



**H401-T-PENNY**  
**Temperature Controller**

**Manual**

IST1450\_REV05  
SV 1.4.0.0

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**H401-T-PENNY** is a compact single-channel temperature controller allowing to set and control the temperature of a single channel Okolab heating device. It is a reliable solution to maintain the effective desired temperature of the specimen right on the microscope stage within the range 25-60°C.

H401-T-PENNY includes the Temperature Controller, only. The heating device must be ordered separately.

A variety of heating devices can be connected to H401-T-PENNY, for example: heating plates, both glass and metal, for inverted, upright and stereo microscopes; glass heating tables; metal heating pads and objective heaters. The heating plates –both glass and metal- are designed to fit into the opening of XY stages of upright and inverted microscopes. Several models of glass and metal heating plates can be selected from the Okolab portfolio. Custom solutions are available upon request. The glass heating table can be placed in the optical path of any stereomicroscope and provides a large, flat, clear, warm surface where one or more specimens can be maintained at physiological temperature. The glass heating table is also suitable for small animal surgery. The metal heating pads are temperature-controlled surfaces that can be positioned on any laboratory workbench or desk surface (e.g. table top, cabinet work surface, etc.) to keep Petri dishes, slides, and tubes at the right temperature before microscope observation. The objective heater is a flexible heated band designed to maintain the desired temperature of the objective body and lenses. It is necessary when the objective is in contact with the sample during water dipping or oil immersion observation.

The H401-T-PENNY allows you to perform the heating device calibration by comparing its temperature value with the value read by an external temperature meter (NOT SUPPLIED).

The H401-T-PENNY features an intuitive interface that combines performance and simplicity.

Okolab recommends reading carefully this manual to familiarize yourself with the functions and the operation of H401-T-PENNY before use.

## 2 Symbol description

This paragraph describes the symbols used in this manual and on the product label.

### 2.1 Symbols used in this manual

The following symbols identify important information to note:



CAUTION or WARNING: this symbol warns you about the risk of electrical shock.



CAUTION or WARNING or IMPORTANT: this symbol warns you of circumstances or practices that can affect the functionality of the instrument.

**Tip** ► *Supplies you with helpful suggestions.*

**Note** ► *Supplies you with important information to successfully use the instrument.*

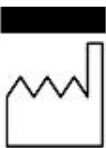
### 2.2 Symbols on the product label



CE MARKING: this symbol indicates product compliance with EU legislation.



PRODUCT DISPOSAL: this symbol indicates that this product must not be disposed as urban solid waste.



This symbol indicates the product production date.



This symbol indicates the Manufacturer data.



This symbol indicates the protection degree against ingress of solids or liquids inside the product.



This symbol warns you to read the user manual before starting the device.

In order to achieve best performance and to ensure proper operation of your new equipment, please read carefully the following safety notes and instructions. If you have any question, please contact Okolab at: [info@oko-lab.com](mailto:info@oko-lab.com)


- The equipment must only be used as intended and as described in this Manual.
- Equipment should be operated only by technically qualified personnel.
- Do not start up the equipment if some of its parts are damaged.
- This instrument is not intended for use in locations subject to flammable or explosive gases.
- Transport the equipment with care.
- Equipment and its internal parts can be damaged by dropping and by shock.
- Some equipment parts may reach temperatures above 60°C. Take care when touching it.
- Avoid rapid changes in ambient temperature which may cause condensation, avoid direct air draft from air conditioner, exposure to direct sunlight and excessive heat accumulation.
- Do not disassemble any part of the system.
- Do not disconnect cables while in operation.
- Do not use a volatile solvent such as paint thinner to clean the instrument, because deformation or discoloration may occur.
- Use a soft, dry cloth to remove stains from the instrument.
- Do not exceed voltage indicated in this manual and on the product label.
- Avoid excessive induction noise, static electricity and magnetic fields.
- Do not expose this instrument to rain or moisture.
- Prevent throttling and kinking of cables.



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- Do not start up the equipment if the supply cable is damaged.
  - Connect the equipment only to grounded mains power socket.
  - Before starting, assemble the equipment while unplugged from an outlet.
  - Prevent metal fragments or lead wire scraps from falling inside instrument case to avoid electric shock, fire or malfunction.



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 International caution symbol marks this device. **IMPORTANT:** read the “Safety Notes” before installing, using and commissioning this device, as the notes contain important information relating to safety and EMC. Not following these instructions can result in damage or breakdown of the device and of its accessories.

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We reserve the right to make technical modifications.

IN NO EVENT OKOLAB S.R.L. SHALL BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR FINANCIAL LOSS RESULTING FROM IMPROPER USE OF THE PRODUCT.

#### 4 Supplied equipment

- 1 **Controller.** One channel temperature controller. See Figure 1 (1).
- 2 **Device support/cradle.** See Figure 1 (2)
- 3 **Power supply and power cord.** 24V DC-60 W power supply. See Figure 1 (3)
- 4 **Heating device connector.** See Figure 1 (4)

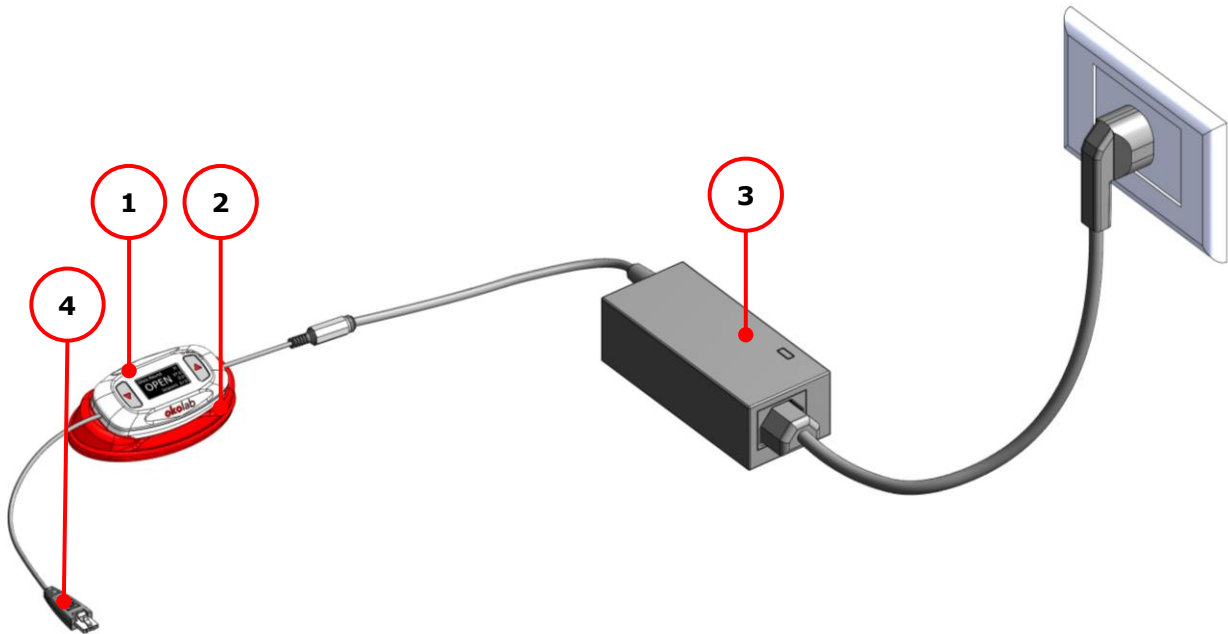


Figure 1. H401-T-PENNY – Components.

## 5 Equipment Description

**H401-T-PENNY** is a compact single-channel temperature controller allowing to set and control the temperature of a single channel Okolab heating device. It is a reliable solution to maintain the effective desired temperature of the specimen right on the microscope stage within the range 25-60°C.

A detailed description of H401-T-PENNY is provided in the following list, which refers to the pointers in Figure 2:

- 1 **Heating Device connector**
- 2 **DOWN button (-)**
- 3 **Display**
- 4 **UP button (+)**
- 5 **24 VDC Power Input**

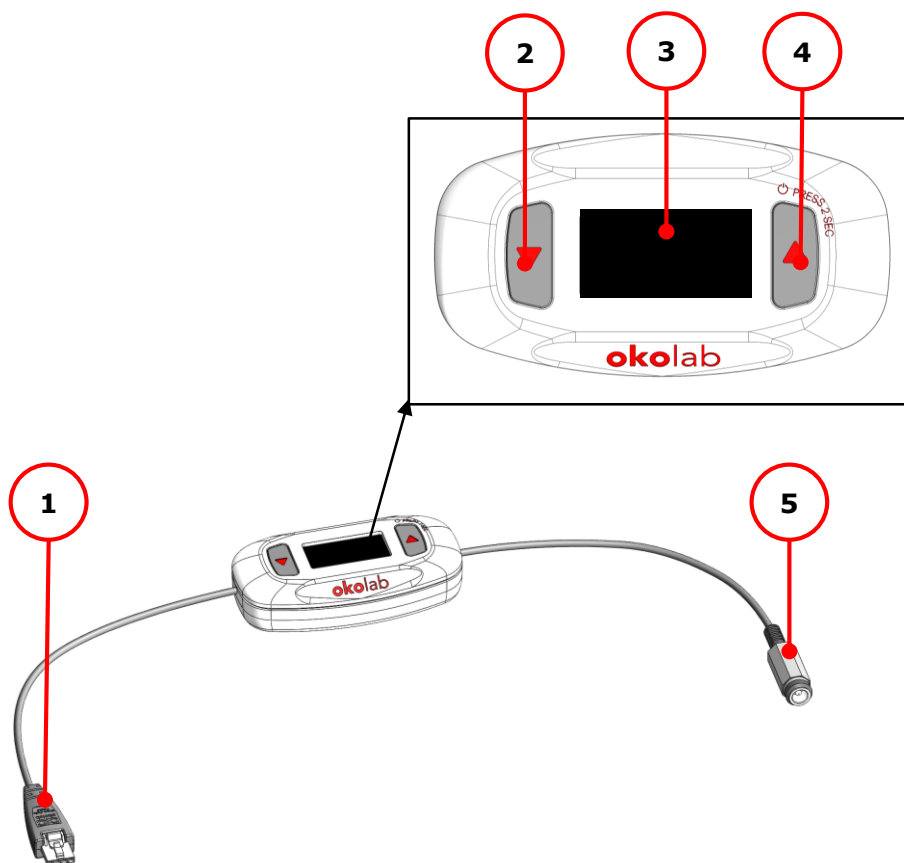


Figure 2. H401-T-PENNY – Equipment description.

### 5.1 Navigation buttons

H401-T-PENNY has two navigation buttons:

- DOWN button (see Figure 2 (2))
- UP button (see Figure 2 (4))

There are two different press modes:

- 1 for 1 second
- 2 for 2 seconds

Keeping the buttons pressed for 1 or for 2 seconds allows you to access different features. The following table lists the navigation buttons functions.

UP BUTTON for 1 second	Increase Value (+)
UP BUTTON for 2 seconds	Turn OFF/ON
DOWN BUTTON for 1 second	Decrease Value (-)
DOWN BUTTON for 2 seconds	Go to Menu
UP & DOWN BUTTONS at the same time for 1 second	Enter
UP & DOWN BUTTONS at the same time for 2 seconds	Cancel/Back

Table 1. UP and DOWN buttons functions.

### 5.1.1 ON/OFF device

To turn H401-T-PENNY on, keep the UP button pressed for 2 seconds (see Figure 3). The device will turn ON.

