

BAKER

RUSKINN

User Manual UM-049

OxyGenie™



OxyGenie™

Affix Serial Number Sticker Here

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INTRODUCTION

Please read this manual carefully before using the OxyGenie™ and familiarise yourself with all aspects of using the product. The Baker Company (Baker) or Ruskinn Technology Ltd (Ruskinn) does not accept responsibility for accidents to personnel or damage to the OxyGenie™ resulting from incorrect use.

Many unique features of the OxyGenie™ are covered in detail in this manual. It is recommended that the user be fully conversant with the instruction and procedures, and that the operator familiarises themselves with all aspects and functions of the system before it is commissioned to maintain optimum performance.

SAFETY INSTRUCTIONS

Baker and/or Ruskinn do not take any responsibility for damages caused by using the equipment for other purposes than described in this user manual.

- This is a Class A product (for industrial environments). In a residential environment, it may cause radio interference. If radio interference occurs, the user may be required to take appropriate measures.
- This device contains high pressure gases.
- If there is gap between gas bottle and regulator do not use or fill this bottle. Place this bottle on ground on an isolated safe place to let the gas bottle to fully degas.
- This device contains electronics.
- This device contains heating elements.
- Do not change heating device type settings from heat plate controller.
- Do not replace any parts of the device or its components.
- This device is intended to use in research only.
- Device should be only used by technically qualified person.
- Device must be used according to manual instructions, if usage deviates from the instructions the performance can be harmed.
- If any damages appear, the device should not be used.
- If unusual performance occurs, such as deformation, discoloration, abnormal sound or smell, or abnormal heating stop using the device and contact the provider.
- If any liquid leaks from interior battery do not touch the fluid.
- Always transport the device with care and do not drop or apply any shock or vibrations to the device.
- Always place device on robust and stable surface.
- Some parts of the device can reach high temperatures, thus do not touch these parts.
- Avoid rapid temperature changes, moisture, moist condensation, air drafts, direct sunlight, temperature way above or below room temperature, excessive induction noise, static electricity and magnetic fields, in the device surroundings and direct contact.
- Do not use this device in same surroundings with flammable or explosive gases.
- Do not disassemble any parts from device.
- Do not use harsh solvents to clean the instrument, this may cause disruption of device.
- Do not induce the device for high voltages and use only electric cords equipped with the device.
- Do not induce physical wear to cables, tubes or any parts.
- Avoid dust particles near gas bottle connections.
- Use only the power supply provided with device.
- Always connect power supply cable first to the device before connecting it to a power socket.
- Do not connect power supply cable or turn on the device if any cables are damaged.
- Connect the device only to grounded main power distribution network.
- When handling gas bottles be extra careful.
- Always check your gas bottles before using.
- Do not use or fill gas bottles that are damaged.
- Do not fill bottles with gas mixtures containing oxygen more than 21% at any circumstances.
- Under NO CIRCUMSTANCES should the system be filled with pure oxygen. Oxygen will ignite causing injury or death.
- Do not let any dirt, water or oils to become in contact with gas bottle regulators.

CAUTION: Asphyxiation Risk

The OxyGenie™ uses Nitrogen (N₂) and Carbon Dioxide (CO₂) as part of normal use with the volume released externally is inconsequential. In the event of a leak or malfunction this gas release may become excessive. DO NOT OPERATE this unit in a SMALL ENCLOSURE such as a small room or walk-in closet. An accidental release of Nitrogen or Carbon Dioxide could create an asphyxiating atmosphere in a small space.

If the equipment is not use in a manor specified by the manufacture, the protection provided by the equipment may be impaired.

Failure to adhere to these safety instructions could cause serious injury and will invalidate the workstation warranty. Ruskinn Technology Limited accepts no responsibility for any accident, injury or loss caused by unsafe operation of the workstation.

REGULATORY COMPLIANCE

European Region



This product complies with the essential EEA requirements for Electrical Safety and Electromagnetic compatibility as set out in the EMC Directive 2014/30/EU, the Low Voltage Directive 2014/35/EU and hazardous substances (RoHS) Directive 2011/65/EU has been tested and found to comply in full.

For details on standards tested refer to the DoC Certificate.

WEEE:



This equipment must be disposed of in accordance with the Waste from Electrical and Electronic Equipment (WEEE) Directive

This product must not be treated as household waste. Instead, it shall be handed over to an appropriate collection point for the recycling of electrical and electronic equipment.

If in doubt, please return this equipment to Ruskinn Technology Ltd who will correctly dispose of it for you. We strongly recommend that this product is returned to RUSKINN TECHNOLOGY LIMITED at the end of its useful life.

Symbols

Before using the OxyGenie™, please ensure that you are familiar with the symbols.









Symbol	Meaning
	Refer to user manual.
~	Alternating current
0	Off
I	On
	Functional Earth Connection
	Protective Earth Connection
CE	This product complies with the essential EEA requirements for Electrical Safety and Electromagnetic compatibility as set out in the EMC directive 2004/108/EC and the Low Voltage Directive 2006/95/EC
	Caution, do not remove covers. No end user serviceable parts behind covers. Please refer to this manual in all cases where this symbol appears, in order to find out the nature of the Potential Hazard and actions to be taken in order to avoid the Hazard.
	Warning, this equipment contains high voltage circuitry.
	Contains material or substances that may be hazardous to human health. Please refer to your local biohazardous material handling procedure for further advice on the handling and disposal of these items.
	OxyGenie™ contains hazardous components and must not be disposed of at a household waste site. Instead it should be taken to the appropriate collection point for the recycling of electrical and electronic equipment.
	USB socket
07/2019	Date of manufacture in format MM/YYYY

Table 1: List of Symbols

TRANSPORT AND STORAGE

When not in use, the OxyGenie™ must only be stored within a temperature of between 0°C and 30°C

Storage outside of this range may cause damage.

ENVIRONMENTAL OPERATING CONDITIONS

The OxyGenie™ should only be operated under the following environmental conditions:

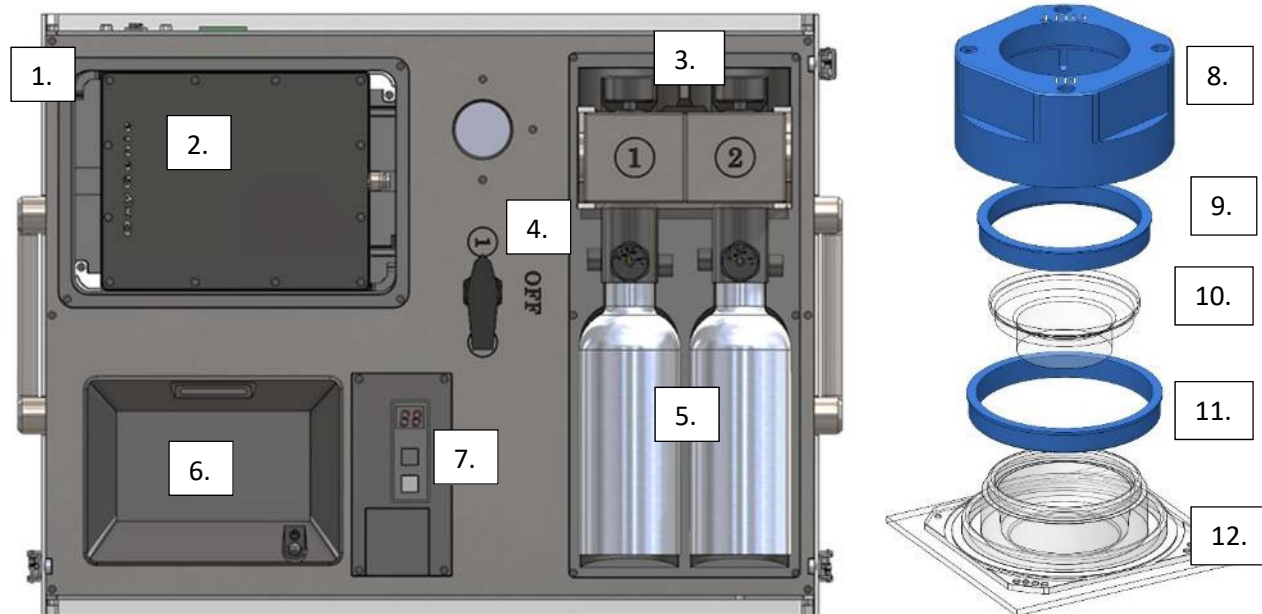
- Temperature – Between 15°C and 30°C
- Humidity – Between ambient and 90% RH, Non-Condensing

The OxyGenie™ must be located in a well-ventilated area.

OXYGENIE™ OVERVIEW

Background

OxyGenie™ is a mini-incubator for cell culture studies. Gas bottles containing different gas mixtures will allow you to control gas environment inside the cell culture structures. With this device, oxygen levels can be controlled while pH and temperature parameters are maintained stable.



OxyGenie™:

- | | |
|---|--|
| 1. Heat plate | 7. Device power switch/battery and power display |
| 2. 6-well flow divider | 8. Cover |
| 3. Open/close bottle valve (separate for each gas bottle) | 9. Lid Lock |
| 4. Gas channel selection valve | 10. Lid |
| 5. Gas bottles | 11. Cover Lock |
| 6. Heat plate controller and heat plate switch button | 12. 1-well structure with glass substrate |

Other components provided with device:

- Power cord
- Temperature sensor (k-type temperature sensor)
- Gas cylinder adapter. This is a plug with push-in connector for gas supply from the large cylinders (additional components user must purchase: 4mm (5/32") PU-tubing and large gas cylinders)

All components can be wiped with 70% EtOH.

Note that device charges battery only when turned on.

HOW TO USE OXYGENIE™



Check/switch gas bottles

- Check gas volume



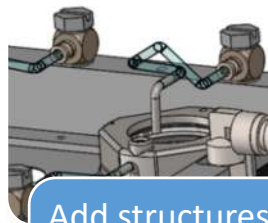
Prepare device

- Select gas bottle from bottle selection valve and open the bottle valve
- Let system equilibrate



Check the device

- Check the valves
- Check the heat plate
- Check that the device is charging



Add structures to 6-well flow divider

- Check the covers
- Connect flow divider gas tubes to covers



Prepare cells

- Assemble 1-well structure components and add cover

POWER SUPPLY

Use only the power supply provided with device.

Note that device charges battery only when turned on.

Battery life of this device is about 2 hours.



Press grey switch button for 3 seconds to turn on the device. (In picture)

Press heat plate controller switch button to turn on heat plate. (See heat plate controller)

Beep test is disabled in this device.

To shut down the whole device, switch off heat plate from the controller switch button and press grey switch button for 3 seconds.

Figure 1: Power Supply

Power display messages					
— —	Power off	Fu	Device performs quick self-diagnosis.	bl	Low battery, put device on charge.
0h.	Power on. Dot on bottom right indicates that device is on charge.	bl	Device operates on battery.	bE	Battery out of power.

