



QUICK INSTRUCTIONS


LEO 2.0 HAND HELD METER



Welcome to LEO 2.0!
Explore its precision CO₂-O₂ measurement and user-friendly interface. This guide ensures a seamless experience in your laboratory tasks.

- Explore LEO 2.0's features for efficiency.
- Accurate gas composition measurement with CO₂-O₂-MODULE.
- Factory calibrated sensor modules for reliability.
- Two operation modes for versatile sampling.

BASIC MODE




Accessible upon device startup.

- 1 Quickly measure CO₂/O₂ % in sampled gas without the need of selecting device or storing the data.
- 2 Gas measured via Diffusion or Pump Mode.

Refer to Gas Connections section for proper tube connections.

Switch to Advanced Mode

ADVANCED MODE



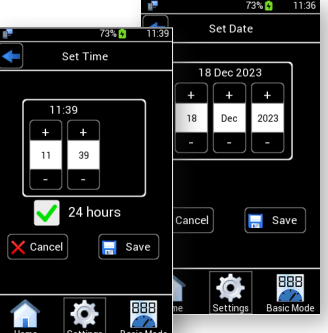
Accessible upon mode selection.

- 1 Perform detailed measurements, analysis, and data storage for each incubator (device).
- 2 Set device parameters and measuring modes tailored to specific requirements.
- 3 Execute sensors zero reset for precise and accurate readings.

PRELIMINARY OPERATIONS for Advanced Mode

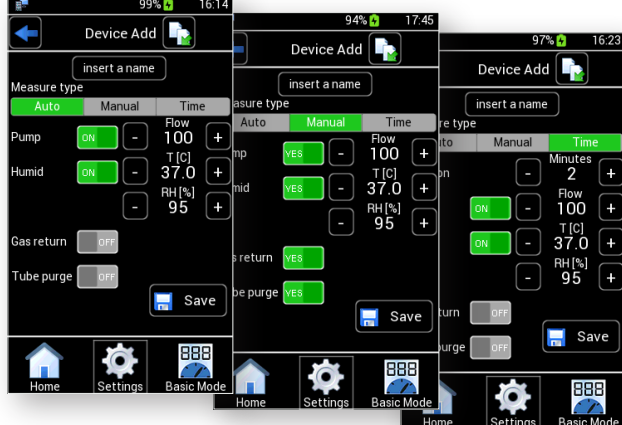
SET DATE & TIME

Navigate to Switch to Advanced Mode > Settings > System > Date & Time



ADD DEVICE

Navigate to Settings > Device > Add



- Insert a Name (max 10 characters).
- Select measurement parameters: Auto (stable value), Manual (user stop), Time (pre-defined duration).

CUSTOMIZABLE SETTINGS:

- Pump Mode or Diffusion mode.
- Humid: Insert the temperature and humidity setpoints of the incubator.
- Gas return: Enable if sending gas back into incubator.
- Tube Purge: Recommended for Gas return, helps incubator recover gas concentration changes.