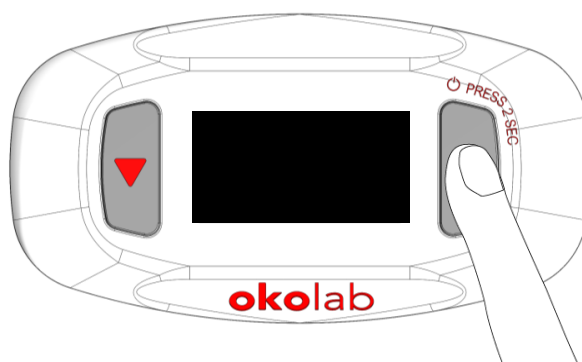


Figure 3. Turning H401-T-PENNY on.

To turn H401-T-PENNY off, keep the UP button pressed for 2 seconds (see Figure 4 a), then press UP for 1 second, following the display info as shown in Figure 4 b. Press DOWN button for 1 second to undo.

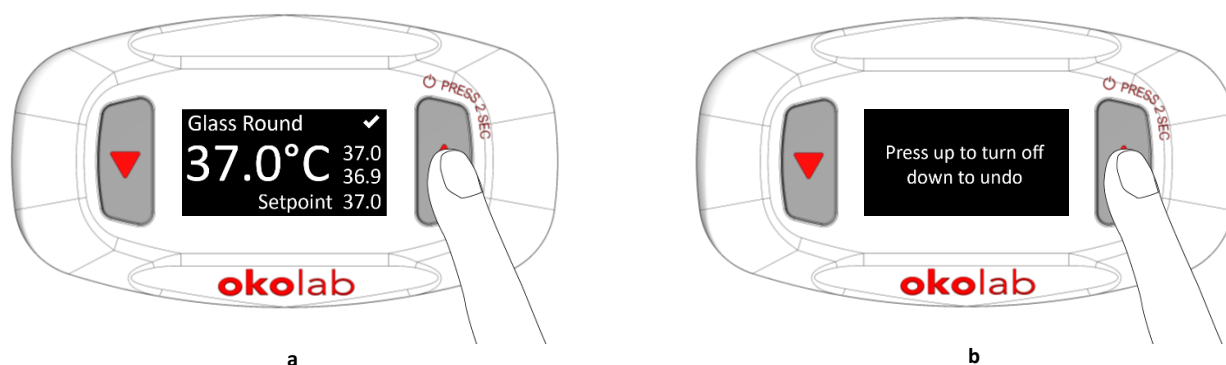


Figure 4. Turning H401-T-PENNY off (a - b).

H401-T-PENNY can control the temperature of a single heating device.

### 6.1 Compatibility

H401-T-PENNY is compatible with all the single channel (only glass or only metal) H401, H601 series heating devices, and with Objective Heaters.

For a complete list of compatible heating devices, refer to: [www.oko-lab.com](http://www.oko-lab.com).

## 6.2 Connections of the heating device

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Do not turn H401-T-PENNY ON until you have completed and checked all connections.

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Follow the instructions below to connect the heating device to H401-T-PENNY.



*Figure 5. Connection of the heating device.*

- 1 Connect the heating device to the Heating Device connector of H401-T-PENNY (see Figure 5 and Figure 2 (1)).
  - 2 Connect the Power Supply to the 24 VDC Power connector (see Figure 5 and Figure 2 (5)).
- 



Use only the power supply provided by Okolab, to prevent system instability, random reset, unexpected shutdown, or problems due to insufficient power.  
For assistance, contact Okolab at [support@oko-lab.com](mailto:support@oko-lab.com).

Do not connect AC power supply to your device until you have completed all the connections shown in Figure 5.

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This chapter describes the user interface of H401-T-PENNY.

Before using the heating device, you need to complete the following setup steps:

1. Set the temperature set point, as described below in the below section 7.1.2
2. Set the device type as described below in the below section 7.2
3. Do a temperature check and if needed, apply a calibration offset as described in the below section 7.2.2

## 7.1 Homepage

Figure 6 shows the main display, in particular it highlights 5 points illustrated below.

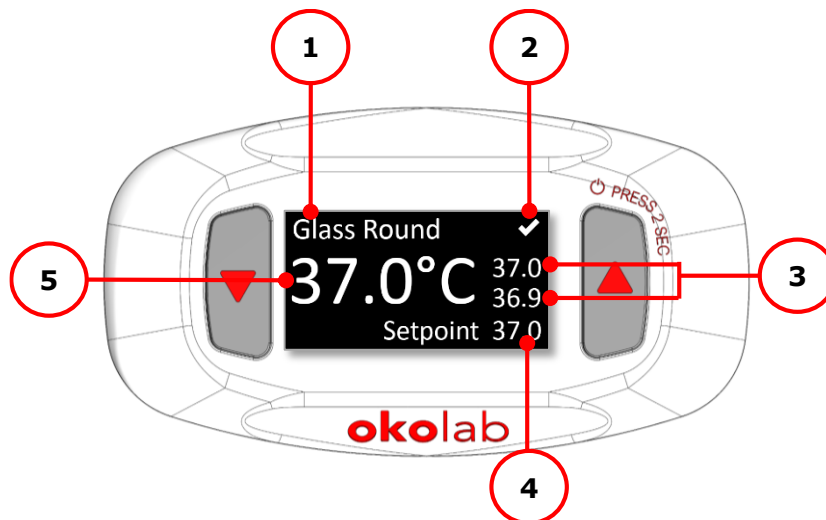


Figure 6. Home page.

- 1 Device type category: it is the type of heating device connected to H401-T-PENNY. See paragraph 7.2.1.1
- 2 Status Icon: it represents the device status. See paragraph 7.1.1.
- 3 Device Minimum and Maximum temperatures reading within 1 minute.
- 4 Device temperature Setpoint. See paragraph 7.1.2.
- 5 Device temperature current value.

**Tip** ► Setpoint Temperature is pre-set at 37. Once turned on, H401-T-PENNY will start operating to reach 37.

**Note** ► If no device is connected, the display shows OPEN, see Figure 7.

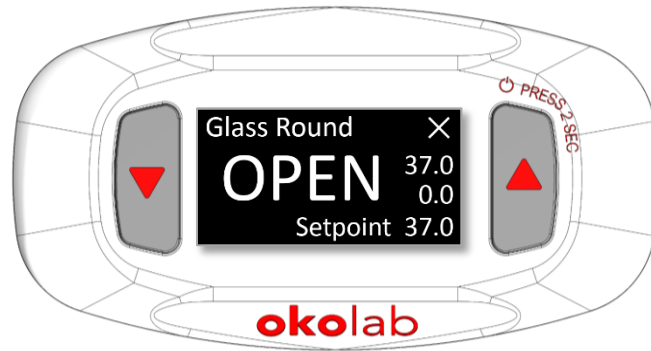
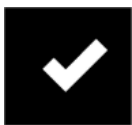


Figure 7. Home page with no device connected.

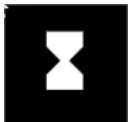
### 7.1.1 Status icons

H401-T-PENNY can assume four different Status, represented by four Status Icons (see Figure 6 (2)).



The *Check Mark* icon indicates that the Setpoint value has been reached (within the tolerance defined in the alarm subpage, see paragraph 7.2.3) and that the system is working properly.

**Controller Status: NORMAL**



The *Hourglass* icon indicates that the controller is in transient regime. The *Hourglass* icon will appear immediately after the controller is turned on and after any Setpoint change. The system is working properly, it is not in alarm and no action is needed. As soon as H401-T-PENNY stabilizes the temperature of the heating device, the Controller Status changes to NORMAL and the *Check Mark* icon appears. If the H401-T-PENNY cannot stabilize the device temperature within the maximum time defined by the operator (see paragraph 7.2.3), the Controller Status changes to ALARM and the *Alert* icon appears.

**Controller Status: TRANSIENT**



The *Alert* icon indicates that the current Temperature value is out of the tolerance defined in the alarm subpage (see paragraph 7.2.3).

**Controller Status: ALARM**



The *Error Cross* icon indicates that there is a problem with the unit itself (for example a Temperature sensor is broken or the Heating device is disconnected). The system is in alarm. Turn the system off, wait for 5 minutes, and turn it back on. If the icon is still present, contact Okolab at [support@oko-lab.com](mailto:support@oko-lab.com) for assistance.

**Controller Status: ALARM**

### 7.1.2 Entering the Setpoint temperature

To input a new Setpoint temperature of the heating device, follow the instructions below:

1. Press the UP or DOWN button for 1 second (as indicated in Figure 8 a) and the *Setpoint* will highlight (see Figure 8 b).

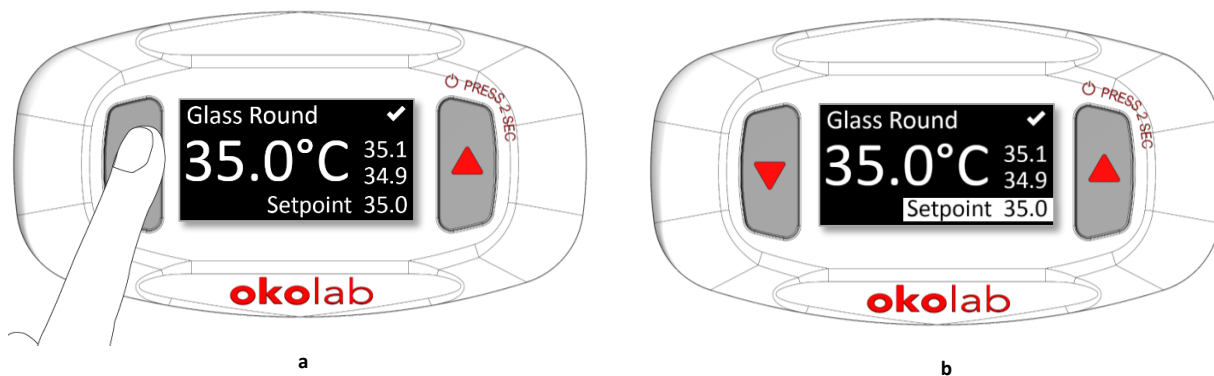


Figure 8. Definition of the Setpoint (a - b).

2. Press again the UP or DOWN button to increase (as indicated in Figure 9) or decrease the Setpoint value.

**Tip** ► By keeping pressed the UP or DOWN button for 2 seconds, the scrolling becomes faster.

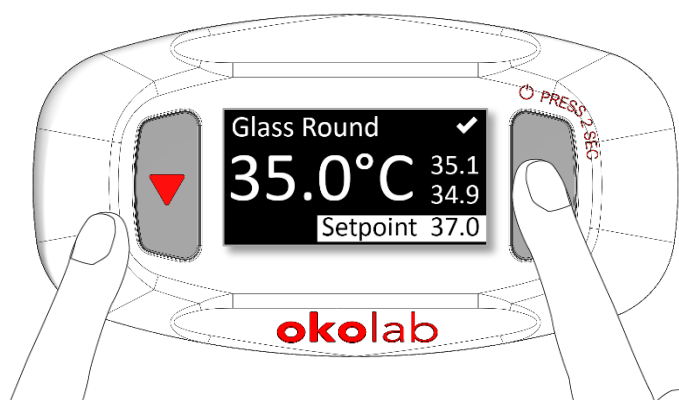


Figure 9. Input of the Setpoint value.

3. Confirm the Setpoint value by pressing UP & DOWN buttons at the same time for 1 second (see Figure 10 a).

To cancel and return to the old Setpoint, press UP & DOWN buttons at the same time for 2 seconds or wait 5 seconds without pressing any button.