Figure 2: Power display messages

For other permanent messages on display, please contact provider.

GAS BOTTLE FITTING

Do not attach any components or fill gas bottles until you have read and understood all of these instructions.

Always wear eye protection and heavy gloves when handling high pressure gases.

Always point every air systems in safe direction away from yourself and others while degassing and filling the gas bottles.

Do not fill bottles with gas mixtures containing oxygen more than 21% at any circumstances.

Do not use compressed air or other particle and/or moisture contaminated gasses at any circumstances.

Always check that all your components are unharmed without any visible fractures and flaws (see page 10)

Do not use excessive force when handling any of components or filling stations.

Do not fill the bottles more than 1500 PSI at any circumstances.

Note that gas bottles can not be filled with more than pressure contained in your filling gas cylinder.

Always mark the gas composition in your gas bottles.

Fill station must be purchased separately. Without filling station bottles are not possible to be filled.

Filling gas cylinders must be purchased from local gas supplier. Ask the right fitting for the cylinder threads from your local gas supplier. Threads in the filling station is ¼" NPT male threads. Make sure that the fitting is with correct threads for the cylinder. Cylinder threads are different in different countries. Ask safety instructions from local gas supplier.

Filling gas cylinder must be properly secured from inclining or falling before attaching filling station to it. Confirm that fitting is compatible with your fill station.

WARNING! Always operate on completely empty filling station.

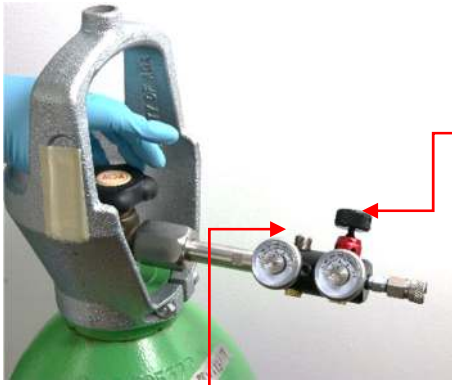


Figure 3 – Filling station to gas cylinder

Tighten the filling station to gas cylinder. Make sure it is properly attached.

Make sure that filling station CONTROL KNOB is turned all the way counter-clockwise. Do not use force to operate the knob. Open gas cylinder slowly and let the pressure flow to the filling station.

BULK gauge shows pressure left in filling gas cylinder.

OUTPUT gauge show pressure that will be dispensed to your gas bottle.

Dispensed pressure can be adjusted by the output pressure ADJUSTMENT SCREW. Pressure can be set by turning the screw with 3/16 inch Allen key. By turning clockwise the output pressure will rise and counter-clockwise it will decrease. After you have set the desired pressure (maximum 1500psi), let air out by turning control knob and you will notice that the output pressure changes from set value. Repeat this pressure adjustment and air release cycle until the pressure reaches desired value after the air is released. This venting step is important especially when values are set to lower range. Check the unit ALWAYS before use, because the values can change over time.



Figure 4 - Filling station to bottle

Make sure all the bottle attachment components are unharmed and air flow from venting hole is not blocked. Attach the bottle to the filling station by pushing the bottle attachment connector backwards. After bottle is properly attached and locked on the connector, the connector should slide back to its place and make click sound.

WARNING Always check that OUTPUT pressure does not exceed 1500 PSI at any circumstances!



Figure 5 - Control knob opening

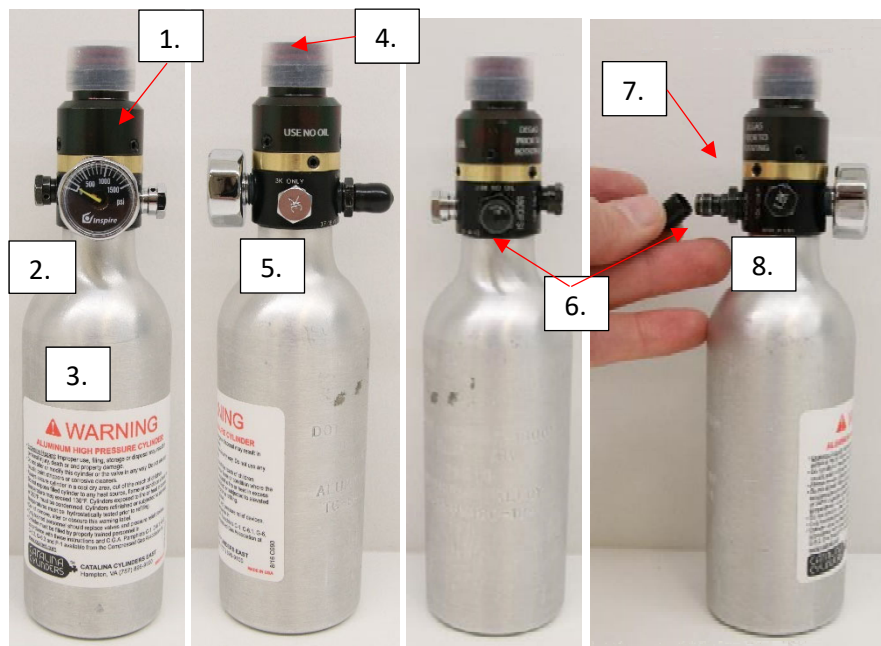
Turn and hold the control knob clockwise until gas start to flow to bottle. After this, turn the control knob $\frac{1}{4}$ further. Wait for pressure flowing to stop and let the pressure settle for at least 30seconds. Follow the gas bottle pressure indicator that it won't exceed 1500 psi.

When the bottle is full turn the control knob counter-clockwise to vent the filling station fully empty.

Detach bottle from regulator and close gas cylinder.

WARNING If gas bottle is not detaching easily pressure may still occupy components! Empty the filling station properly by turning the control knob.

GAS BOTTLES



WARNING!

If there is gap between gas bottle and regulator, do not use or fill this bottle. Place this bottle on ground on an isolated safe place to let it fully degas and contact provider.

Compartments:

- | | | |
|---------------------|--------------------------|--------------------------------|
| 1. Bottle regulator | 4. Plastic regulator cap | 7. Rotational adjusting collar |
| 2. Pressure gauge | 5. Burst disk (3k) | 8. Burst disk (1.8k) |
| 3. Gas bottle | 6. Filling nibble | |

WARNING high pressure

Do not use or fill the bottle if any fractures or flaws are visible.

Do not apply heat.

Do not use excessive force when handling gas bottles.

Gas bottle must be changed before pressure display reach zero.

Always check gas bottle and that it contains a suitable gas composition.

Always check that you have enough gas to perform your experiments.

Always cover the head of the regulator with a gas bottle regulator cap, do not let any dirt, water or oils to become in contact with gas bottle regulators.

GAS BOTTLE ASSEMBLY

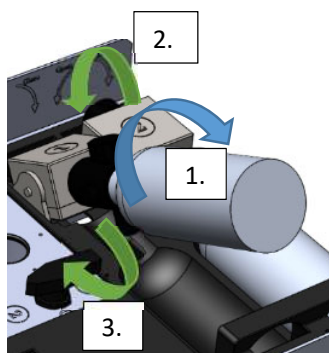


Figure 6 - Gas bottle assembly

1. Tighten gently gas bottles to places indicated by numbers 1 and 2. **Do not use excessive force to tighten the bottles.**
2. Open only one bottle valve (#2 in the picture) by turning gently all the way to the left. **Do not use excessive force.**
3. Turn the gas channel selection valve to correct position. Pointy head indicates which bottle valve is open.
Note that only one bottle can be open at a time.

CHANGING THE GAS BOTTLE

1. Close the bottle valve (red arrow) by turning the valve **gently** all the way to the right. Wait 1 minute for pressure to settle. Open the other bottle valve (green arrow) by turning the valve **gently** all the way to the left. **Do not use excessive force.**
2. Turn the gas channel selection valve to position 2 for continuous gas flow. Pointy head indicates which valve is open.
3. Remove the empty bottle and replace it with a new bottle. **Do not use excessive force to tighten the bottle.**

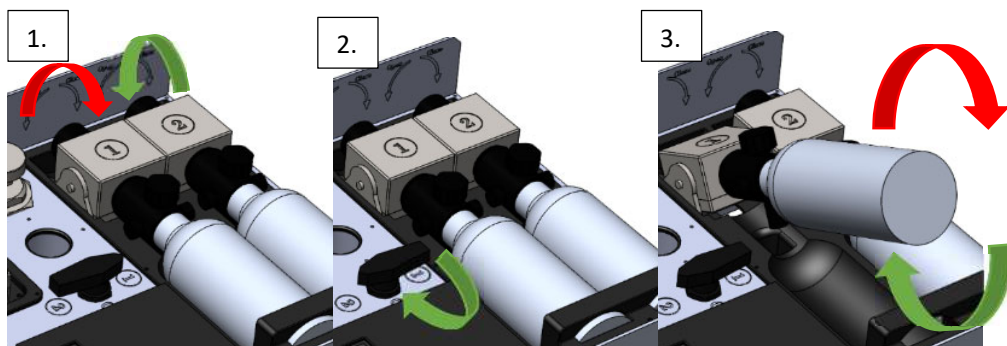


Figure 7 – Changing the gas bottle

GAS CYLINDER ADAPTER

Gas cylinder adapter allows gas to be fed from larger gas cylinders, thus allowing prolonged experiment time without changing gas bottles. Attach the adapter same way as gas bottles are attached to the device.

Attach 4 mm (5/32") polyurethane tubing between adapter and gas cylinder regulator. Attach gas cylinder adapter to device and adjust gas cylinder regulator to 1 bar. Make sure that bottle valve is open and gas channel is selected correctly.

Note! The OxyGenie™ bottle valve cannot close the gas flow. Gas flow must be closed from the gas cylinder regulator.

User must purchase tubing, cylinder regulators and gas cylinders from other providers.



Figure 8 - Gas cylinder adapter

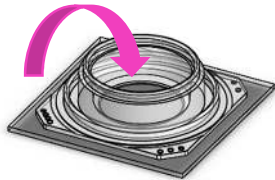


Figure 9 - Gas cylinder adapter to regulator

1-WELL ASSEMBLY AND CELL CULTIVATION

Always use new and sterile 1-well structures.

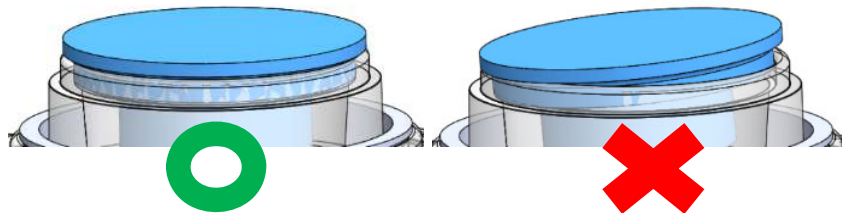
1-well structures, lids and lid locks, covers and cover locks are compatible with autoclave, EtOH and short term UV sterilization.



