months
Expected Lifespan	24 months

Temperature Sensor Specifications

Temperature Range	-20.0 to 60.0°C (-4 to 140°F) display
Display Resolution	0.1°C (0.1°F)
Display Options	°C/°F(switchable)
Accuracy	$\pm$0.5°C(±0.9°F)
Response Time	5~30 seconds(device must equilibrate with environment)

Humidity Sensor Specifications

Measurement Range	0.0 to 99.9%RH
Display Resolution	1%RH
Accuracy	$\pm$4.5%RH
Response Time	<8 seconds for 63% of step change

General

Operating	-20°C to 50°C (-4°F to 122°F),0~99% RH non-condensing
Storage	-20°C to 60°C(-4°F to 140°F),<99% RH non-condensing
Power Supply	Li-ion battery(4.2V, 400mAh)
Dimensions	60x35x25mm (2.36x1.38x0.98")
Weight	45 grams (1.58oz.)

TROUBLESHOOTING GUIDE

Symptom / Issue	Possible Cause / Resolution
Device does not power ON	Make sure the power supply is connected properly and that there is power at the outlet. Use the supplied adapter. Verify that your meter has had enough time to charge before turning it on.
Reading does not change	In fresh air, you will rarely see oxygen levels change. This is normal.

OXYGEN RECOMMENDED LEVELS

- \> 23.5%   Oxygen enriched, presents significant fire and explosion risk
- 20.8 - 21%   Normal oxygen level in fresh air
- 19.5%   Lowest safe oxygen level limit (OSHA)
- < 16%   Headache, nausea, difficulty performing manual tasks
- < 12%   Difficulty breathing, impaired coordination and perception
- < 10%   Poor judgement and bluish lips
- < 8%   Fatal within minutes if not treated
- < 6%   Fatal in 40 seconds

SUPPORT

The quickest way to obtain technical support is via email. Please send all support inquires to **support@co2meter.com**.

Please include a clear, concise definition of the problem and any relevant troubleshooting information or steps taken so far, so we can duplicate the problem and quickly respond to your inquiry.

WARRANTY

This meter comes with a 1 YEAR (warranty period) limited manufacturer's warranty, starting from the date the meter was shipped to the buyer.

During this period of time, CO2Meter.com warrants our products to be free from defects in materials and workmanship when used for their intended purpose and agrees to fix or replace (at our discretion) any part or product that fails under normal use. To take advantage of this warranty, the product must be returned to CO2Meter.com at your expense. If, after examination, we determine the product is defective, we will repair or replace it at no additional cost to you.

This warranty does not cover any products that have been subjected to misuse, neglect, accident, modifications or repairs by you or by a third party. No employee or reseller of CO2Meter.com's products may alter this warranty verbally or in writing.

LIABILITY

All liabilities under this agreement shall be limited to the actual cost of the product paid to CO2Meter.com. In no event shall CO2Meter.com be liable for any incidental or consequential damages, lost profits, loss of time, lost sales or loss or damage to data, injury to person or personal property or any other indirect damages as the result of use of our products.

RETURNS

If the product fails under normal use during the warranty period, a RMA (Return Material Authorization) number must be obtained from CO2Meter.com. After the item is received CO2Meter.com will repair or replace the item at our discretion.

To obtain a RMA number, call us at (386) 256-4910 or email us at support@co2meter.com. When requesting a RMA please provide reason for return and the original order number.

If we determine that the product failed because of improper use (water damage, dropping, tampering, electrical damage etc.), or if it is beyond the warranty date, we will inform you of the cost to fix or replace the product.

For additional warranty information visit our website: www.CO2Meter.com/pages/faq

CONTACT US

We are here to help!

For information or technical support, please contact us.

✉ support@co2meter.com

📞 (386) 256-4910 (Technical Support)
📞 (386) 872-7665 (Sales)

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