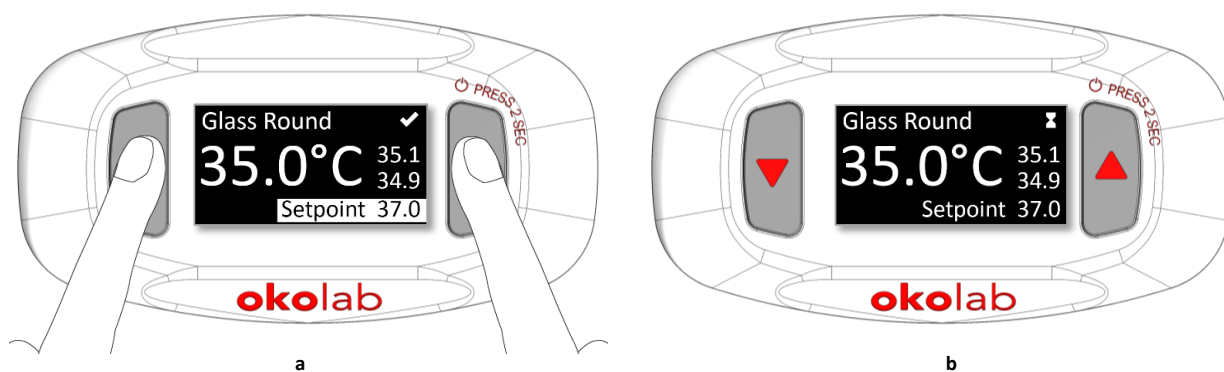




Figure 10. Confirm the Setpoint value (a - b).

**Note** ► After any change in Setpoint value the controller enters into a transient regime. The Alert icon  will appear, as in Figure 10 b. During the transient regime, the controller will not go in alarm. As soon as

H401-T-PENNY stabilizes the temperature of the heating device, the controller status changes to NORMAL and the Check Mark icon  appears.

## 7.2 Menu navigation

Press DOWN button for 2 seconds to access the Menu page (see Figure 11). Press UP or DOWN button for 1 second to scroll the menu items (see Figure 12) and choose the submenu. Submenus are: *Device selection, Calibration, Alarm, Unit, Status, System info*.

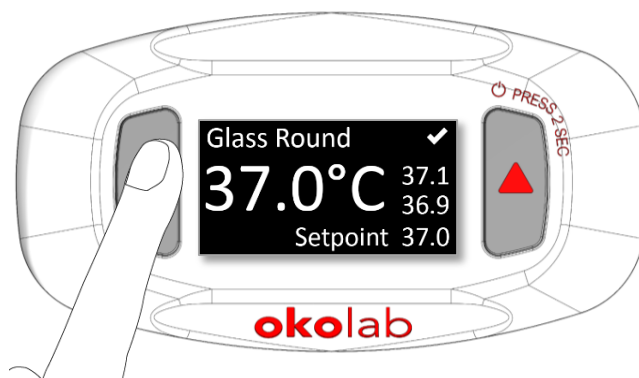


Figure 11. How to access to Menu navigation: press DOWN button for 2 seconds.

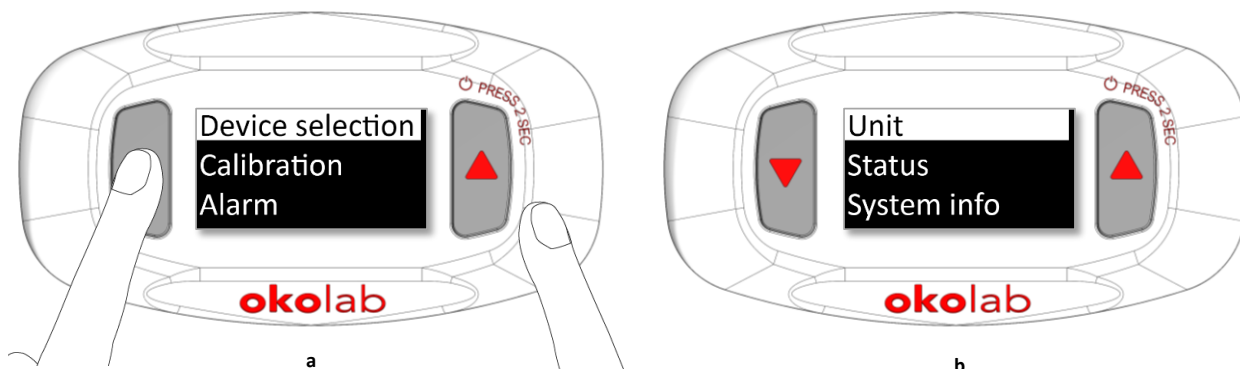


Figure 12. H401-T-PENNY Menu. Scroll by pressing UP or DOWN button for 1 second a) page1/2; b) page 2/2.

### 7.2.1 Device selection

The Device selection menu allows to select the type of heating device connected to H401-T-PENNY.

#### 7.2.1.1 Setting the proper Device Type

To set the proper Device Type follow the instructions below:

1. Read the Type Number from the Product Label (see Figure 14).
2. Press UP & DOWN buttons at the same time for 1 second to enter the *Device selection* submenu (see Figure 13 a).
3. Use UP or DOWN button to scroll the Type number list (see Figure 13 b).

**Tip** ► By keeping pressed UP or DOWN button for 2 seconds, the scrolling becomes faster.

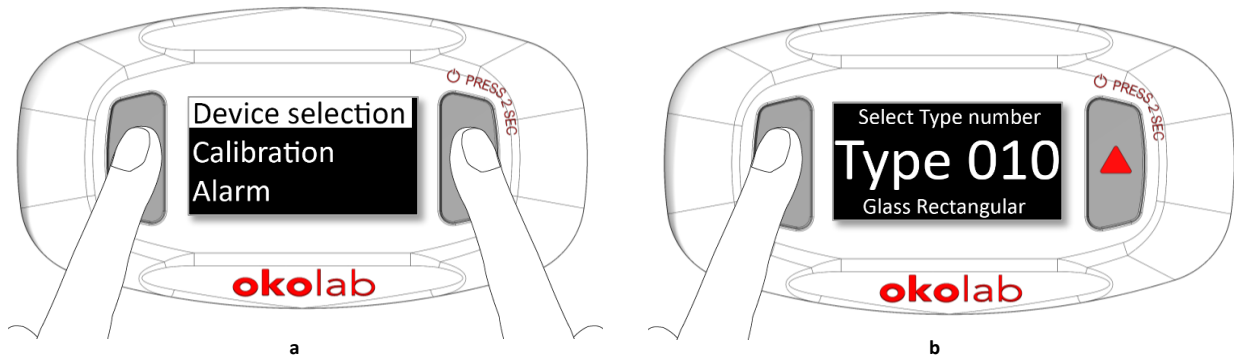


Figure 13. Device selection (a) and Device selection submenu (b).

- When the Type Number shown on the display corresponds to the Type Number on your heating device label (see Figure 14), press UP & DOWN buttons at the same time for 1 second to select it (see Figure 15). To cancel and return to menu page press UP & DOWN buttons at the same time for 2 seconds or wait 30 seconds without pushing any button.



Figure 14. Heating device label.

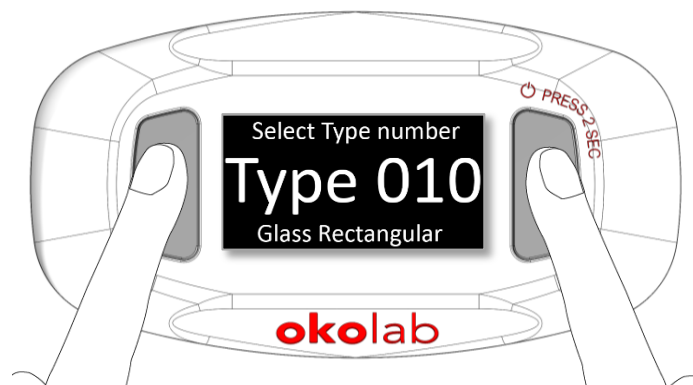


Figure 15. Selecting the Device Type Number.



H401-T-PENNY is pre-set with *Type 010*. Once turned on, it will start operating with the parameters of Device Type 010. To optimize the temperature control of your heating device, set the Type Number that you can read on the heating device label.

### 7.2.1.2 Advanced: How to manually set the control parameters

You can manually input the control PID parameters by selecting “Type 000” and inserting the values for  $K1$ ,  $T1$ ,  $K2$ ,  $T2$ ,  $\Delta T$  parameters.

**Tip** ► When selecting “Type 000”, the display shows “Custom” as Device Type. See Figure 16.

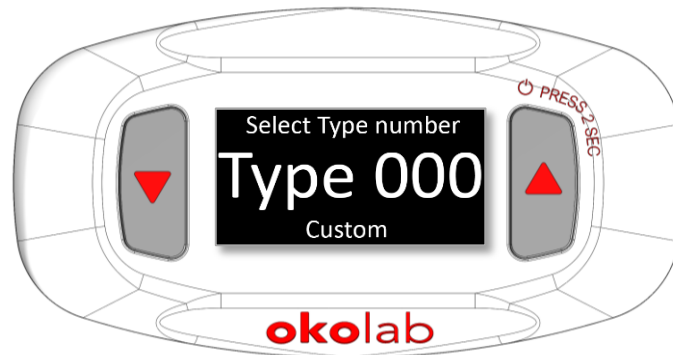


Figure 16. Device Type 000 allows manual setting of control parameters.

Follow the instructions below to modify control PID parameters:

1. Press UP & DOWN buttons at same time for 1 second (see Figure 17 a) to enter the list of control parameters (see Figure 17 b).
2. Scroll by pressing UP or DOWN button for 1 second.
3. Press UP & DOWN buttons at same time for 1 second to enter  $K1$  subpage (see Figure 17 c).
4. Use UP button to increase (or DOWN button to decrease) the  $K1$  value (as shown in Figure 17 d).
5. Press UP & DOWN buttons at the same time for 1 second to confirm (see Figure 17 e).
6. Repeat steps 1,2,3, 4 and 5 to insert values for  $T1$ ,  $K2$ ,  $T2$  and  $\Delta T$  parameters.

To know the correct parameters values for you device or to receive more information about PID parameters contact Okolab at [support@oko-lab.com](mailto:support@oko-lab.com).