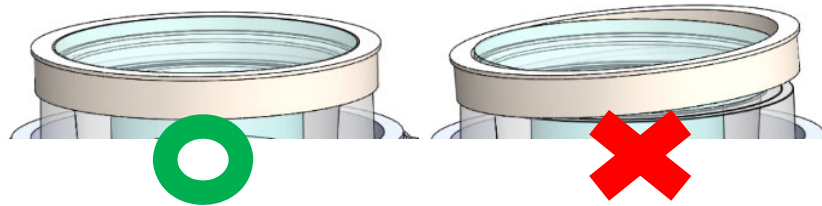
1-well structure bottom can be coated before culturing cells. Cells can be cultured in these structures by following regular protocols.

How to prepare structures to OxyGenie™:

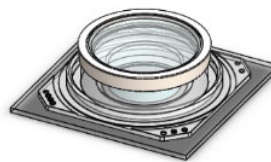
1. Add in cell culture medium and other necessary substances.
! Optimal volume for substances is 1 ml.
2. Place the lid over the 1-well structure.
! Make sure it fits correctly.



3. Place the lid lock around the 1-well structure and the lid.
! Make sure it grips the lid tightly and correctly around the structure.



4. When all these components are placed correctly, the cover can be added to encase the whole 1-well structure.



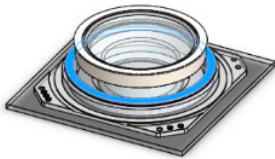
COVER

The cover encloses the 1-well structure and maintains correct gas composition in cell culture environment.



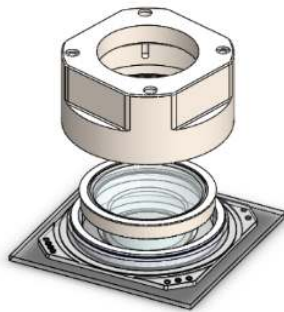
How to place the cover:

1. Place cover lock on the groove of 1-well structure so that little shoulder is upwards
2. Place the cover on top of the 1-well structure. The cover lock will allow the cover squeeze tightly around silicone structure.
3. Make sure the cover is pushed to the bottom.



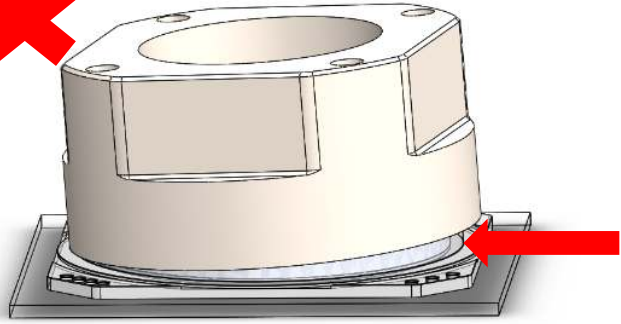
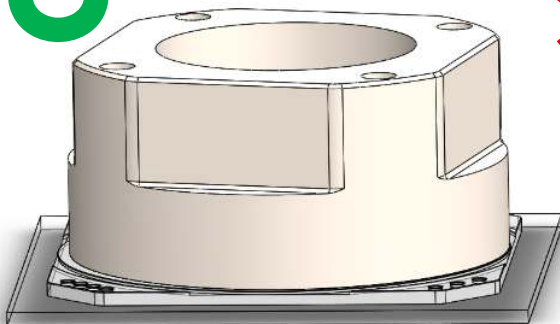
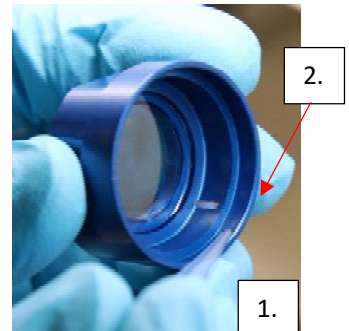
1-well structures are now ready to be assembled to OxyGenie™.

If covers are not adjusted all the way to the bottom, they may leak and affect to the gas concentrations inside the cell culture.



Tip: Use **very thin** layer of silicone grease in the lip of the cover [1]. That will help the assembly of the cover and ensure better sealing of the cover.

Do not spread the grease to the outlet tube (white tube [2]) or the might be partly or fully blocked. Always remember to check the out flow from the chamber (check the Tip in the next page).



ADDING 1-WELL ASSEMBLY TO SYSTEM

Before adding 1-well assembly to the OxyGenie™ system, make sure that you have a correct gas composition and enough gas in the bottles. Also check that bottles/gas cylinder adapter are properly assembled.

Confirm that the covers are assembled correctly.

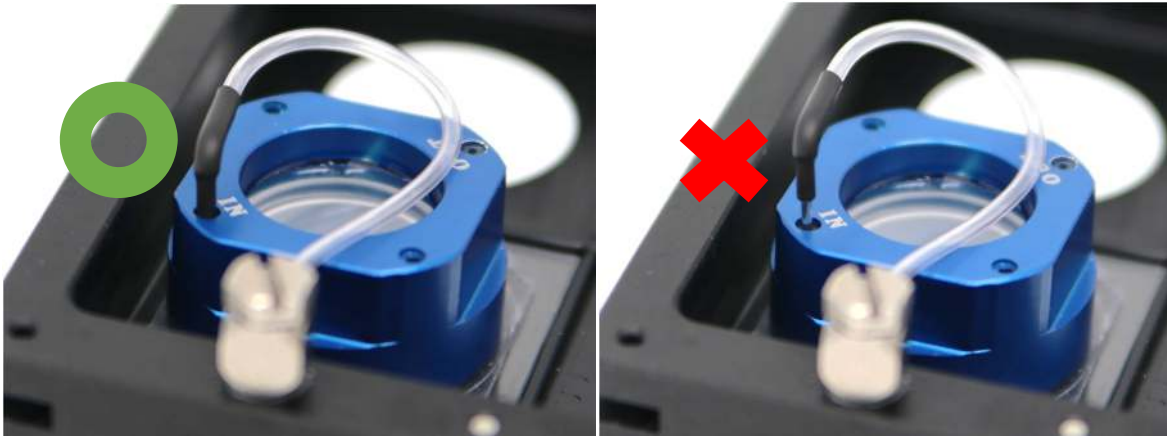
6-well flow divider can be wiped with 70% EtOH.



Ensure that the gas bottles are open and gas is flowing.

Tip: Tubes coming from flow divider can be submerged in small amount of EtOH (e.g. in small centrifuge tube) and check that bubbles come out to ensure gas flow.

Add 1-well structures to 6-well flow divider as indicated in pictures.

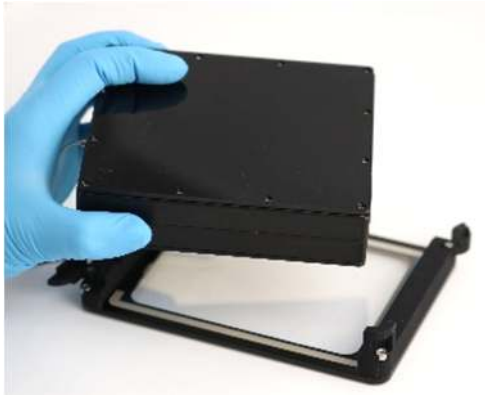
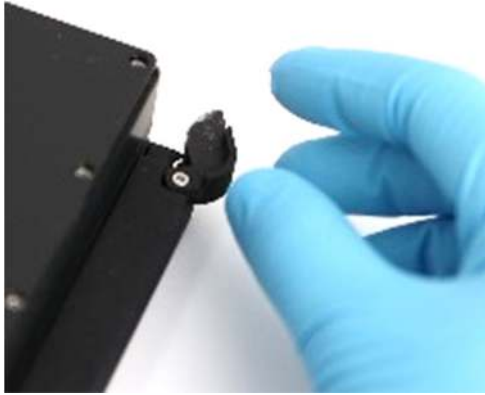


Connect the flow divider tubes to the cover inlet marked with IN and make sure that it is properly attached so that metal tubing is hid entirely.

Tip: Few microliters of water or EtOH can be also pipetted to the OUT of covers and ensure that it bubbles to ensure gas flow.



If flow divider tube is not used, attach it to the core of the flow divider. This will keep outlet clean and preventing gas flow that increase the life time of the gas supply from the bottles.

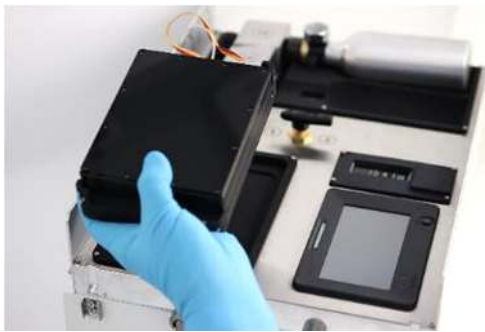


6-well flow divider can be separated from the heat plate by opening locks.

The 6-well flow divider can be lifted and separated from the rest of the system.

Gas flow and temperature are maintained as long as gas is connected and flow divider is resting on the heat plate.

