# Leo

## Precision in your hands

okolab


www.oko-lab.com

$O_2$ $CO_2$ VOC $H_{\%}$ pH

## Features

- User-friendly touch screen interface
- Compatible with any incubator on the market
- Diffusion or Aspiration gas sampling modes
- Pump suction rate 100 ml/min
- Sampling tube and de-humidification kit included
- Long term logging
- Micro USB for data download
- Calibration:
  a) Removable sensors can be shipped to certified laboratories to be calibrated. Calibration is stored in sensor on-board memory. Leo reads calibration upon sensor installation
  b) In situ sensor calibration via LEO calibration


LEO is a battery operated, handheld analyzer designed to measure $CO_2$, $O_2$, Temperature, VOC, Relative Humidity and pH.

Includes $CO_2$ and $O_2$ sensors.

Optional modules: Temperature, Humidity, VOC and pH

## $CO_2$-$O_2$ Module - Always included

$CO_2$-$O_2$ module can be easily extracted from LEO and sent out for calibration.

| | Type | Range | Accuracy |
|---|---|---|---|
| $CO_2$ | Non Dispersive InfraRed (NDIR) dual wave length detector with pressure and temperature compensation | 0-20% | ±(1.0% of full scale +2% scaling) at 6% = ±0.32% |
| $O_2$ | Fluorescence based optical sensor | 0-25% | ±(1.0% of full scale) at 6% = ±0.25% |

The module stores calibration data in its own memory, that Leo reads when the module is put in place.


## $CO_2$ - $O_2$ Sampling

### Diffusion Mode

For incubator featuring gas sampling port with spontaneous outlet


Gas flows into LEO through a dedicated diffusion inlet.
Suction pump is not activated.

### Aspiration Mode

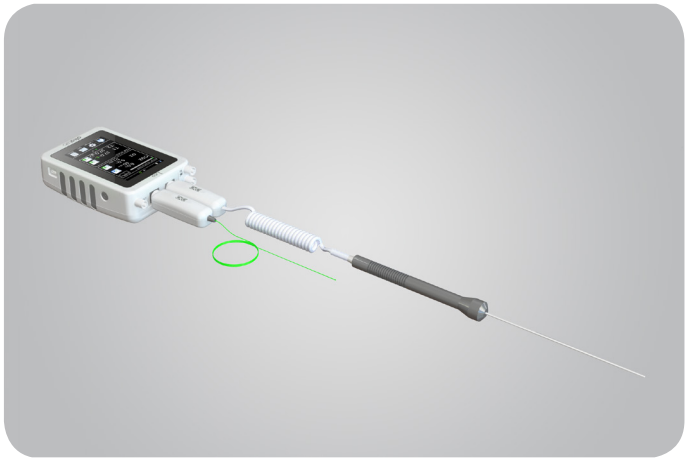
For incubator featuring gas sampling port without a spontaneous outlet

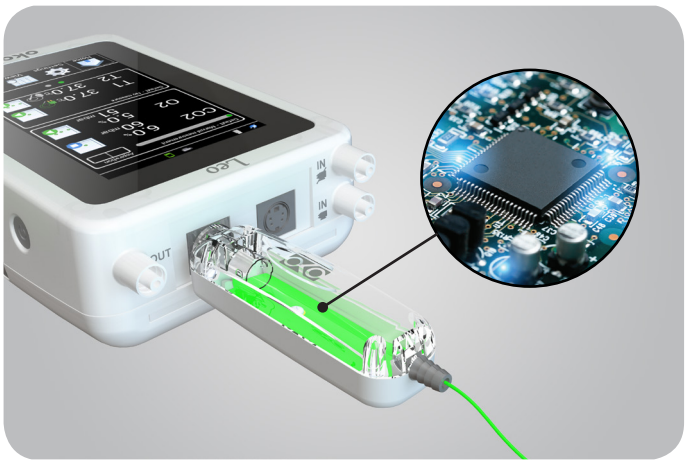

LEO activates its **suction pump** to sample gas from the incubator.
LEO releases the sampled gas through its output port. Gas can be VOC filtered and reinjected into the incubator.

## T Modules

Leo features two external temperature modules, which can operate at the same time:

- T1 is a small, flexible immersible thermocouple, ideal for measurements in liquids, such as the culture media in the dish.
- T2 is a thermistor, ideal for measurements of incubator temperature, accessed through the sampling port.

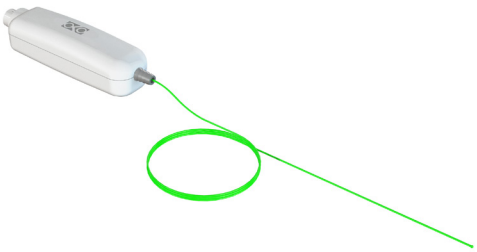




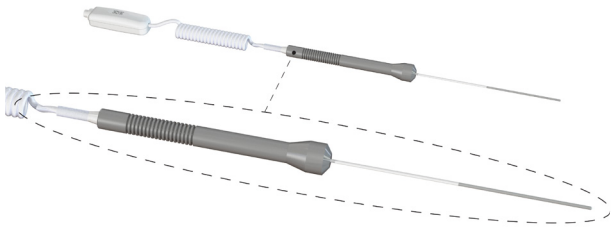
| | Type | Range | Accuracy |
|---|---|---|---|
| T1 | K-type Thermocouple.<br>PFA-insulated; Length: 2 m; OD: 0.13 mm | 20-45°C | ± 0.1 °C |
| T2 | PT1000<br>Probe length: 150 mm; OD: 1.5 mm;<br>Cable length: 1 m | 20-45°C | ± 0.1 °C |

Each sensor module stores calibration data in its own local memory, that LEO reads upon connection.

T1



T2




| | Type |
|---|---|
| LEO | Handheld, touch screen, battery operated analyzer. Includes $CO_2$-$O_2$ module, sampling tube and de-humidification kit. |
| $CO_2$-$O_2$ module (included in Leo) | $CO_2$: Non Dispersive InfraRed (NDIR) dual wave length detector<br>$O_2$: fluorescence based optical sensor |
| T1 module | K-type Thermocouple; OD: 0.13 mm |
| T2 module | PT1000 Thermoresistance - Probe length: 150 mm; OD: 1.5 mm |
| H module | Linearized and temperature compensated sensor. Range: 0-100% Accuracy: ±1.5% RH |
| VOC module | Photoionization detector (PID). Range:0-2ppm<br>Accuracy: ±3% of reading<br>Minimum detection limit: 0.5 ppb |
| pH module | Automatic temperature compensation probe<br>Accuracy @ 20°C: pH: ±0.01 pH Range: 0-14 |
| $CO_2$/$O_2$ calibration kit | 6 mm O tygon tube with a calibrated orifice deliveing a flow of 100 ml/min to Leo when connected to a gas source at 1 barg (14.7 psig) |
| Hard Case | Hard travel case for Leo and its accessories |