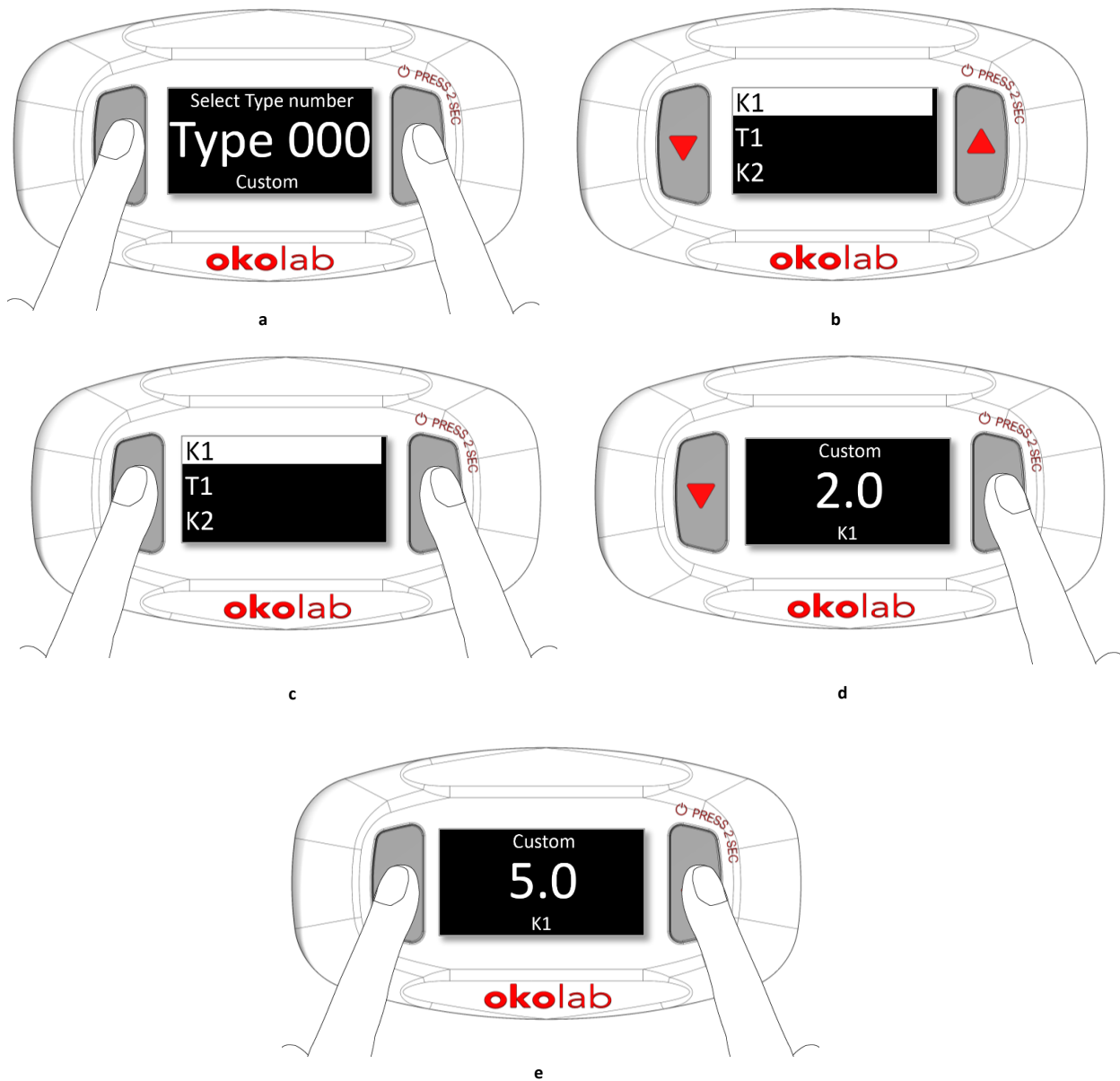


Figure 17. Custom Device Type 000: how to set the control parameters (a – b – c – d - e).

### 7.2.2 Calibration

H401-T-PENNY allows to calibrate the connected Heating Device. To do so, you need an accurate independent Temperature Sensor with which to measure the temperature. You can calibrate the temperature of the surface of the connected Heating Device, or if you wish you can also calibrate the temperature of the liquid inside the sample holder.

The Calibration is completed when you achieve the desired temperature.

The outcome of the calibration is the offset value between set point and the actual temperature.

**Tip** ► You can use the Okolab LEO with T1-Module as external meter to make an accurate calibration.

To start the calibration, follow the instructions below:

1. Secure the independent T Sensor to the center of the heating device for surface temperature calibration, or in the case of in-sample liquid calibration to the bottom of the sample holder (Petri dish, Chambered Glass Slide, etc.) with commercial adhesive tape as shown in Figure 18. Do not cover the tip of the T-Sensor.

**Tip** ► Use the same sample holder that you use in regular practice.

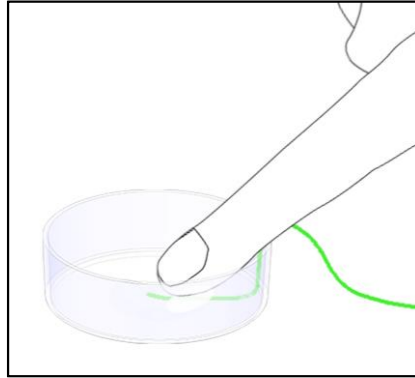


Figure 18. T Sensor secured inside a Petri Dish

You need to follow the steps 2 to 4 only if you are calibrating in the sample holder.

2. Fill the sample holder with oil or water to the level used during regular practice. Make sure the tip of the independent T Sensor is immersed in the liquid, inside the sample holder (see Figure 19).

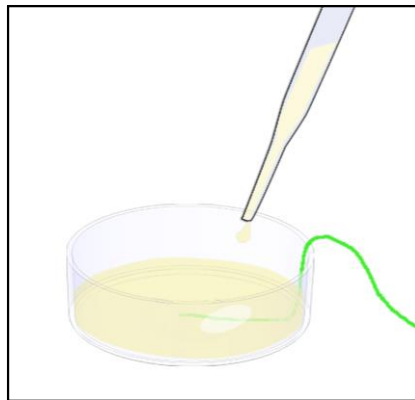


Figure 19. Fill the sample holder with oil

3. Cover the sample holder with the lid or leave it open, according to the protocol followed during regular practice.
4. Place the petri-dish on the center of the heating device, as shown in Figure 20.

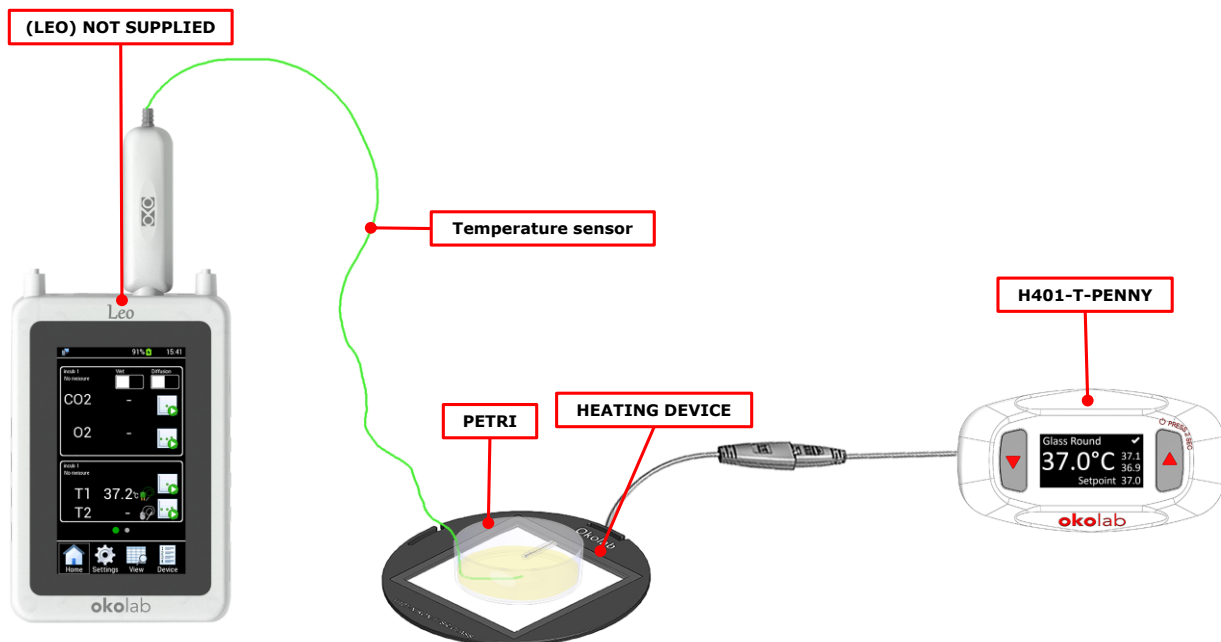


Figure 20. H401-T-PENNY: manual calibration with LEO

5. Wait until the temperature measured by LEO (or by any other independent sensor) is stable.
6. Make sure that H401-T-PENNY has reached the steady state, i.e. the status indicator is the *Check Mark* icon (see paragraph 7.1.1).
7. Press DOWN button for 2 seconds to access the *Menu* page (see Figure 21 a) and use the DOWN button to select the *Calibration* page (see Figure 21 b).

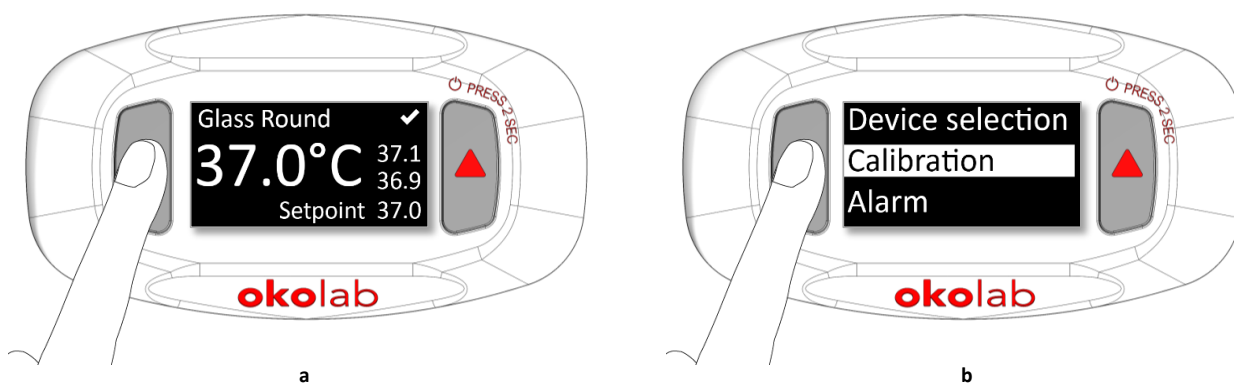


Figure 21. How to enter the Calibration Submenu.

8. Press UP & DOWN buttons at the same time for 1 second to enter the Calibration page (see Figure 22 a), the page shown in Figure 22 b will appear.

**Tip** ► In the Calibration page you can read the Offset value, the Device Temperature current value (T) and the Device Temperature Setpoint (SP).

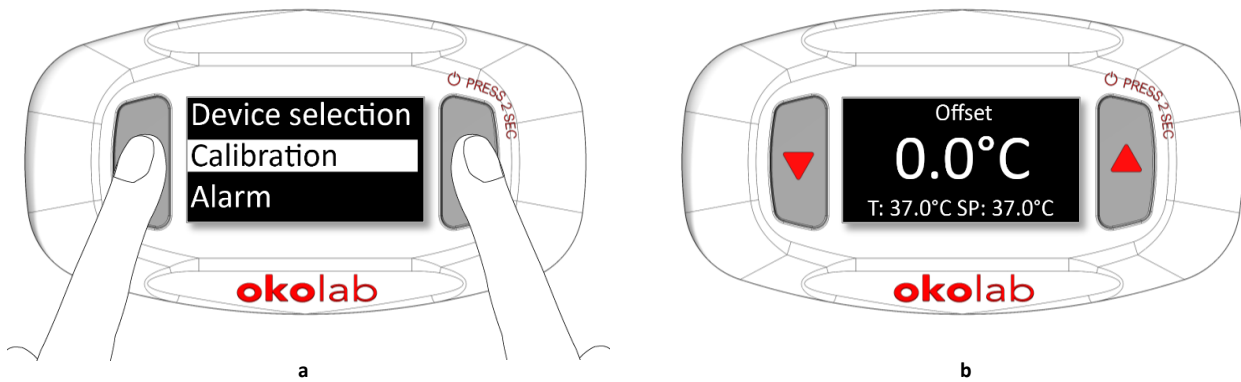


Figure 22. Calibration. (a) How to enter the calibration menu (b) Calibration menu.