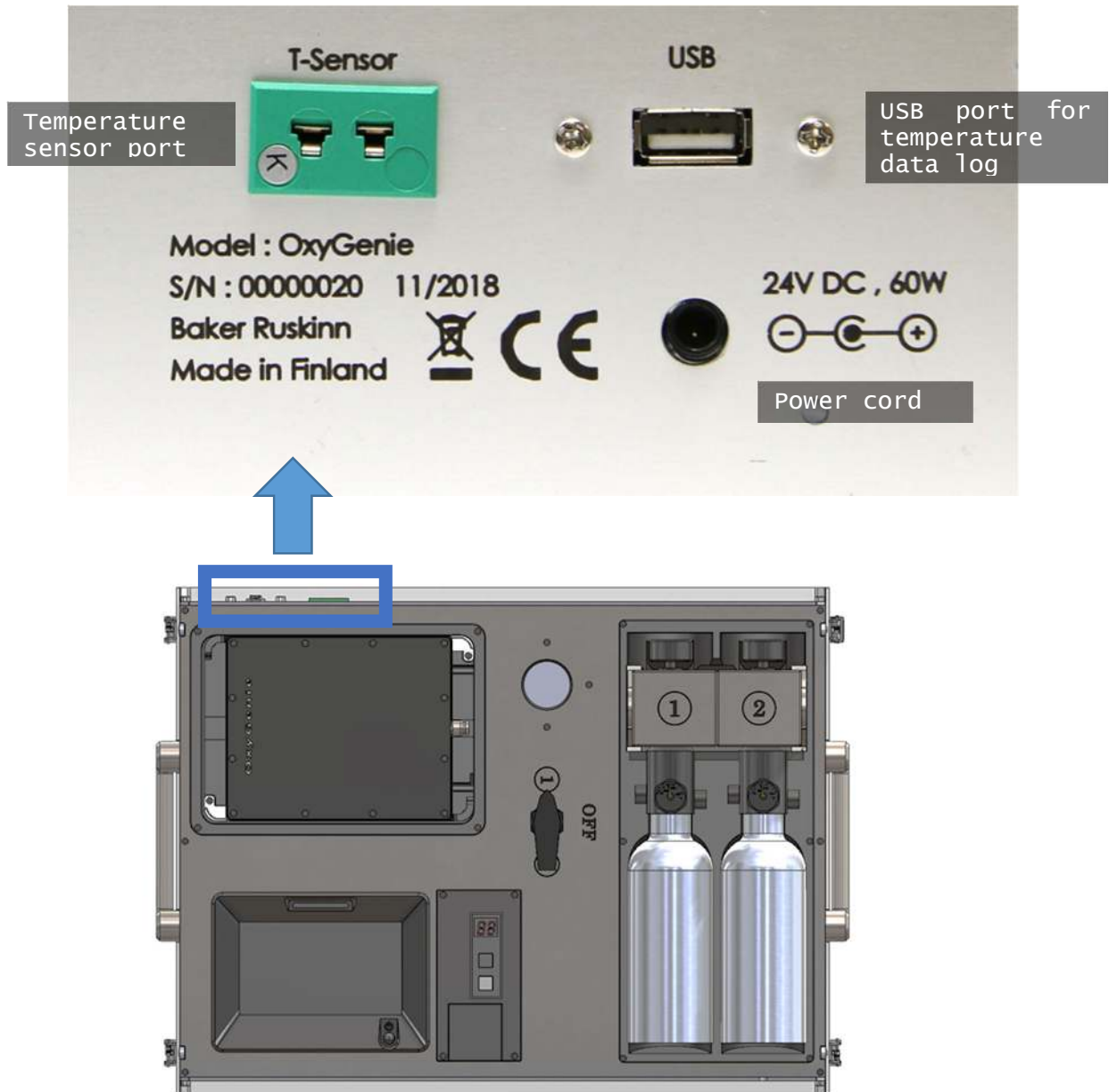
Length of these tubing and wires are 1,5 m.



HEAT PLATE BY OKOLAB

Heat plate is controlled with separate controller unit, H401-T-CONTROLLER (Okolab). Setting are initially in default temperature 37 °C and when device is turned on controller starts to reach this set point.

Few quick tips and pictures are collected from Okolab H401-T-CONTROLLER Temperature Controller User's Manual. For more information see Okolab user manual from their webpage.

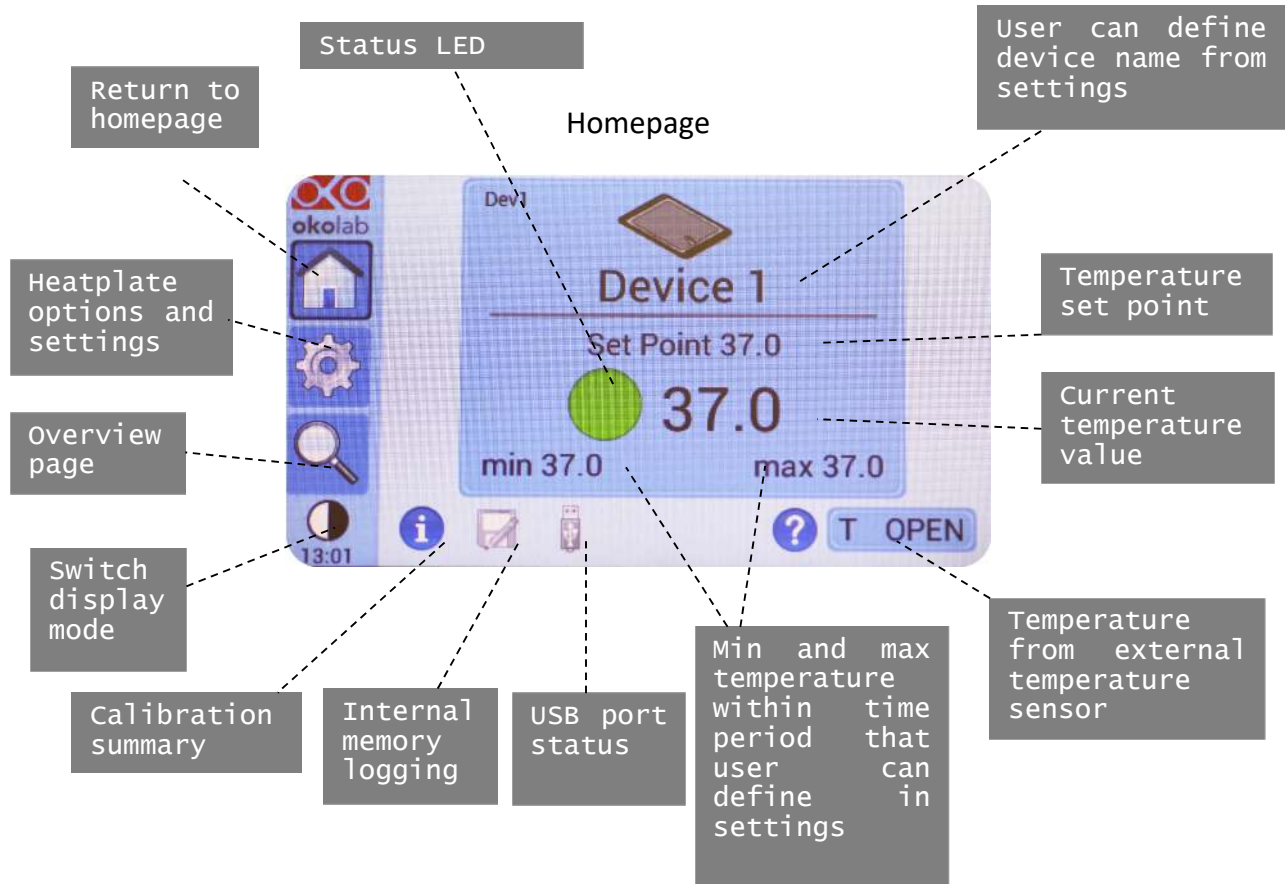


How to plug in temperature sensor:







How to plug in USB drive:

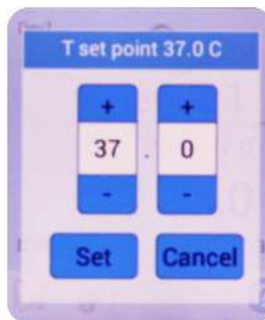




Status LED colours

There is a colourful dot on the touch screens homepage and colourful led on top of the screen indicating the state of the heat plate.

-  Green indicates that set-point have been reached and system is working properly. The set point is defined with tolerance that you have set.
-  Yellow indicates that system is working towards reaching set point. No actions is required and this appears every time you change the set point temperature.
-  Orange indicates that the current temperature value is out of tolerance defined in the alarm settings. Controller triggers alarm and will start work toward recovery from out-of-range value. Check your device for misplacements.
-  Red indicates that there is a problem with the heat plate controller unit. Turn off the system and turn it on again. If the problem is not solved with restart, contact provider.




To set temperature

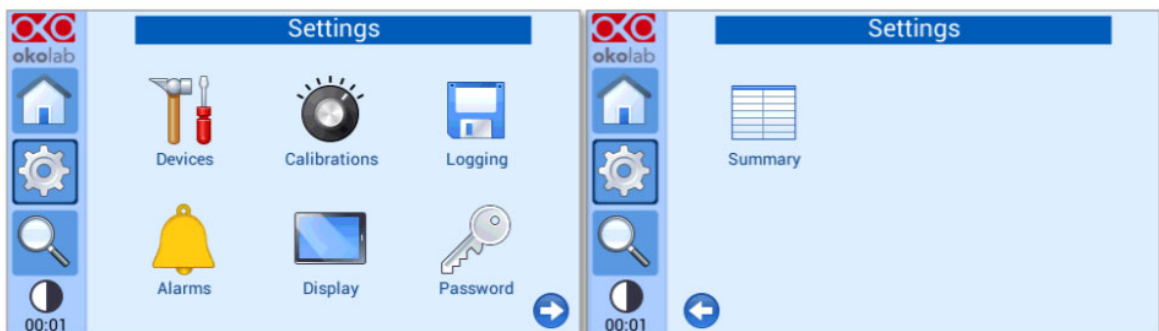
Click temperature tab on the homepage. Modify temperature set point by clicking + and -

After modification, click "Set" to save changes or "Cancel" to cancel changes.

Settings



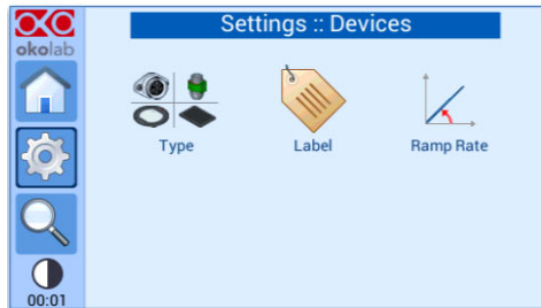
To enter settings press  icon, while following menu will appear.





Settings: Devices

This menu allows to control heating device type, name of the device and maximum heating rate.

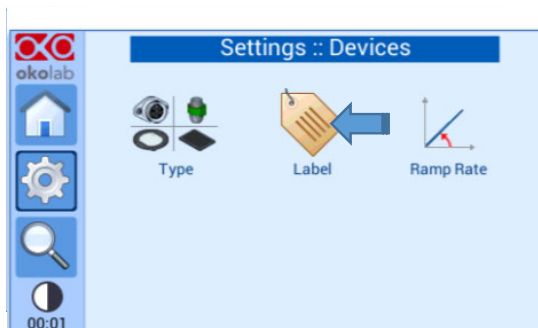


Type:

The heating device type is initially defined as **Glass plate square**. This is device 1.

Device 2 is initially defined as **None**.

WARNING do not change heating device type from device 1. (**Glass plate square**) or device 2. (**None**). If these settings are changed it will cause error to device function and possibly cause danger to user.

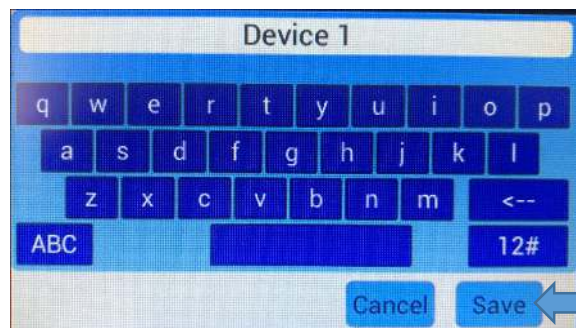


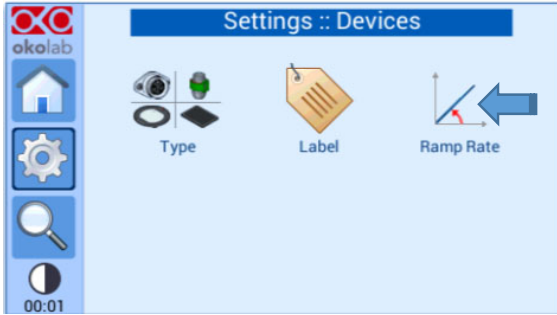
Label:

This menu will allow user to change the device name.