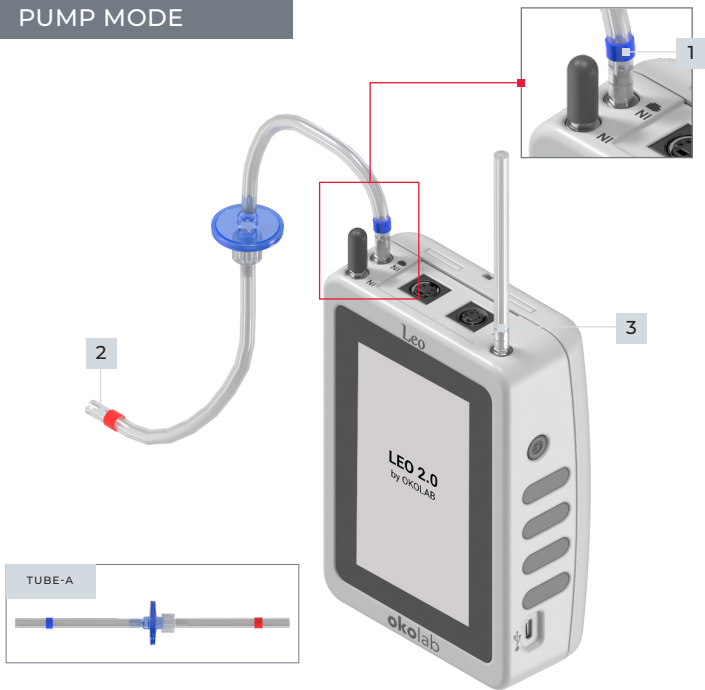
1. GAS CONNECTIONS and MEASUREMENTS

GAS CONNECTIONS

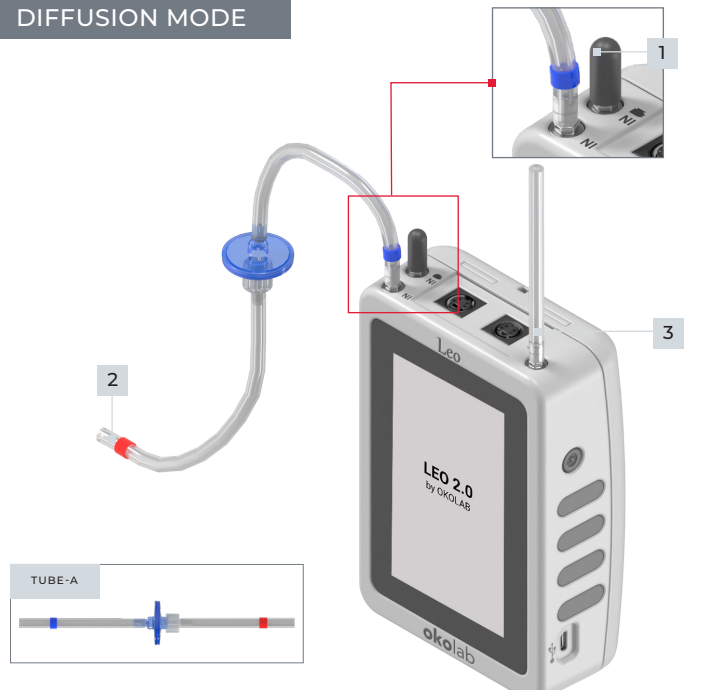


Please verify the correct measurement mode for each incubator.

PUMP MODE



DIFFUSION MODE



1 Connect the **blue labeled end** of TUBE-A to LEO 2.0 gas inlet port labeled as **IN**. Put the cap on the other inlet port.

1 Connect the **blue labeled end** of TUBE-A to LEO 2.0 gas inlet port labeled as **IN**. Put the cap on the other inlet port.

2 Connect the TUBE-A **red labeled end** to the incubator. Use tube fittings and/or additional tubes if required.

3 For incubators with gas return port, use the supplied Output Tube to connect this port to LEO 2.0 gas **OUT** port.

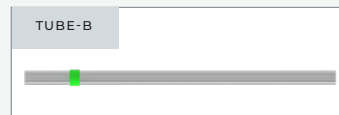
4 Select the device, verify the correct setup and start the gas measurement .

MOISTURE TRAP

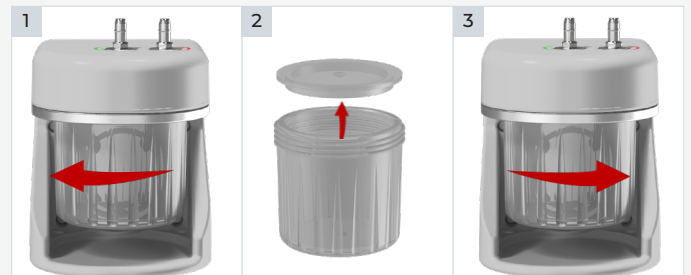


To be used when the sampling gas is humid.

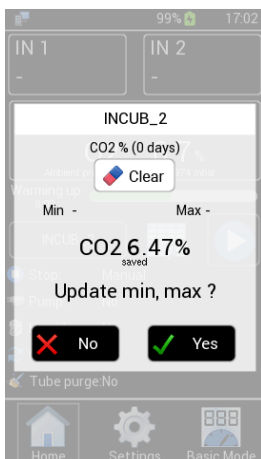
TUBE-A **red end** to Moisture Trap and other end to LEO 2.0.
TUBE-B **green end** to Moisture Trap and other end to the incubator.



For Time Logging Measurement remove the Trap Top Lid.