9. Insert the offset value by pressing UP or DOWN button, as shown in Figure 23 a and press UP & DOWN buttons at the same time for 1 second to save (see Figure 23 b).

**Tip** ► Okolab recommends introducing as offset value the difference between the actual temperature measured by the independent T Sensor and the Setpoint temperature. In the example shown in Figure 20, LEO reports 37.2°C and H401-T-PENNY reads 37°C, the Offset value will be 0.2°C, as shown in Figure 23.  $\text{Temperature offset} = \text{Actual} - \text{setpoint}$

**Note** ► After changing the offset, it is advisable to wait at least 10-20 minutes to ensure that the temperature inside the sample holder is stable.

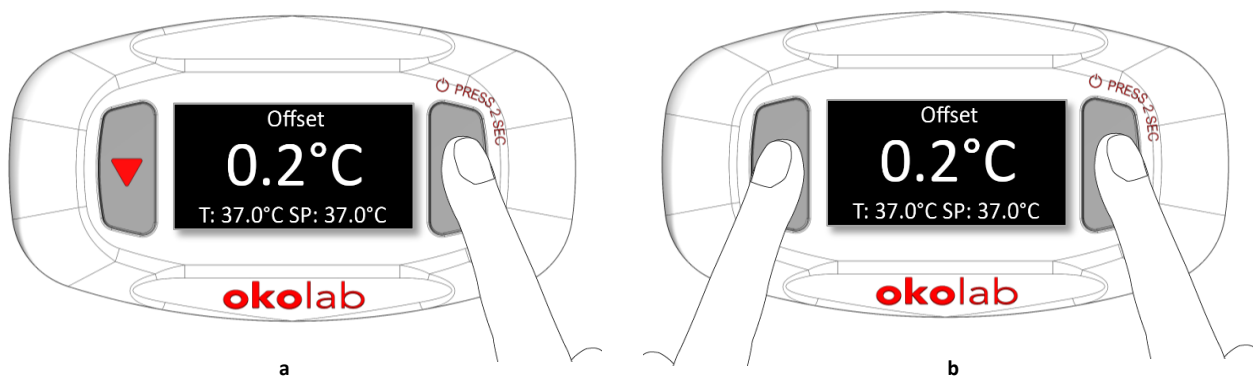


Figure 23. Insert the Device Offset value (a - b).

10. If the temperature measured by the independent T Sensor is within the  $\pm 0.3^\circ\text{C}$  from Setpoint, you can consider the Manual Calibration as completed. Otherwise, repeat the steps 7 to 9 until the temperature measured by the independent T Sensor reaches the Setpoint temperature within  $\pm 0.3^\circ\text{C}$ .
11. Once the manual calibration is completed you can remove the independent T Sensor from the petri dish and start using the calibrated Heating Device.



If room temperature changes by more than 1°C during the calibration time or if air draft blows directly on the heating device you will not be able to achieve an accuracy in the liquid of  $\pm 0.3^\circ\text{C}$ .

### 7.2.3 Alarm

H401-T-PENNY features a visual alarm if the temperature of the heating device becomes unstable. To set alarm specifications, follow the instructions below:

1. Press UP & DOWN buttons at the same time for 1 second (see Figure 24 a) to enter the *Alarm* page. The submenu will appear as shown in Figure 24 b.

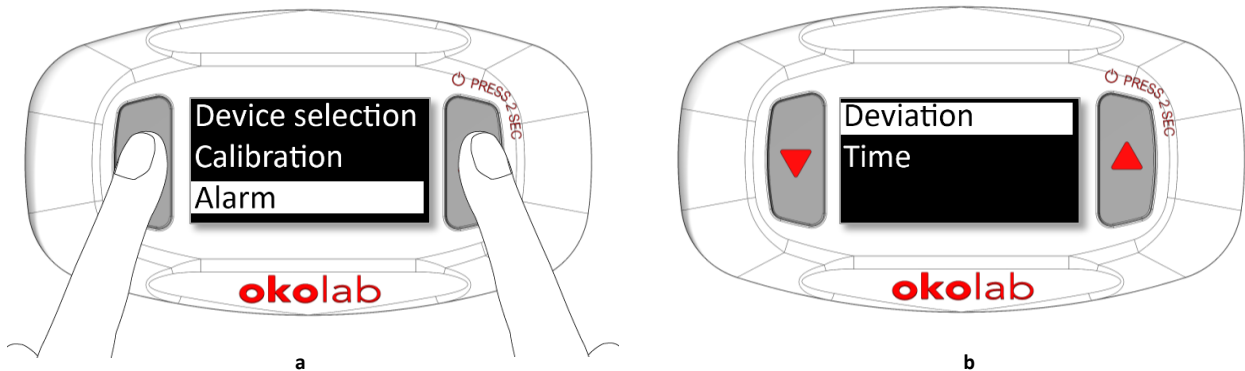


Figure 24. Alarms settings. (a) How to enter the Alarm setting menu; (b) Alarm configuration.

2. Press UP & DOWN buttons at the same time for 1 second to enter the *Deviation* Page (see Figure 25 a), use the UP or DOWN button to change the deviation value (see Figure 25 b). Confirm by pressing again UP & DOWN buttons at the same time for 1 second.

**Note** ► This value defines the allowed tolerance from the Setpoint.

**Note** ► The deviation value range is 0.3/2.0°C. The deviation value is pre-set at 0.3°C.

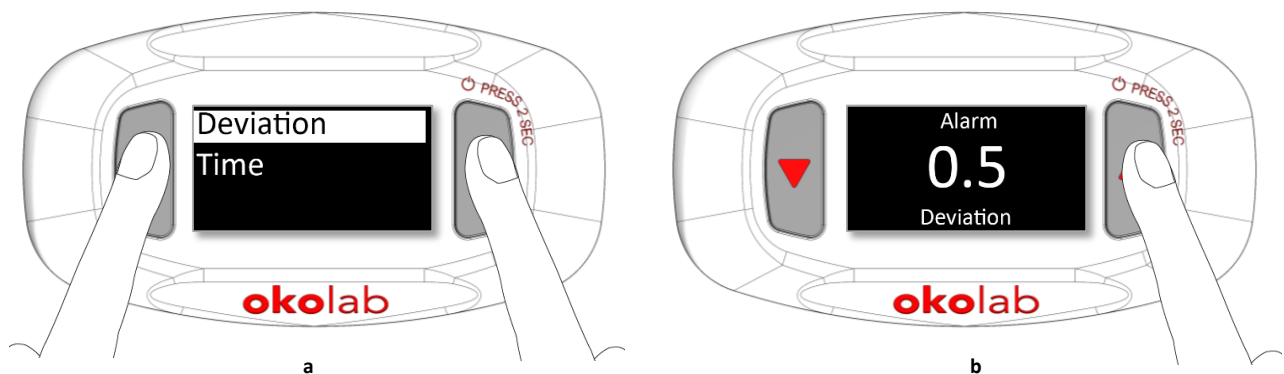


Figure 25. Deviation value setting (a - b).

3. Once you have opened the *Alarm* page as described in step 2, press the DOWN button to select the *Time* page and then press the UP & DOWN buttons at the same time for 1 second to enter the *Time* page (see Figure 26 a). Use the UP or DOWN button to change the time value (see Figure 26 b) and confirm by pressing UP & DOWN buttons at the same time for 1 second.

**Note** ► The Alarm Time is the maximum time for which the temperature of the Heating Device may remain outside the allowed deviation before the Controller displays the alarm.

**Note** ► The alarm time range is 5/20 minutes. The alarm time value is pre-set at 5 minutes.

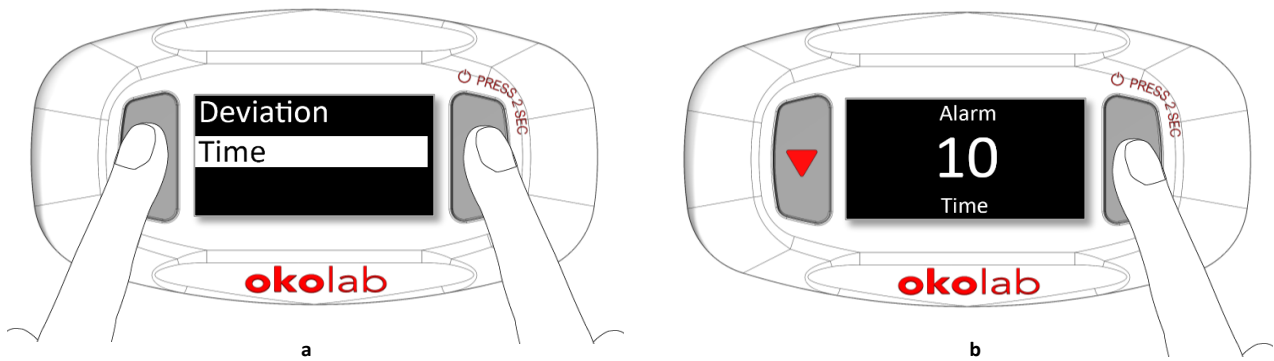


Figure 26. Time alarm setting (a - b).

#### 7.2.4 Unit

The H401-T-PENNY allows to choose the measurement unit for Temperature. To set the unit, follow the instructions below:

1. Press UP & DOWN buttons at same time for 1 second to enter the Unit page (see Figure 27 a).
2. Scroll the Unit list by using UP or DOWN button to select the Unit of measurement that you prefer.
3. Press UP & DOWN buttons at the same time for 1 second to confirm.

**Tip** ► The available Units are: C°, F°, K°.

4. To cancel and return to menu page, press UP & DOWN buttons at the same time for 2 seconds.

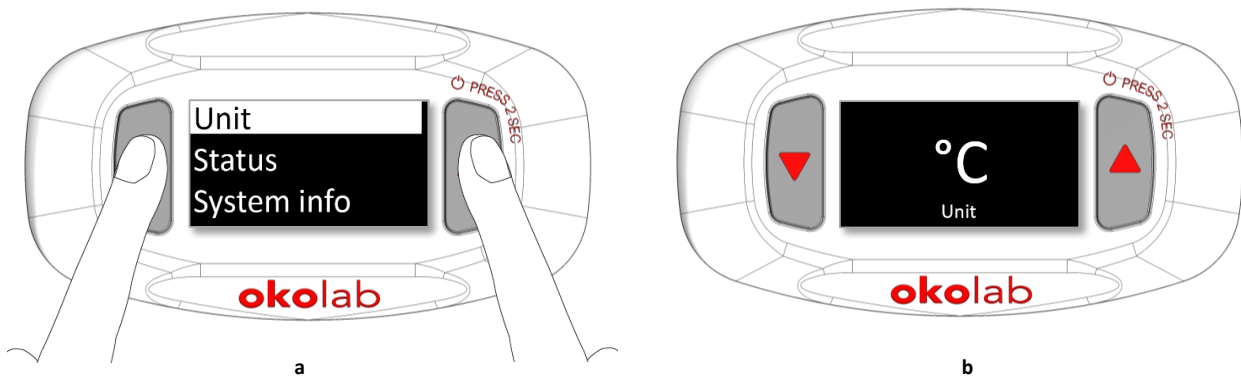


Figure 27. Unit submenu (a - b).

#### 7.2.5 Status page

Press UP & DOWN buttons at the same time for 1 second (as shown in Figure 28 a) to open the *Status Page* (see Figure 28 b).