Press Dev1 to enter the name of the device. Press save or cancel to undo.

Label is saved within logged data. This can be used to relate to the saved temperature data.



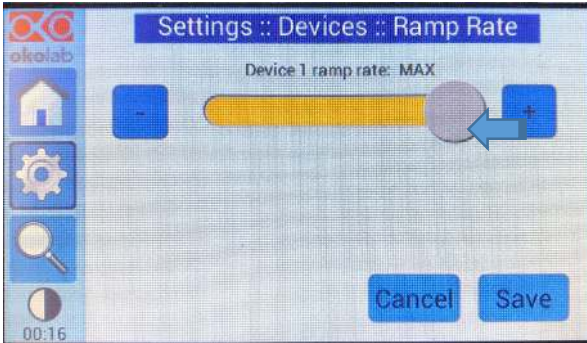


Ramp rate:

This menu allow user to define maximum heating rate for the heat plate.

Select the maximum heating rate from slide bar or + or – and press save.

WARNING If heating ramp rate is defined in high values, this may lead heating device overshoots and the temperatures can reach significantly higher value than defined set value.

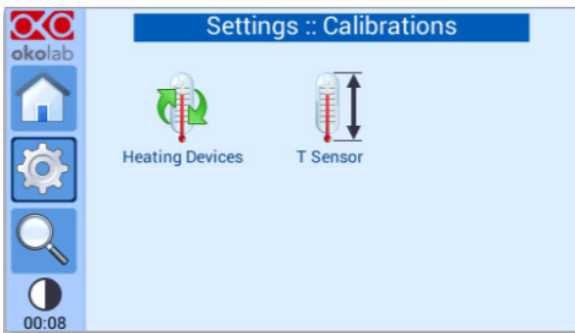


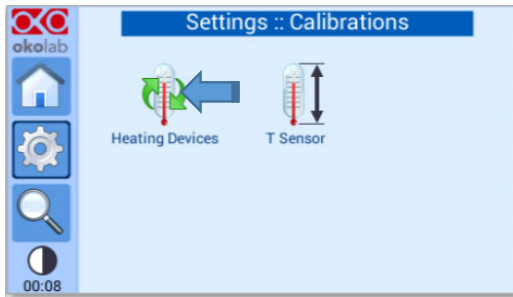
Settings: Calibrations

This menu calibrates heating device and temperature sensor.

User is recommended to calibrate heating device when first assembled the device and when the temperature in the room has changed more than 1 °C.

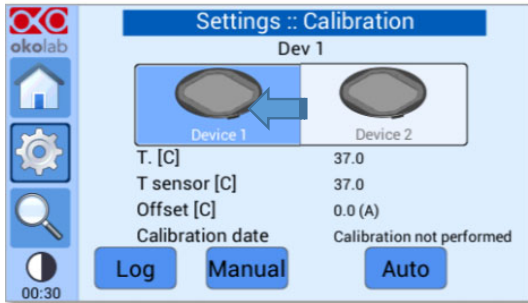
Temperature sensor is recommended to be calibrated once a year.





Heating device calibration:

Heating device can be calibrated either automatically or manually. Letter behind Offset value mark for automatic calibration (A) or manual calibration (M). Calibration provides offset value that marks the temperature difference between liquid inside 1-well structure and the heat plate.



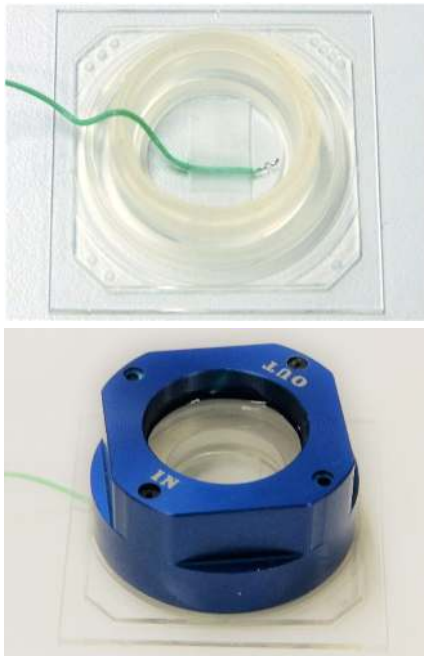
The external temperature sensor is provided with OxyGenie™ device. This sensor can be immersed in water and oil.

How to calibrate:



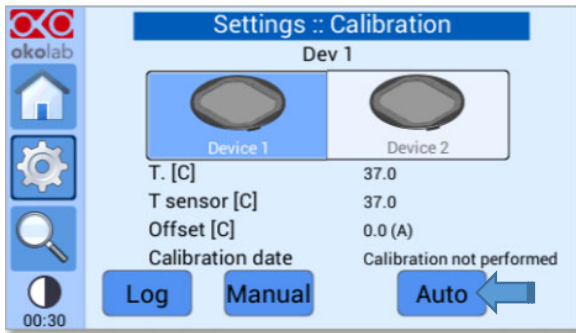
1. Click Heating device icon.
2. Always select Device 1 (Device 2. is disabled)
3. Make sure that the external temperature sensor is connected (See page 22)
4. Assemble the external temperature sensor to the bottom of the 1-well structure with commercial adhesive tape. Do not cover the tip of the sensor with the tape.
5. Fill the 1-well structure with water or oil. Use the volume that is intended to use in experiments, but make sure that the tip of the sensor is immersed in the liquid.
6. Close this structure with the lid and the chamber cover. Do not use chamber cover lock or lid lock when sensor is inside.
7. Place the structure on the flow divider and let it stabilize the liquid temperature.

Proceed further to either automatic calibration or manual calibration.



Monitor the room temperature while performing calibration. If the room temperature deviates during process calibration will fail.

Air drafts and forced convections for example air conditioning should be avoided for enhance accuracy.



Automatic calibration:

With this procedure heat plate temperature is modified until the temperature of the liquid inside 1-well structure reaches set point and remain stable within user defined tolerance range (accuracy).

After completing steps 1-7 click "Auto".

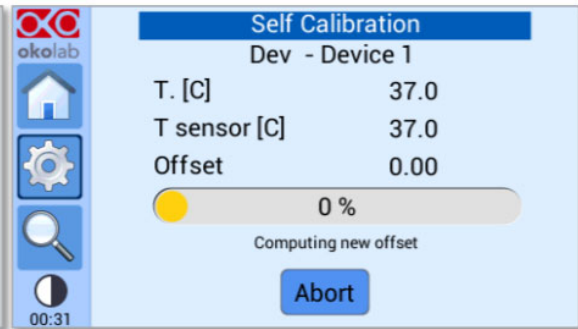
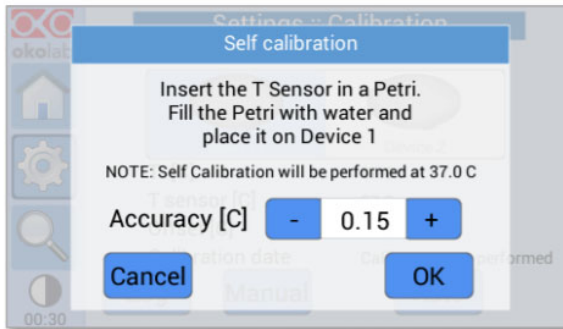
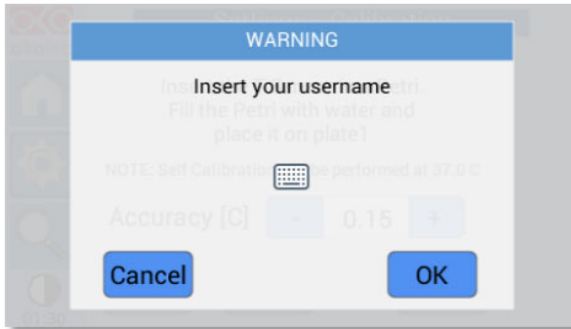
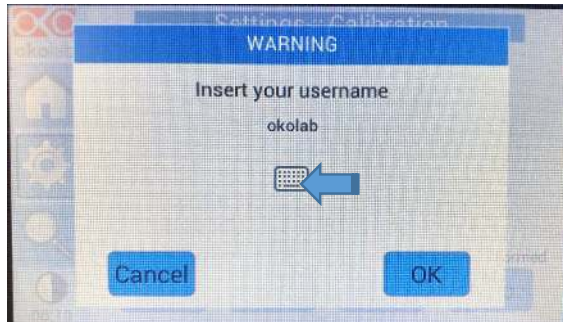
If password is set that has to be inserted before continuing to name typing.

If password is not defined, procedure will continue straight to name typing.

Type in name that can be later to be used to track down calibrations.

Insert accuracy that is wanted to achieve and press "OK" to start calibration. Device allow you to follow the process.

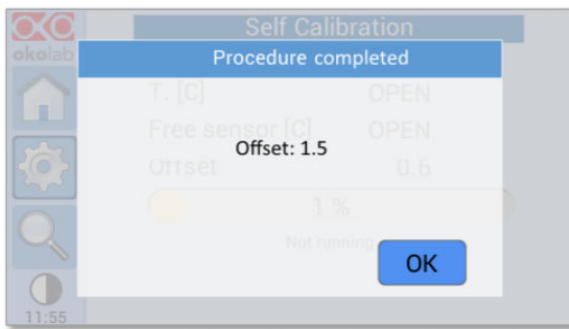
Calibration is completed when temperature sensor measures stable (set point) temperature for 20 minutes, within the accuracy defined by the user.



Auto-calibration can take up to 2 hours. Average time is 90 minutes.

If room temperature changes more than 1°C during calibration the calibration will not be successful. Accuracy in the liquid will not be achieved by ± 0.3°C.

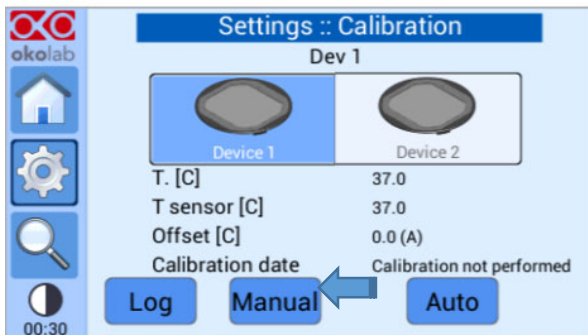
Direct air drafts to device will prevent successful calibration.



Automatic calibration is successful when the display shows offset value.

After calibration detach temperature sensor from 1-well structure and start using the device.

The touch screen is possible to be used while calibration is ongoing. Calibration procedure compilation screen will appear automatically.