UPDATE MIN MAX



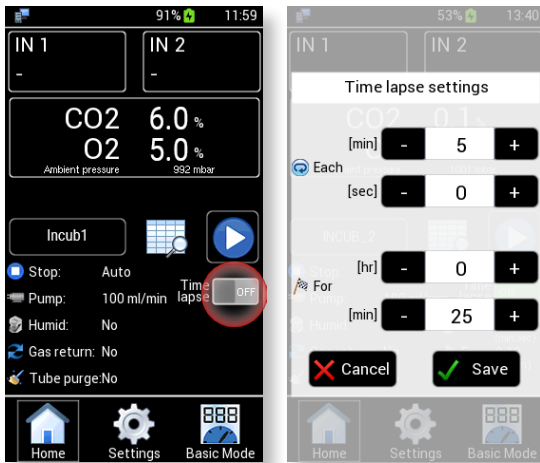
- The min-max update prompt will appear the first time you measure a device.
- After the initial measurement, the prompt will only appear if the measured value is outside the existing min-max limits.
- This dynamic adjustment allows you to specify accepted measurement limits per incubator, ensuring precise monitoring near the set points.
- The number of days for the current limits history is indicated in brackets next to the incubator's name.

NOTE ▶ If a T-module is connected during the measurement, the prompt will appear for updating the min/max values of the temperature as well.



Update Min-Max Prompt is exclusive to CO2 and Temperature readings, ensuring precision monitoring.

TIME LAPSE LOGGING

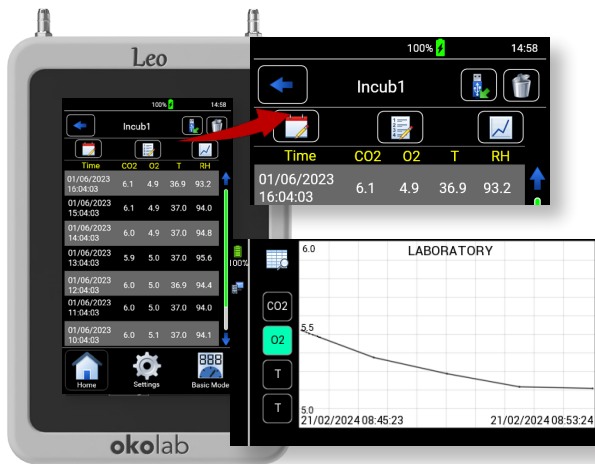



If enabled, LEO 2.0 automatically performs sequential measurements:






- **FOR** a predefined time duration, where
- **EACH** measurement has a predefined time interval

NOTE ▶ Available for Time (pre-defined duration) and Auto (stable value) stop modes

VIEWING/DELETING DATA





Select a device and press the View icon  to visualize the device's data. When viewing the data of a device some of the options available are:

-  Date Filter icon: to add a 'Date Start' filter and to filter 'Only warning measures'.
-  Parameter Filter icon: To filter the parameters you want to view (CO2, O2, T etc.).
-  Graph icon: To view the trend for a selected parameter.
-  Download icon: To download the device's data.
-  Delete icon: To delete the device's data.

DATA ANALYSIS



- Connect a USB stick to LEO 2.0 by using the OTG cable.
- Navigate to Select Device> View Data .
- Download data to the USB stick.
- Open Excel and create a new blank document
- Go to Data > From Text/CSV .
- Connect the USB stick, click on the incubator name.txt file (with the incubator name) and press "Import".
- In the window that appears press "Load" and the data will appear in the excel spreadsheet.

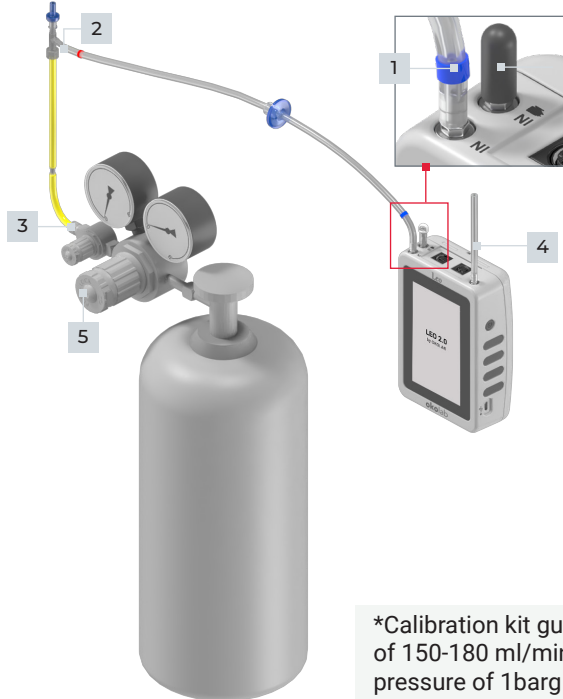
Time	CO2 [%]	O2 [%]	T [C]_1	T [C]_2	Stop-mode	Issue	Out-of-range
21/02/2024 08:45	5.85	4.6	36.94	37.08	4	0	4
21/02/2024 08:47	6.14	5.35	37.01	36.97	5	0	0
21/02/2024 08:49	5.41	5.89	36.52	36.99	3	1	3
21/02/2024 08:51	6.22	4.23	37.23	37.11	3	2	7
21/02/2024 08:53	6.02	5.09	37.03	36.95	2	0	1
21/02/2024 08:57	6.18	5.12	37.07	36.88	4	0	6
22/02/2024 08:57	6.18	5.12	37.12	36.99	3	3	2
23/02/2024 08:57	5.79	5.12	37.02	36.88	5	0	5