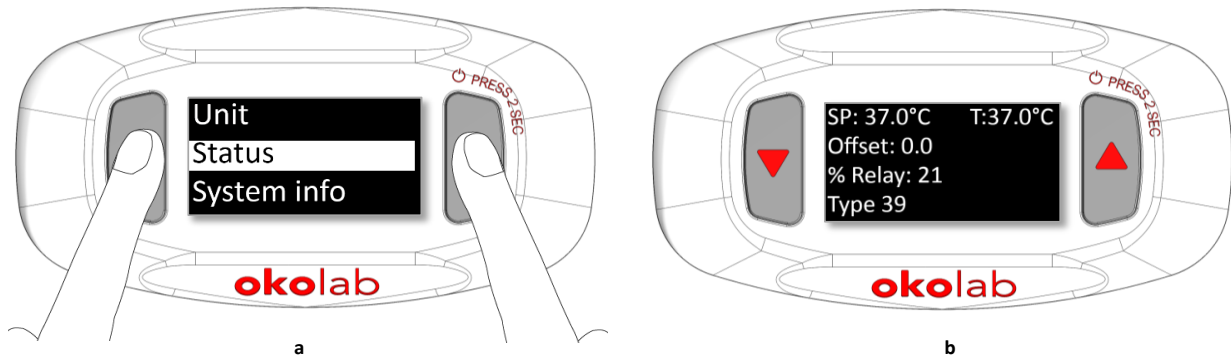


Figure 28. Status page (a – b).

**Note** ► This page (as shown Figure 28 b) contains advanced technical data. You may be asked to read these data in case of technical assistance with Okolab engineers.

### 7.2.6 System info

Select *System info* by pressing on UP and DOWN buttons for 1 second (see Figure 29 a). This page contains the information related to the H401-T-PENNY serial number and version (see Figure 29 b).

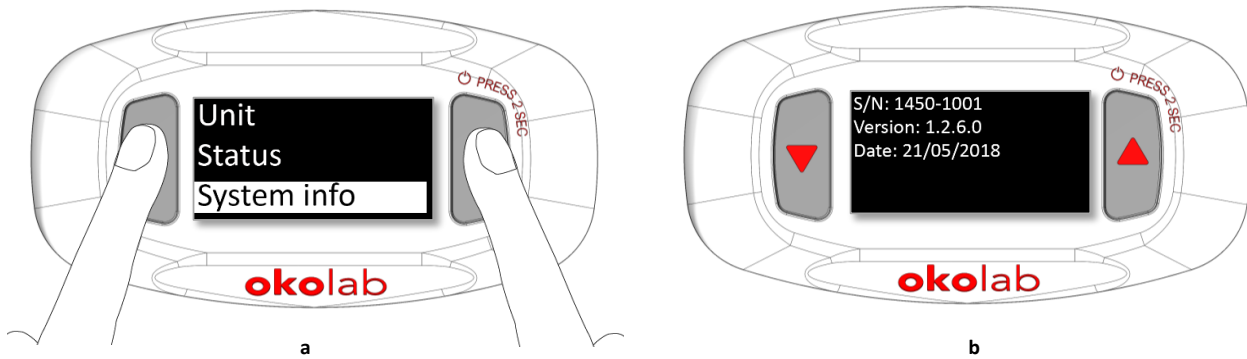


Figure 29. System info selection (a – b).

**Tip** ► Please have this information handy when contacting Okolab for support.

## 8.1 H401-T-PENNY

### Cleaning

Please, follow the instructions below to clean the H401-T-PENNY:

- Turn H401-T-PENNY off and unplug all connecting cables
- Use a polishing cloth or dry cloth to wipe off dust and dirt.
- Do not pour or spray any liquid directly on the H401-T-PENNY.

### Maintenance

- Verify periodically the status of all cables. If some cable is damaged, contact Okolab to receive assistance.

## 8.2 Heating Devices

### Cleaning

Please, follow the instructions below to clean the Heating Devices:

- Turn H401-T-PENNY off and unplug all connecting cables.
- Let the Heating Device cool down.
- To clean the metal and the glass of the Heating Device, wipe with a soft micro-fiber cloth. For stubborn smudges, you can damp a soft micro-fiber cloth with ethyl alcohol (product code UN1170).
- Do not pour or spray any liquid directly on the Heating Device.
- Avoid getting liquid seep into the small gap between glass and metal frame.
- Gently wipe any glass surfaces. Do not apply strong force to the surface of the glass because it can be damaged.
- Keep acid solvents away from the Heating Device. They might cause corrosion and discoloration.
- Do not use a compressed air gun.



Glass Heating Devices are coated with a thin layer of indium tin oxide (ITO).

ITO is electrically conductive and optically transparent. Use care when cleaning Glass Heating Device to avoid damaging the ITO coating.

---

### Maintenance

- Verify periodically the status of all cables. If some cable is damaged, contact Okolab to receive assistance.
- Verify periodically the status of the temperature sensor. If the temperature sensor is damaged, contact Okolab to receive assistance.

Contact Okolab in case you need assistance with the cleaning procedure or in case of doubt concerning the compatibility of the cleaning products.

To contact one of our engineers please write to [support@oko-lab.com](mailto:support@oko-lab.com) or contact us through the live chat in [www.oko-lab.com](http://www.oko-lab.com). You can request a remote support session anytime.

Please, do not hesitate to contact Okolab should you need any further commercial information or technical support.

For HARDWARE SUPPORT: [sibillo@oko-lab.com](mailto:sibillo@oko-lab.com)

Phone +39 081 806 3470

Fax: +39 081 876 4410

Mobile: +39 348 96807 18

For COMMERCIAL SUPPORT WORLDWIDE: [lanzaro@oko-lab.com](mailto:lanzaro@oko-lab.com)

Phone +39 081 806 2624

Fax: +39 081 876 4410

Mobile: +39 348 96807 17

For COMMERCIAL SUPPORT US&CANADA: [usa@oko-lab.com](mailto:usa@oko-lab.com)

For COMMERCIAL SUPPORT CHINA: [tong@oko-lab.cn](mailto:tong@oko-lab.cn)

<b>H401-T-PENNY TECHNICAL SPECIFICATIONS</b>	
Temperature	Range: from ambient to 60°C Setpoint resolution: 0.1°C
Operating Temperature	0°C ~+55°C
Storage Temperature	5°C ~ +60°C
Operating Humidity	0-70%
Temperature control method	PID control
Supply voltage	24V-DC
Power Consumption	60 W max
Dimension	84x45x20 mm
Weight	47.5 g

*Table 2. Technical specifications.*

## 11 Troubleshooting

The table below shows some frequently asked questions. Please contact Okolab if you need assistance.

Symptom	Probable cause	Remedy
Device is off	Device wrong connections	Properly connect the cables to the device
	Device cables damaged	Replace the cables
Device is cold	Low Setpoint value	Change the Setpoint
	Cable disconnected	Connect the cable
	Cable damaged	Replace the cable
Alarm	Current temperature reading is far from the Setpoint temperature	Check for air drafts or A/C blowing directly on the heating device
	Cable disconnected	Connect the cable
No device temperature displayed: OPEN	Device not connected or sensor broken	Connect the device or contact Okolab to receive assistance
I followed the troubleshooting suggestions above but I cannot solve the problem		Contact: <a href="mailto:support@oko-lab.com">support@oko-lab.com</a>

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## 14 Manual Revision Table

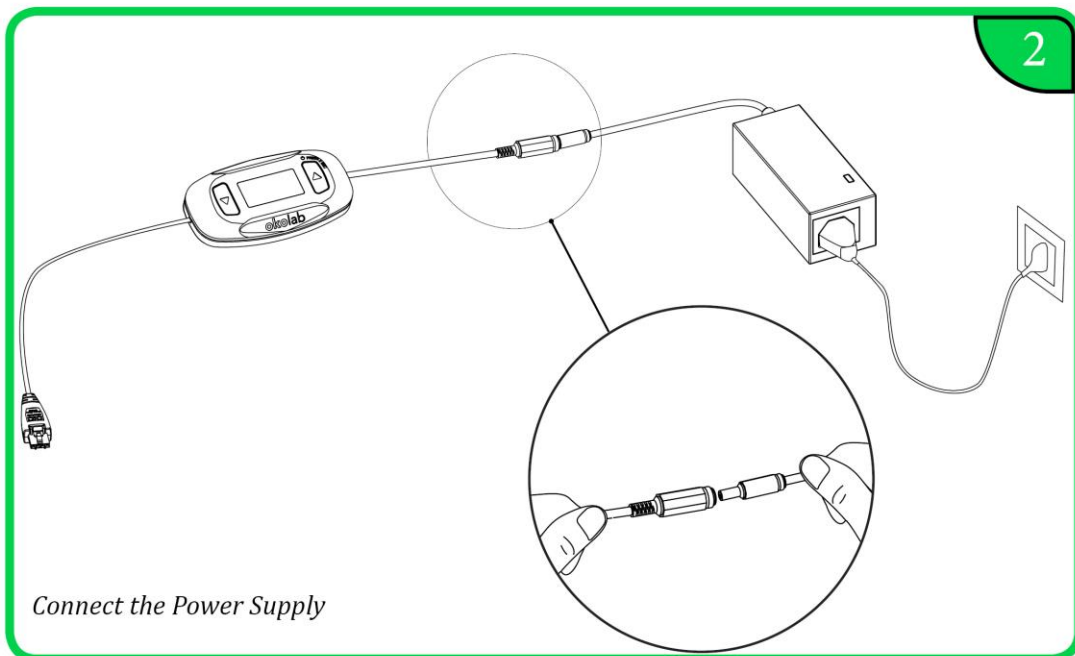
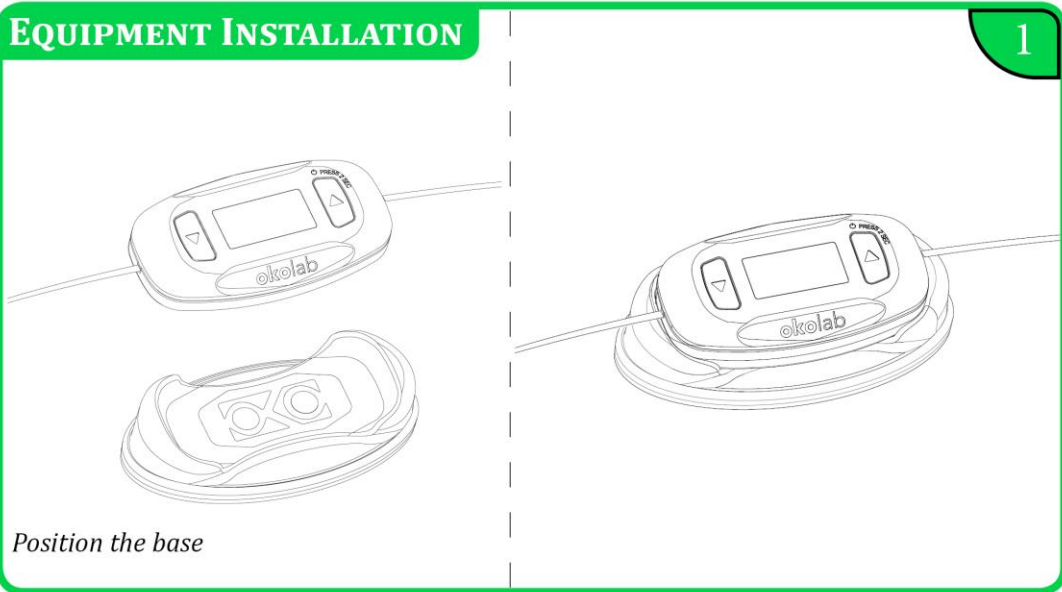
Revision Number	Addition of changes	Date
01	Redaction	June 2018
02	Layout review	September 2018
03	Added annex	June 2019
04	Cleaning & Maintenance	September 2020
05	Updates in sections 6.1; 7; 7.2.2; 9	October 2025