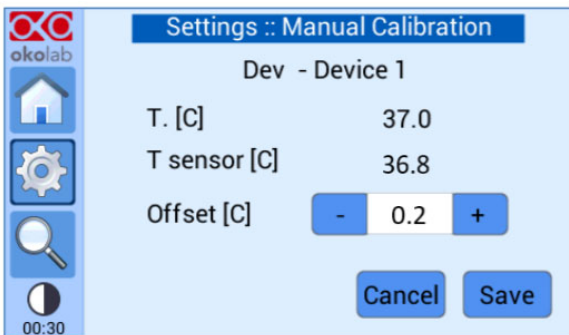


Manual calibration:

This procedure modifies manually the heat plate temperature until temperature sensor reaches set point value.

After completing steps 1-7 wait till the system has reached steady state, for example status led is green.

Click "Manual".



Adjust offset value meaning the temperature difference between heat plate set point and actual temperature measured with temperature sensor. Offset value can be set with + and – and press save.

In the left picture temperature difference between set point (37.0 °C) and actual temperature (36.8 °C) is 0.2 °C so this is the offset value.

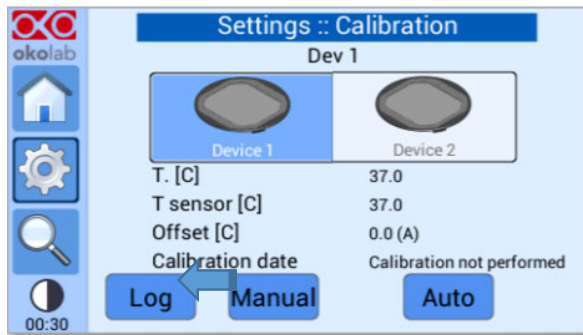
After setting offset value type in name that can be later to be used to track down calibrations. If password is set to device, that has to be inserted before continuing to name typing.

Wait until the actual temperature measured by the temperature sensor is stable (usually 10-20 minutes). If this temperature is close to the set point, manual calibration is finished. Otherwise, repeat manual calibration steps until set point temperature is reached with temperature sensor.



After calibration detach sensor from 1-well structure and start using the device.

If room temperature changes more than 1°C during calibration the calibration will not be successful. Accuracy in the liquid will not be achieved by $\pm 0.3^{\circ}\text{C}$.
 Direct air drafts to device will prevent successful calibration.



Previous calibrations

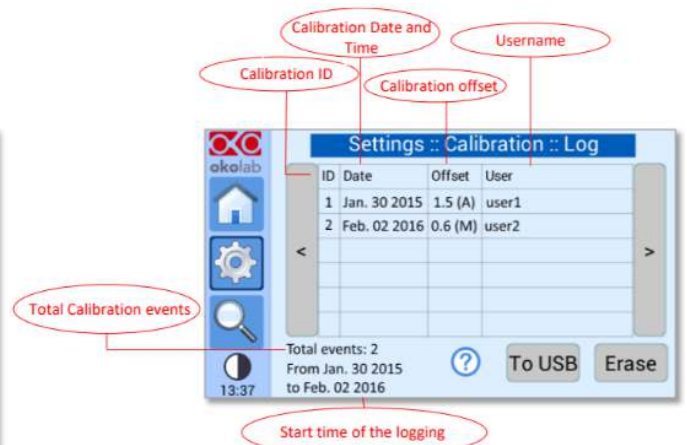
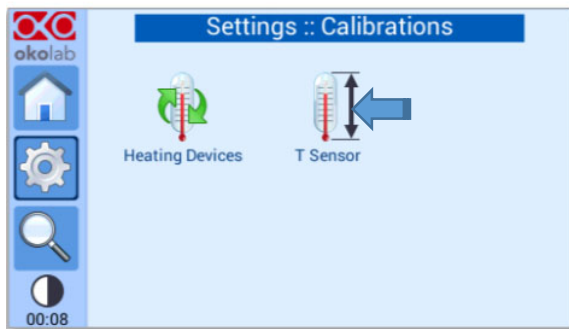
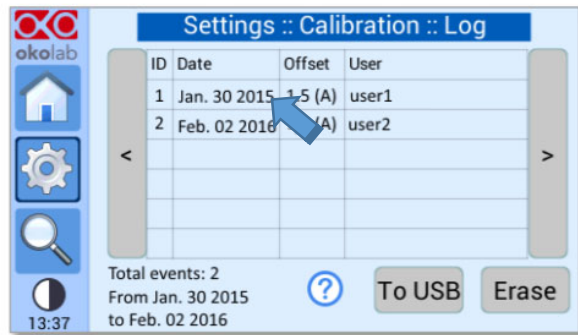
Previous calibrations are saved and by clicking "Log" list of previous calibrations is shown.

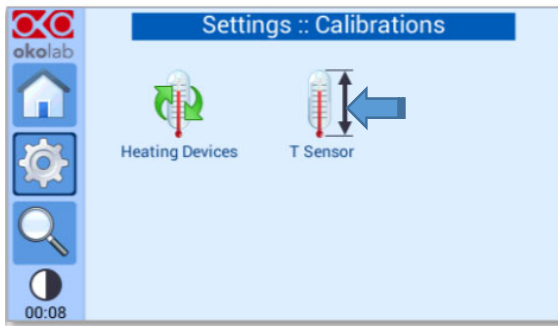
Click certain calibration row to view. That value can be used to the device by clicking yes.

By clicking "To USB" calibration data can be downloaded to USB drive.

By clicking "Erase" calibration data is deleted.

For this function it is possible to define password.



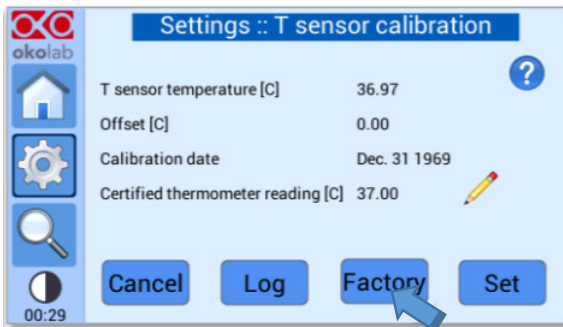


Temperature sensor calibration


Click T sensor  icon


Temperature sensor is calibrated initially at 35.0 °C, 37.0 °C and 40.0 °C.

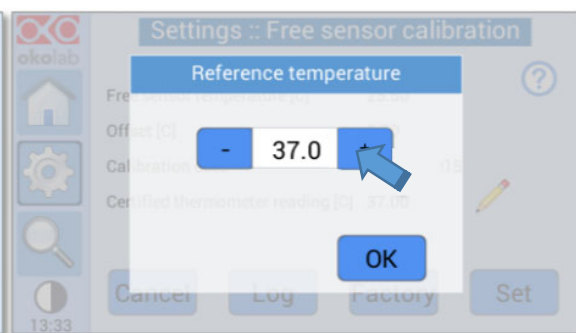
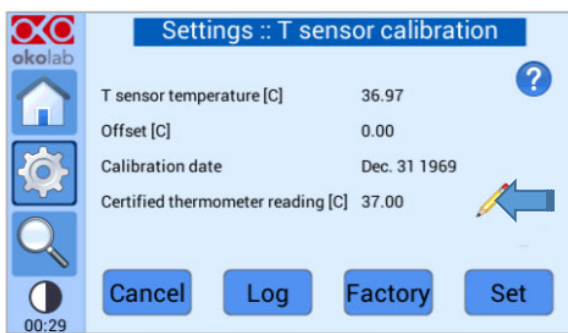
Factory settings can be seen by clicking "Factory".



Re-calibration of temperature sensor:

1. Set water bath to the set point temperature used during experiments (37 °C most of the time).
2. Immerse temperature sensor to water bath with a **certified thermometer**.
3. Type in the temperature value from thermometer by pressing pencil  icon and clicking "OK".
4. Click "Set" to set the reading of the temperature same as thermometer.

 *Icon gives information how to calibrate temperature sensor.*

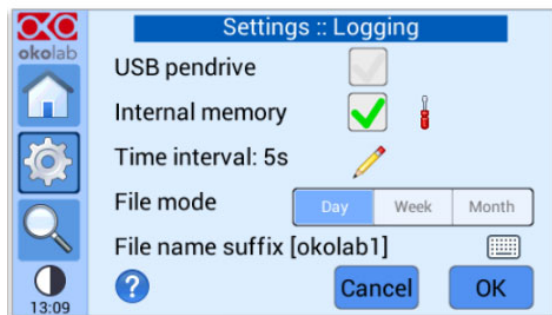
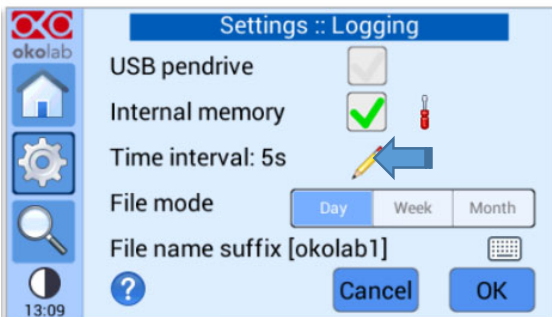
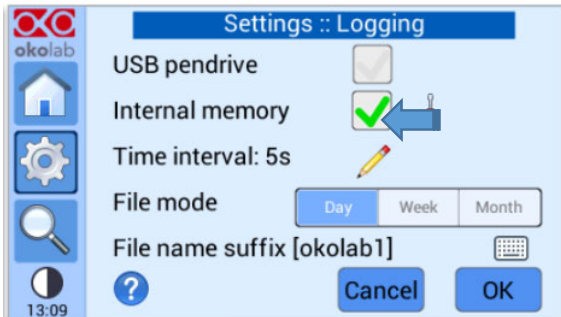





Settings: Data logging

Calibration data and temperature data can be stored to device internal memory or directly to USB drive.

To log data to internal memory:



1. Click Logging  icon. From Log subpage click "Internal memory".


2. Click pencil  icon to set logging interval in range of 1-60 seconds.

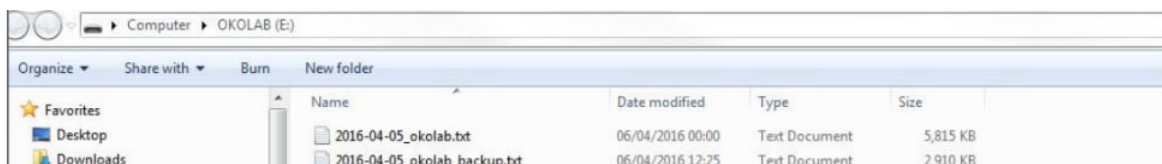
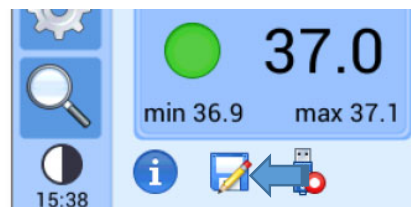
3. Choose how the data is split into files. If "Day" mode is chosen, each day temperature data is stored in separate file. If "Week" mode is chosen, each week temperature data is stored in separate file. If "Month" mode is chosen, each month temperature data is stored in separate file.