2. Zero Reset

Okolab suggests to perform the Zero Reset procedure each month.

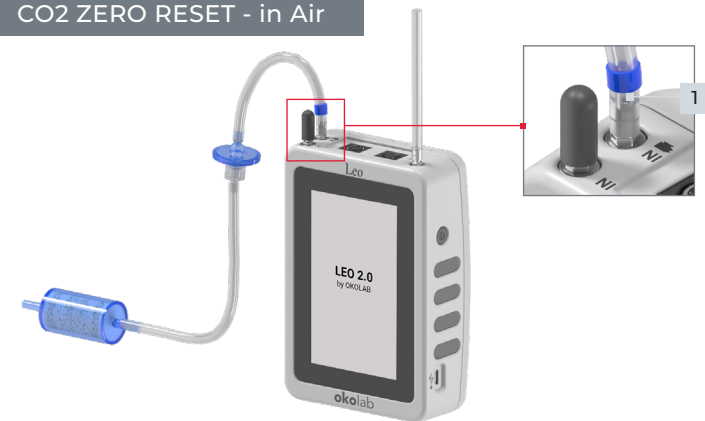
CO2-O2 ZERO RESET

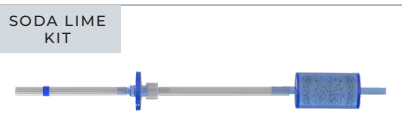
N2 CYLINDER WITH PRESSURE REGULATOR



- 1 Connect the **blue labeled end** of TUBE-A to LEO 2.0 gas inlet port labeled with icon **IN** and put the cap on the other gas inlet port.
 
- 2 Connect the **clear connector** of the Calibration Kit to the **red labeled end** of TUBE-A.
- 3 Connect the **yellow end** of Calibration Kit to the Gas Cylinder*.
 
- 4 Use the OUTPUT TUBE to connect a purge tube to LEO 2.0 gas outlet port. Place the purge tube in a well ventilated environment.
- 5 Set 1.0 barg on the pressure regulator of the pure N2 tank. Do not exceed 1.5 barg.
- 6 Start the CO2-O2 Zero Reset procedure (refer the LEO 2.0 User Manual).

CO2 ZERO RESET - in Air



- 1 Connect the **blue labeled end** of SODA LIME KIT to LEO 2.0 gas inlet port labeled with icon **IN** and put the cap on the other gas inlet port.
 
- 2 Start the CO2 Zero Reset procedure (refer the LEO 2.0 User Manual).

The CO2 Zero Reset procedure adjusts the zero of the CO2 sensor only.

TIPS FOR LEO 2.0 USAGE

LARGE VOLUME INCUBATORS

- **Pump mode** with high flow rate.
- Shorter measurement time Duration (**Time Mode**).
- Utilize moisture trap without the cap for humid gas.

PREMIXED GAS BENCHTOP INCUBATORS

- **Diffusion mode.**
- Shorter measurement time Duration (**Time Mode**) in purge flow.
- Longer measurement time Duration (**Time Mode**) in normal low flow.

INTERNAL MIXER BENCHTOP INCUBATORS

- **Pump mode** with low flow rate.
- Utilize **Time mode** for measurement.
- Return the sampled gas to increase the final accuracy.
- Utilize the Tube purge option as it increases final accuracy.
- If the sampled gas is Humid utilize the moisture trap. Keep the cap on for short measurements.

More information in LEO 2.0 website ▶