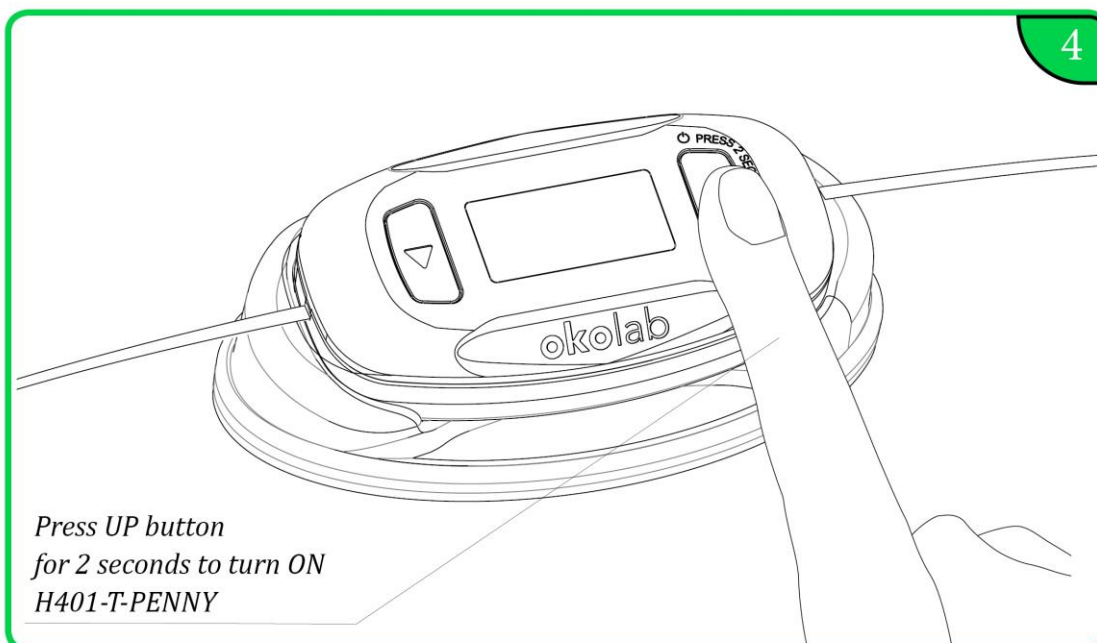
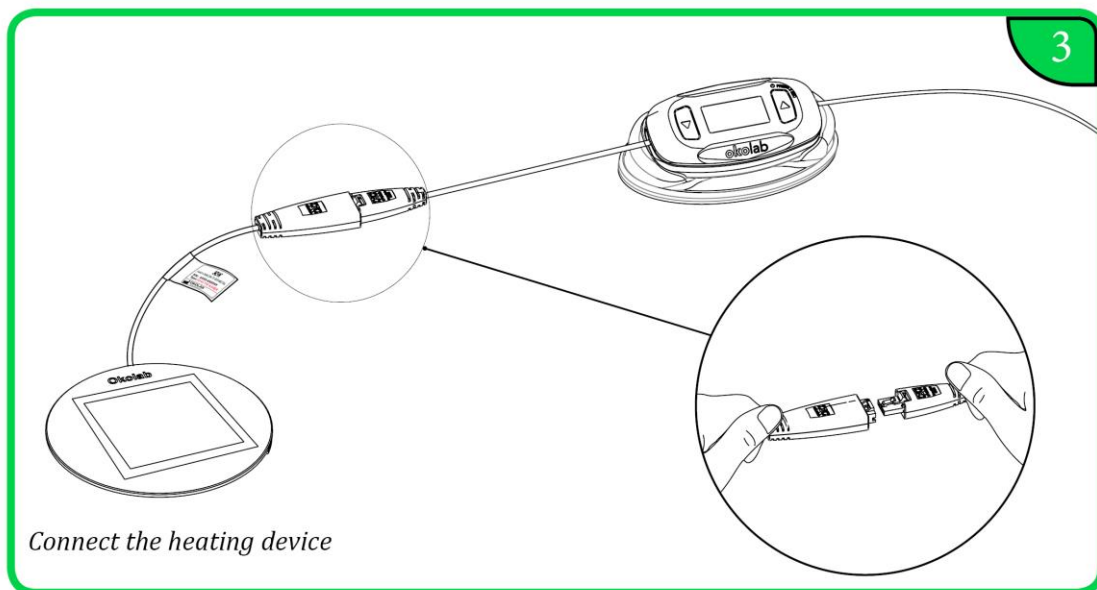
TYPE ON H401-T-PENNY	DEVICE CODE	DEVICE CATEGORY
000	CUSTOM	
001	H601-K-FRAME-GLASS-FLAT	GLASS RECTANGULAR
001	H601-NIKON-TI-SAM-GLASS	GLASS RECTANGULAR
001	H401-GLASS-200x200	GLASS RECTANGULAR
001	H401-LEICA-M-HL-GLASS	GLASS PLATE
002	H401-230x110-GLASS-FLAT	GLASS RECTANGULAR
003	H601-K-FRAME-GLASS-RECESSED	GLASS RECTANGULAR
003	H601-MCL-Z100/500-GLASS	GLASS RECTANGULAR
005	H601-PRIOR H117-GLASS-RECESSED	GLASS RECTANGULAR
006	H401-LEICA-R88-GLASS	GLASS ROUND
007	H401-LEICA-TL-220x170-GLASS	GLASS RECTANGULAR
009	H401-NIKON-TI-SR-GLASS	GLASS ROUND
010	H601-NIKON-TS2R-GLASS	GLASS RECTANGULAR
011	H401-NIKON-SMZ-180-GLASS	GLASS ROUND
012	H401-NIKON-SMZ25-GLASS	GLASS RECTANGULAR
013	H401-NIKON-SMZSL-GLASS	GLASS RECTANGULAR
014	H401-NIKON-SMZSS-GLASS	GLASS RECTANGULAR
016	H401-OLYMPUS-IX-SUSP-GLASS	GLASS ROUND
017	H401-OLYMPUS-SZX2A-GLASS	GLASS RECTANGULAR
018	H401-OLYMPUS-SZX2B-GLASS	GLASS RECTANGULAR
019	H401-EUROMEX-IF-GLASS	GLASS ROUND
020	H401-GLASS TABLE	GLASS TABLE
021	H401-GLASS-90	GLASS ROUND
022	H401-GLASS-90-RTD1000	GLASS ROUND
023	H601-M-FRAME-GLASS	GLASS RECTANGULAR
024	H401-R120-GLASS	GLASS ROUND
025	H401-NIKON-TI-SR-T-PAD	METAL RECTANGULAR
026	H401-NIKON-TS2R-T-PAD	METAL RECTANGULAR
027	H401-OLYMPUS-IX-SUSP-T-PAD	METAL RECTANGULAR
028	H401-K-FRAME-METAL-FLAT	METAL RECTANGULAR

<b>TYPE ON H401-T-PENNY</b>	<b>DEVICE CODE</b>	<b>DEVICE CATEGORY</b>
029	H401-K-FRAME-METAL-RECESSED	METAL RECTANGULAR
030	H401-NIKON-NZ100/200/500-N-METAL	METAL RECTANGULAR
031	H401-PRIOR-H117-METAL-RECESSED	METAL RECTANGULAR
032	H401-LEICA-R88-METAL	METAL ROUND
033	H401-NIKON-TI-SR-METAL	METAL ROUND
034	H401-NIKON-TI-S-ER-METAL	METAL RECTANGULAR
035	H401-NIKON-TS2R-METAL	METAL RECTANGULAR
036	H401-NIKON-TI-SAM-METAL	METAL RECTANGULAR
037	H401-NIKON-NI-S-E-METAL	METAL RECTANGULAR
038	H401-OLYMPUS-IX-SUSP-METAL	METAL ROUND
039	H401-EUROMEX-IF-METAL	GLASS ROUND
040	H401-UP-METAL	METAL RECTANGULAR
041	H401-T-PAD-SMALL	T-PAD
042	H401-T-PAD-MEDIUM	T-PAD
043	H401-T-PAD-LARGE	T-PAD
048	H601-NIKON-TI-SR-GLASS	GLASS ROUND
048	H401-LEICA10447342-ROUND-GLASS	GLASS ROUND
049	H601-OLYMPUS-IX-SUSP-GLASS	GLASS ROUND
054	H401-OLYMPUS-IX3SVR-RO-T-PAD	T-PAD
055	Objective Heater	Objective Heater

### 15.1 Annex 1 Revision Table

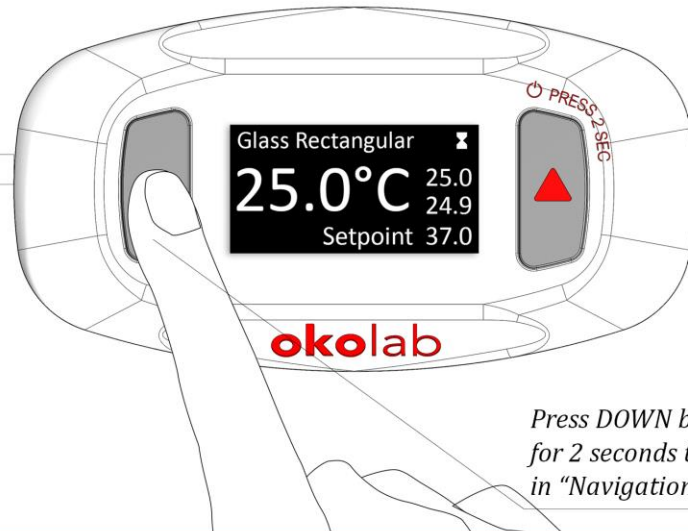
<b>Revision Number</b>	<b>Addition of changes</b>	<b>Date</b>
01	First Emission	May 2019
02	Insert new device	July 2019
03	Insert H401-LEICA10447342-ROUND-GLASS	December 2019
04	Insert H401-LEICA-M-HL-GLASS	January 2020
05	Insert H601-MCL-Z100/500-GLASS	January 2021