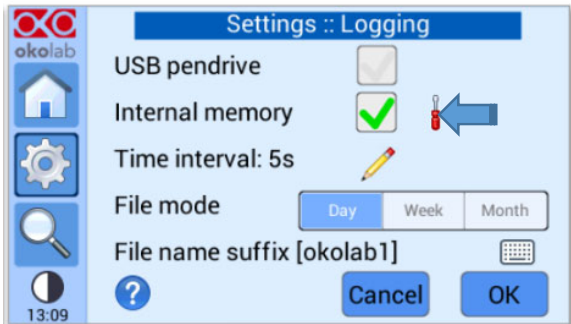
4. Label stored data by clicking keyboard




icon and press "Save" to start logging. By this label data is found when downloaded to the USB drive.

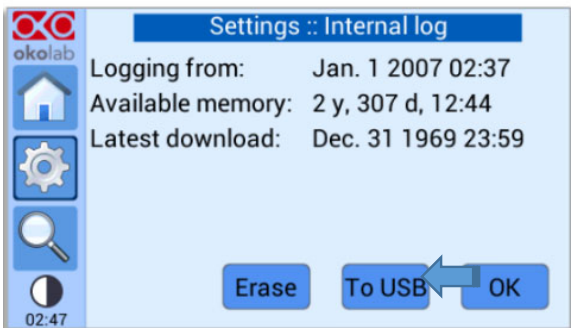
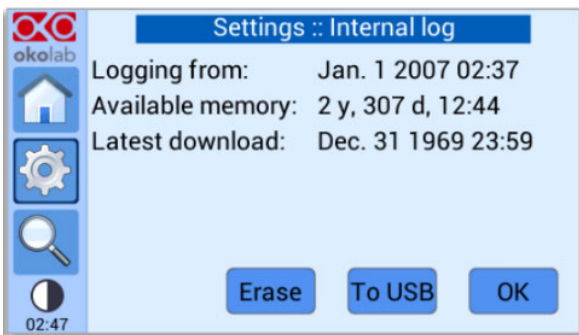
5. When internal memory logging starts  icon appears to the homepage. The logging page is accessible while logging and can be also accessed from home page.






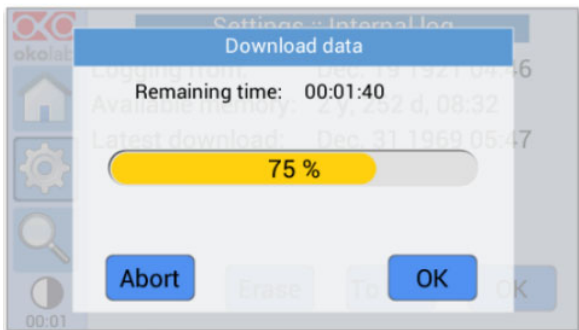
6. By pressing screwdriver  icon, the logging starting date, available memory and latest download can be seen.

Available memory is dependent on logging time. You can save internal memory by decreasing logging time interval.



To save data to USB drive:

From subpage clicked from screwdriver  icon saved data is possible to download to USB drive. Connect USB drive and click "To USB". By clicking "Erase" saved data is deleted.



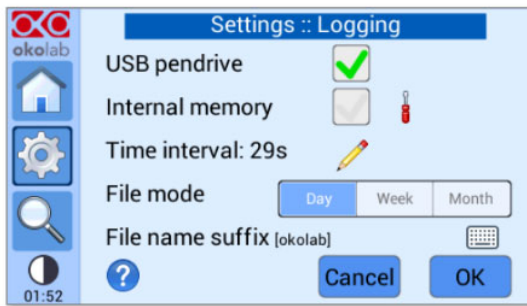



Log data to USB drive:

1. USB pen drive must be connected to the back of the device. (See page 20) USB drive icon




activates in the homepage when connected.

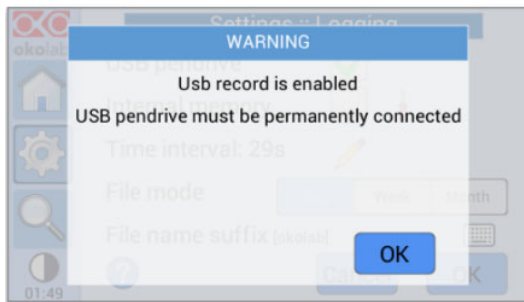



2. Click Logging  icon. From Log subpage click "USB pendrive".

3. The device reminds that USB drive must be connected at all time during logging.

4. Click pencil  icon to set logging interval in range of 1-60 seconds.

5. Choose how the data is split into files. *If "Day" mode is chosen, each day temperature data is stored in separate file. If "Week" mode is chosen, each week temperature data is stored in separate file. If "Month" mode is chosen, each month temperature data is stored in separate file.*

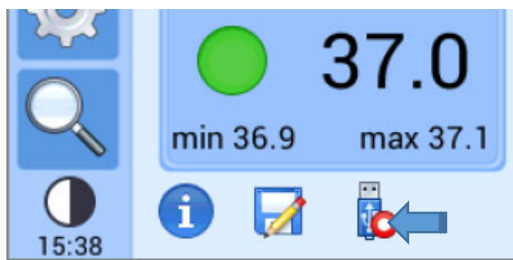


6. Label stored data by clicking keyboard  icon and press "Save" to start logging. By this label data is found when downloaded to the USB drive.

7. When USB drive logging starts red dot

appears on USB drive  icon in homepage.

Do not disconnect USB drive while logging.



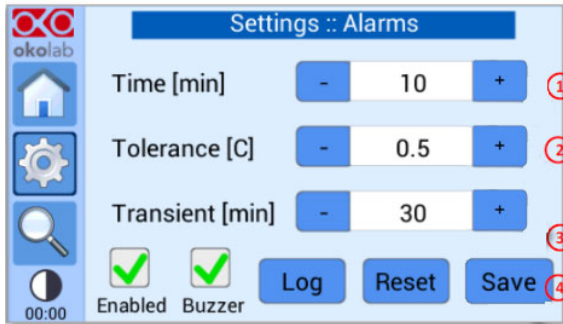


Settings: Alarms

Alarm can be set to inform if temperature deviates from set point for defined period of time. Alarm can be beside visual also audible.

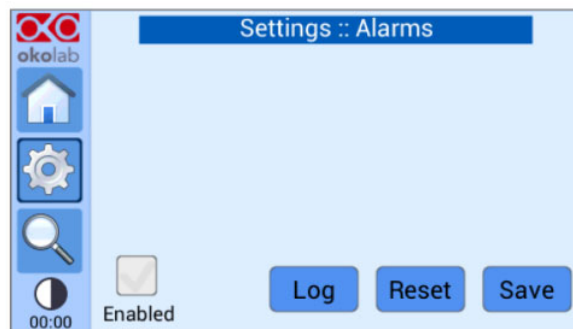


Click alarms icon to set alarm:

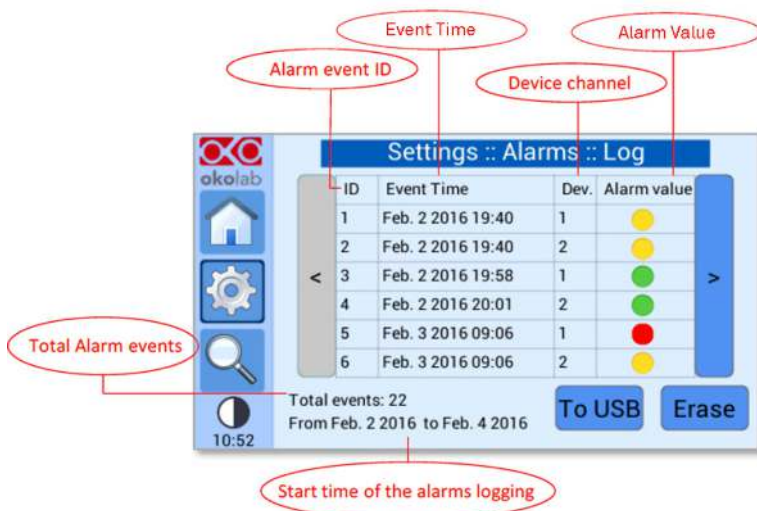


1. Define the time that heat plate temperature may remain outside allowed tolerance before triggering alarm.
2. Define the tolerance value which temperature cannot go over or below.
3. Define transient time meaning the time that system can take to reach a new set point without triggering the alarm.

The transient time should be twice the time that heat plate normally takes to heat to the set temperature



4. The audible alarm is enabled by ticking "Buzzer". The alarm is always visual. To disable alarm remove tick from "Enabled". After this device will not alert from deviating temperatures, only if problems occur.
- 5.
6. Press "Save" to save changes.



Alarms log:


By clicking "Log" all led status changes can be viewed.

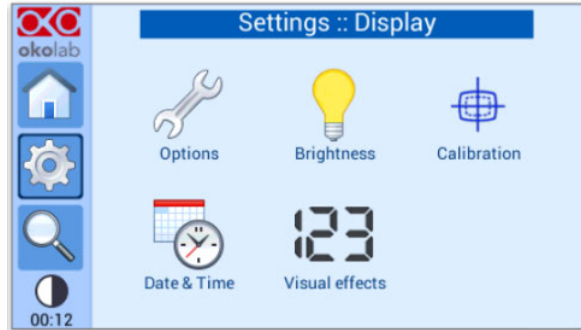
This data can be stored to USB drive by clicking "To USB" or delete by clicking "Erase".




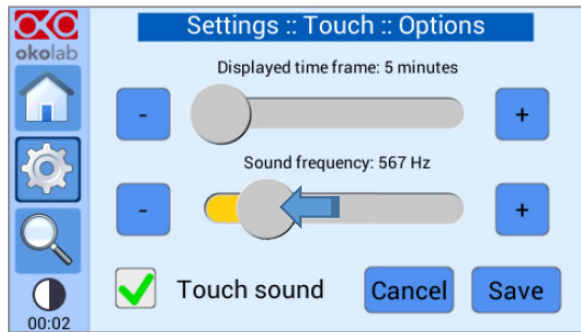
Settings: Display


Click display  icon to access display menu.

From option  icon the time frame for minimum and maximum temperature displayed in homepage can be modified. Also from this subpage touch screen sound can be disabled and sound frequency can be modified. After adjustments press "Save".



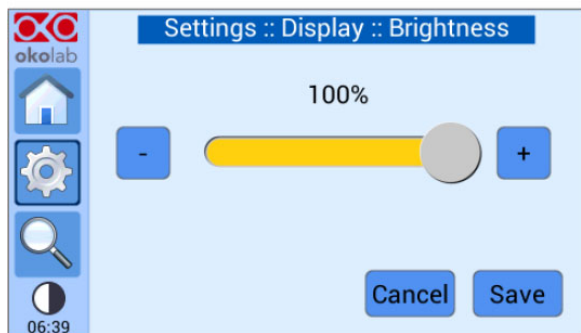
From brightness  icon display brightness can be modified. After adjustments press "Save".