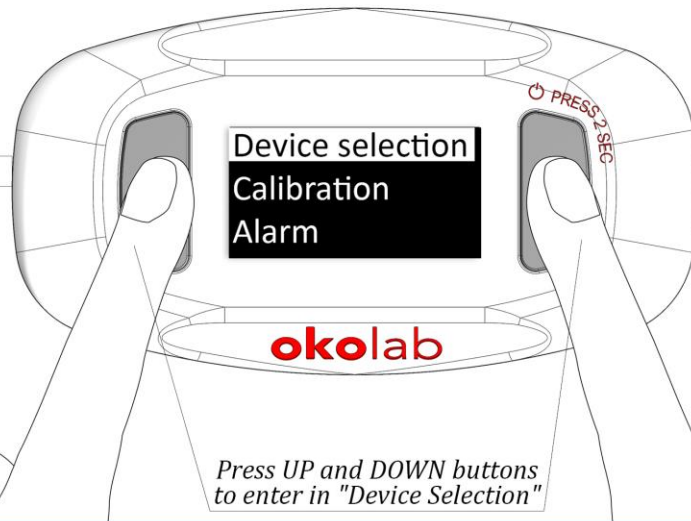
## DEVICE SELECTION

1

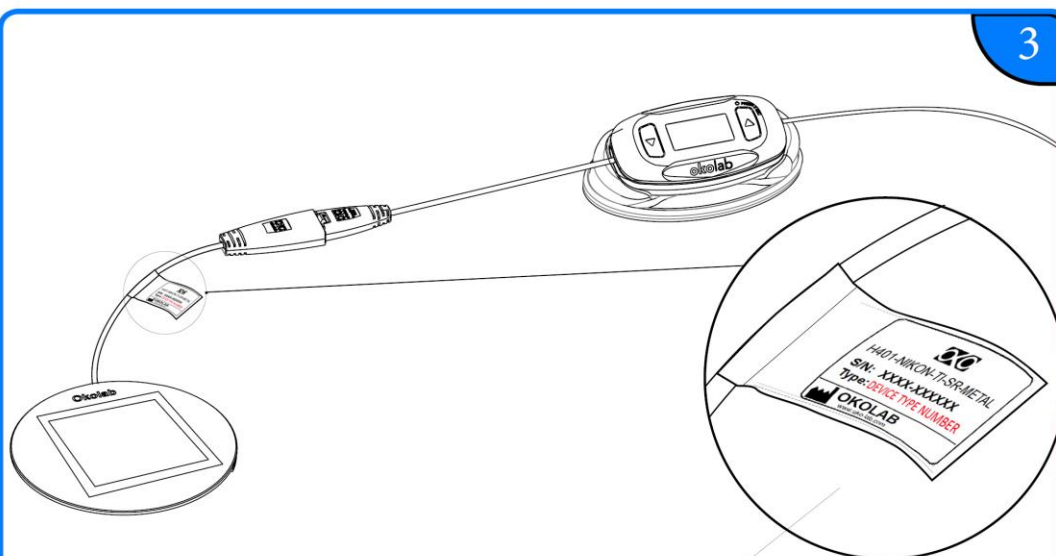


*Press DOWN button  
for 2 seconds to enter  
in "Navigation Menu"*

2

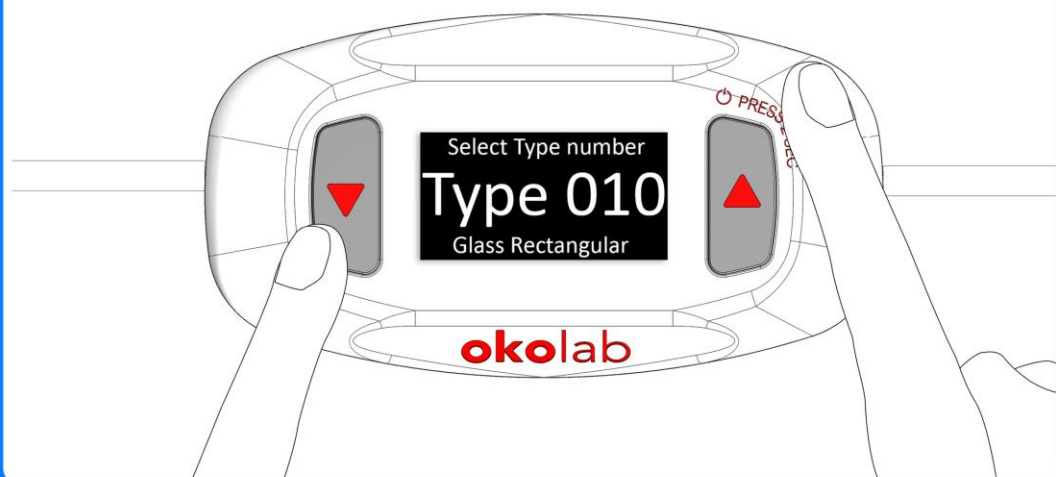


*Press UP and DOWN buttons  
to enter in "Device Selection"*

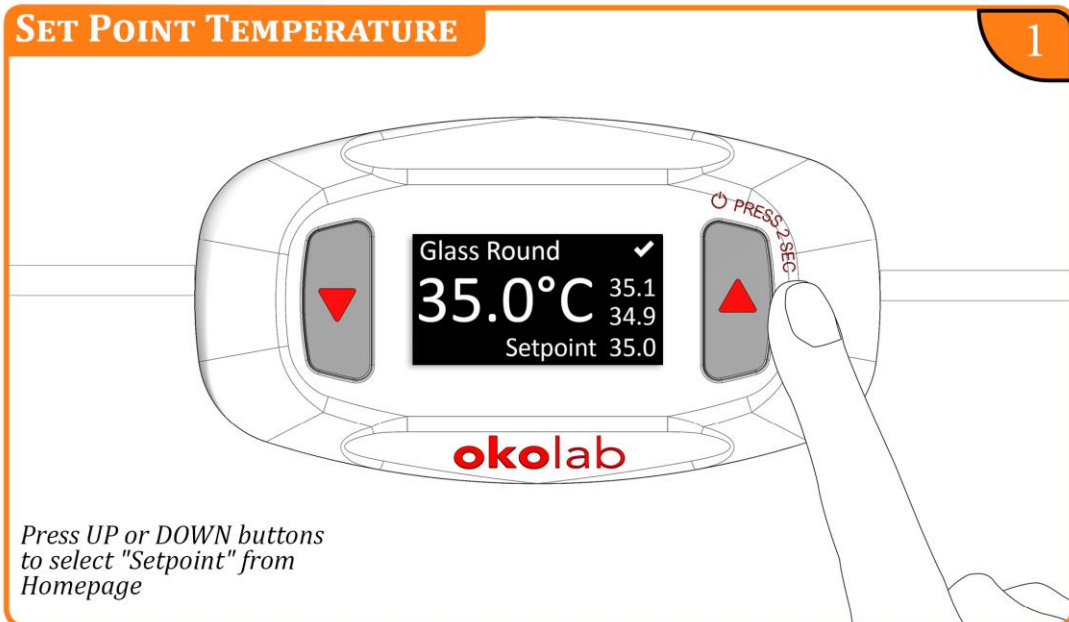
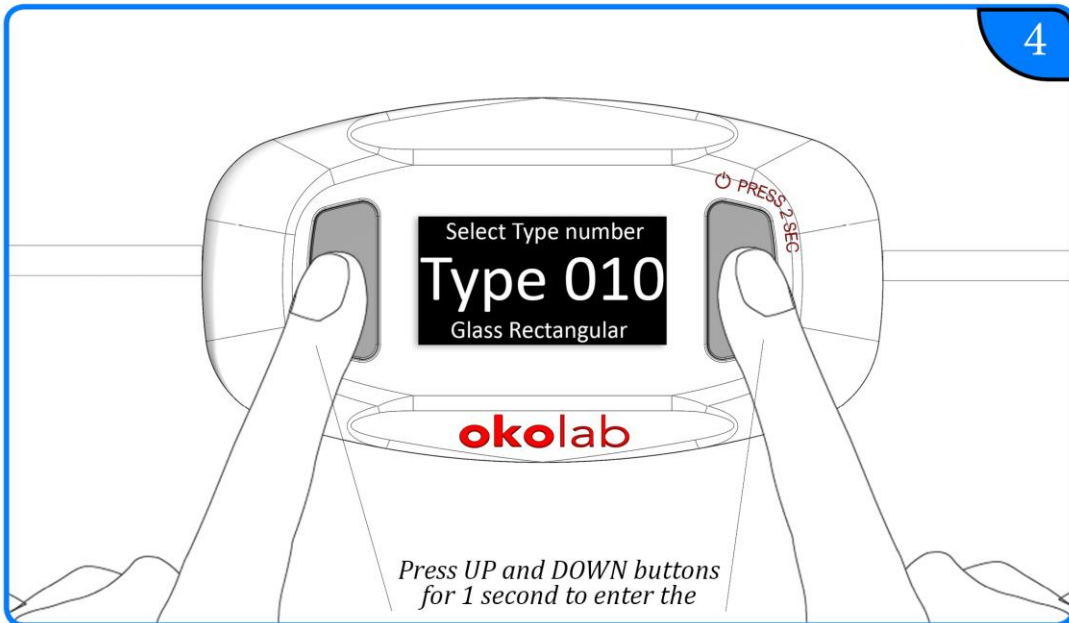


*Read the heating device Type Number on the label*

*Press UP or DOWN button to select the heating device Type Number*

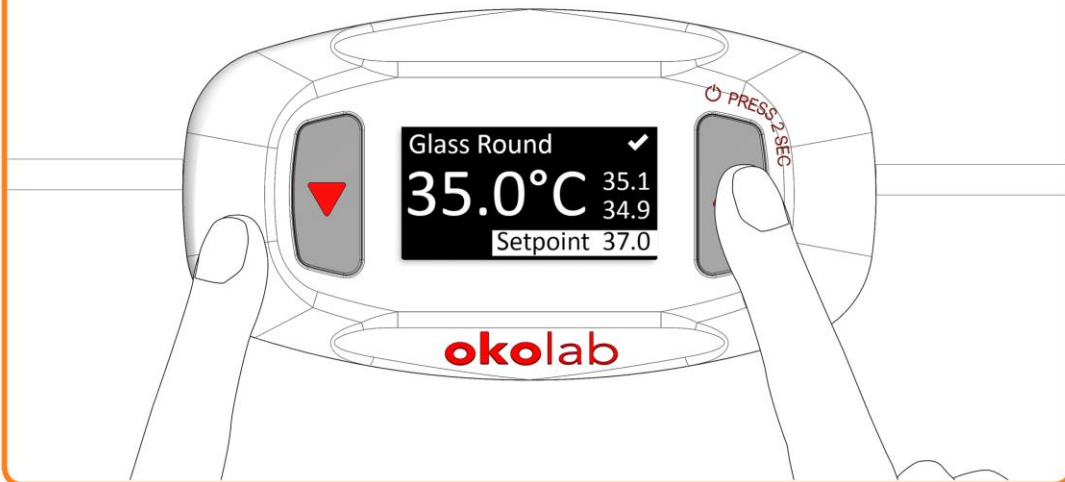


*\*Remember to modify the Type Number if you change heating device.*



Press UP button to increase (or DOWN button to decrease) the Setpoint value

2



3



## WARRANTY

Okolab S.r.l. warrants "H401-T-PENNY" to be free of defects in materials and workmanship for a period of one year starting from invoice date. If the unit malfunctions, it must be returned to the factory for evaluation. If the equipment has to be returned to the factory, please ensure that is carefully and properly packed. Okolab S.r.l. accepts no responsibility for damage due to unsatisfactory packing. If the unit is found to be defective, it will be repaired or replaced at no charge. This warranty does not apply to defects resulting from any actions of the purchaser. Components which wear are not warranted. Okolab S.r.l. neither assumes responsibility for any omissions or errors nor assumes liability for any damage that may result from improper use of its products in accordance with information provided by Okolab S.r.l. Okolab S.r.l. warrants only the parts manufactured by Okolab S.r.l. to be free of defects. Okolab S.r.l. makes no other warranties or representations of any kind whatsoever, express or implied, except that of title, and all implied warranties including any warranty of merchantability and fitness for a particular purpose are hereby disclaimed. LIMITATION OF LIABILITY: the total liability of Okolab S.r.l. shall not exceed the purchase price of the component upon which liability is based. In NO event shall Okolab S.r.l. be liable for consequential, incidental or special damage.