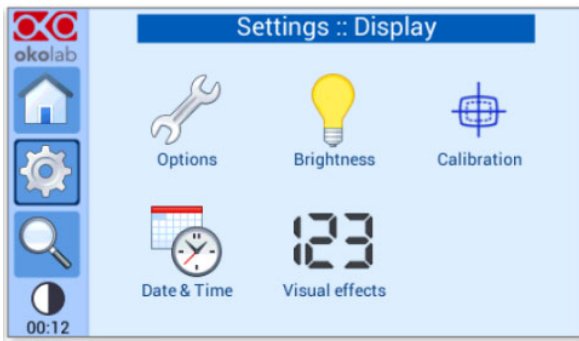



From calibration  icon touch screen is calibrated. Device asks to touch three points on display thus recalibrates the touch

Touch screen calibration procedure can be started also by holding power button for 10 seconds.

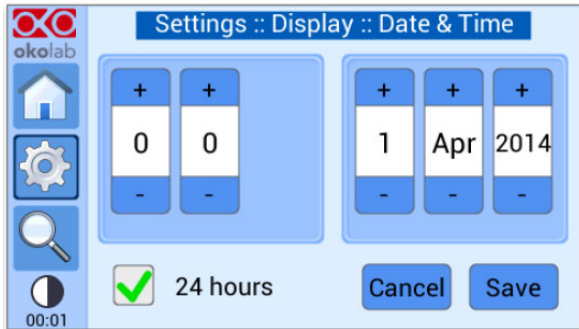
interface.





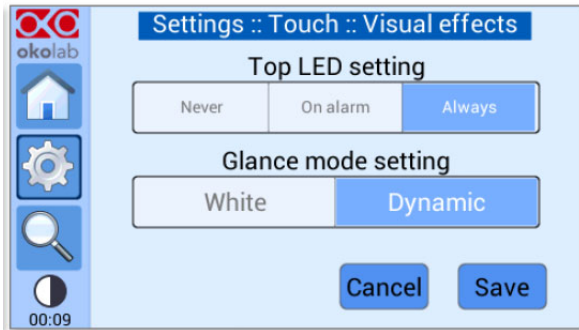
From Date & time  icon date and time values can be set. Time can be displayed either 24 or 12 h format. After setting time and date press "Save".


From visual effects  icon top led and glance mode settings are controlled.



Top LED settings control when the top led is illuminated. "Never" settings will disable top led, "On Alarm" led will illuminate only when device is on alarm status and "Always" setting will allow top led to illuminate status color all the time.

Glance mode settings define the top LED color and glance mode colors. "White" setting keep these all the time white, while "Dynamic" colors will show the status of the device according to colors defined in page 24.



By clicking Glance mode  icon display enters glance mode.

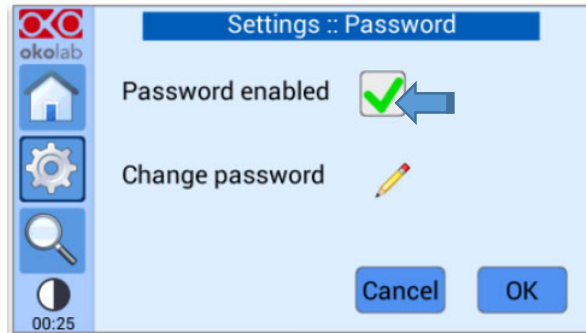





Settings: Password

Password is possible to set for following procedures:


- Heating devices calibration procedures
- Temperature sensor calibration
- Data download
- Data erase



To set password click password  icon.

Flag password enable to enable password.

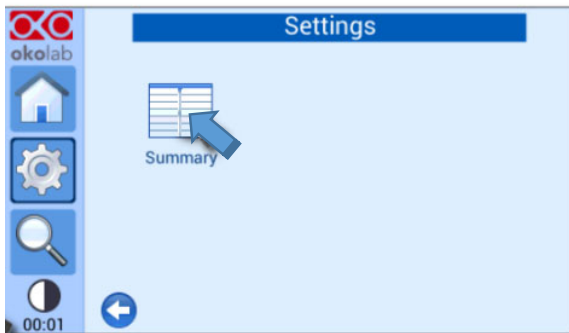
Default password is okolab.

To set password click change password  and follow instructions.



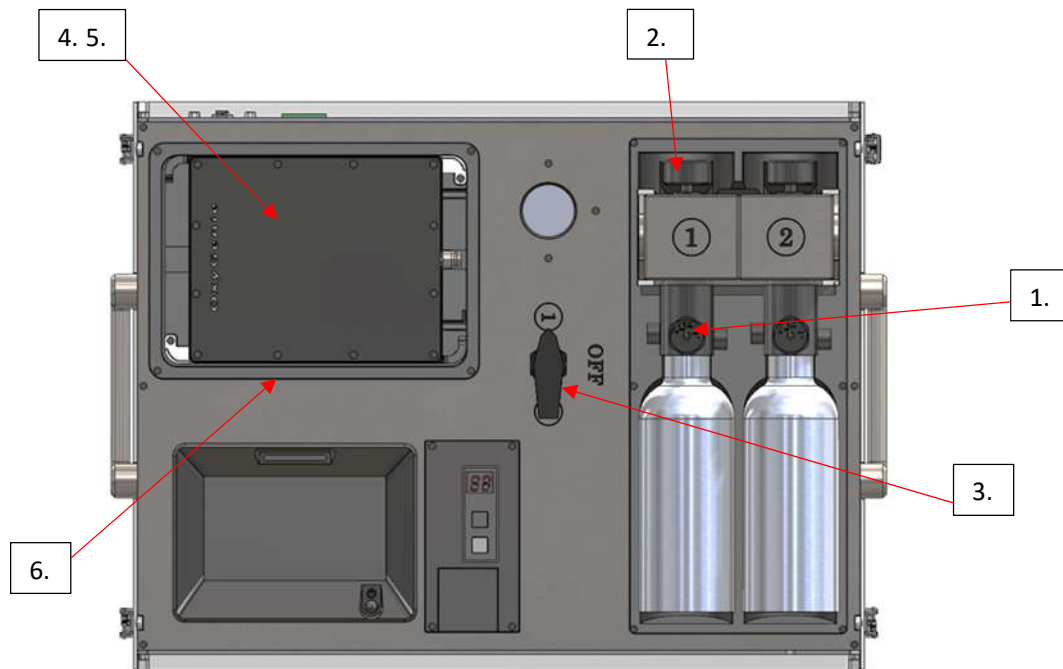
Settings: Summary

The summary page reports technical information and summary about the Okolabs heating device settings.



Summary			
Dev 1 SP	37.0	Dev 2 SP	37.0
Dev1 Ramp rate	MAX	Dev2 ramp rate	1.000
Dev1 Offset	-0.6	Dev2 Offset	-0.7
Alarm Time	10	Alarm Dev	0.5
Alarm transient	30	Alarm enabled	On
Alarm buzzer	Off	Min and max length	5
Touch buzzer freq.	300	Touch sound	On
Display brightness %	100	T sensor offset [C]	0.00

CHECKLIST



1. Check the gas bottles. Make sure there are enough gas and correct gas composition.
2. Check that correct gas bottle valve is open and the other is closed.
3. Check that the gas bottle selection valve is pointing to the correct position.
4. Check that 6-well flow divider is resting right above the heat plate
5. Check that covers are adjusted tightly around the 1-well structures.
6. Check settings for heat plate.

System is now ready to use. When possible keep device on charging. If the battery is fully charged the whole system is portable and will maintain all functions with a battery life of 2 hours.

WARRANTY INFORMATION

Ruskinn Technology Limited warrants for the applicable time period that the OxyGenie™ will substantially perform in accordance with the user documentation. The terms of this Agreement do not affect or prejudice the statutory rights of a consumer acquiring the Ruskinn Technology Limited OxyGenie™ otherwise than in the normal course of a business.

THIS WARRANTY DOES NOT APPLY IN THE FOLLOWING CIRCUMSTANCES:

(A) IF THE Ruskinn Technology Limited OxyGenie™ HAS BEEN REPAIRED BY PERSONS NOT AUTHORIZED BY Ruskinn Technology Limited; OR

(B) THE Ruskinn Technology Limited OxyGenie™ AND ASSOCIATED ACCESSORIES/PERIPHERALS HAVE BEEN ALTERED, MODIFIED, OR MISUSED; OR

(C) THE Ruskinn Technology Limited OxyGenie™ IS USED WITH NON- Ruskinn Technology Limited COMPONENTS; OR

(D) THE Ruskinn Technology Limited OxyGenie™ OR A COMPONENT IS USED FOR OTHER USES (FOR EXAMPLE USE WITH OTHER CIRCUIT BOARDS OR SOFTWARE) OR

(E) THE Ruskinn Technology Limited OxyGenie™ HAS NOT BEEN MAINTAINED OR USED IN ACCORDANCE WITH THE INSTALLATION AND USER GUIDE. UNLESS PROHIBITED BY LAW, THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, THE IMPLIED WARRANTY OF MERCHANTABILITY, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE. Ruskinn Technology Limited DOES NOT WARRANT THAT THE Ruskinn Technology Limited OxyGenie™ WILL FUNCTION ERROR FREE.

If within the Warranty Period, the Ruskinn Technology Limited OxyGenie™ does not conform to the express warranty set forth above, Ruskinn Technology Limited's sole obligation and Users sole remedy shall be, at Ruskinn Technology Limited's option: 1. to repair or replace the non-conforming component; or, 2. refund the purchase price.

LIMITATION OF LIABILITY.

UNLESS PROHIBITED BY LAW, Ruskinn Technology Limited WILL NOT BE LIABLE TO USER OR OTHERS FOR ANY OTHER DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES INCLUDING, FOR EXAMPLE, LOST PROFITS, BUSINESS, INVESTMENTS, OR OPPORTUNITIES EVEN IF Ruskinn Technology Limited HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

The parties agree that Ruskinn Technology Limited total cumulative liability to User for direct damages for all causes under this Agreement shall not exceed £5,000,000 (FIVE MILLION UK STERLING POUNDS), or the price paid for the Ruskinn Technology Limited OxyGenie™ whichever is higher. Some states or countries may have laws which require liability rights different from those stated above. In such states or countries, the minimum required liability terms shall apply.

DISPOSAL INFORMATION

OxyGenie™ contains hazardous components and must not be disposed of at a household waste site. Instead it should be taken to the appropriate collection point for the recycling of electrical and electronic equipment. Alternatively, please contact your local distributor for disposal instructions.

OxyGenie™ contains recyclable parts. Please contact your local distributor for more advice

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YouTube channel <http://www.youtube.com/ruskinntechnology>

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