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HeatSensor

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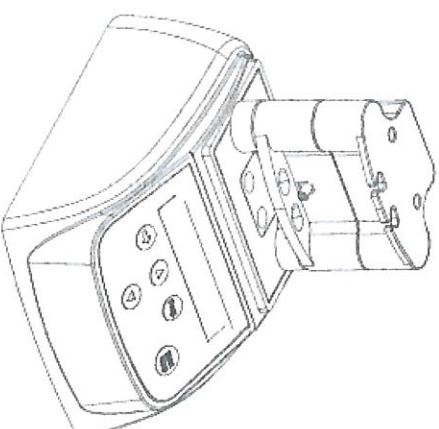
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Heatsensor DUO/OCTO

Operations Manual



UNISENSOR sa

Foreword

Thank you for purchasing our Products: Heatsensor-DUO/OCTO.
This Manual for users contains function and operation of the Instrument. In order to use the instrument properly, please read this manual carefully before using the Instrument.

Opening Check

Please check the Instrument and Appendix with the packing list when you first open the instrument packing case. If you find there is something wrong with the Instrument and the Appendix, do contact the vendor or the producer.

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1. Introduction

This Incubator is designed for workstations in training and research laboratories in the fields of bioscience, medicine and chemistry. Before starting up this incubator for the first time, please read the rest of this operations manual.

2. Delivery package

Heatsensor DUO/OCT0	1 pc
Power transformer	1 pc
Adapters	3 pc
Operations manual	1 pc
Appendix 1: list of the pre-installed programs	1 pc
Appendix 2: certification	1 pc

3. Safety precautions



This product is a normal and an indoor Instrument.



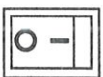
Read the Manual carefully before operation. The expert of wiring equipment can operate this Instrument.



The operator should not open or repair the Instrument by himself, which will result in losing the qualification of repair guarantee or in occurring accident. In case of technical problems with the Instrument, the company will repair it.



The Instrument should be put in a place of low temperature, little dust, no water and no sun or strong lamp. What's more, the place should be good aeration, no corrosively gas or strong disturbing magnetic field, far away from central heating, camp stove and other hot resource. Don't put the Instrument in wet and dusty place.



Mains switch is on the rear of the device, push "1" to power on the device, and push "0" to power off the device.



Power connector is on the rear of the device, DC12V input, inside is "+", outside is "-".



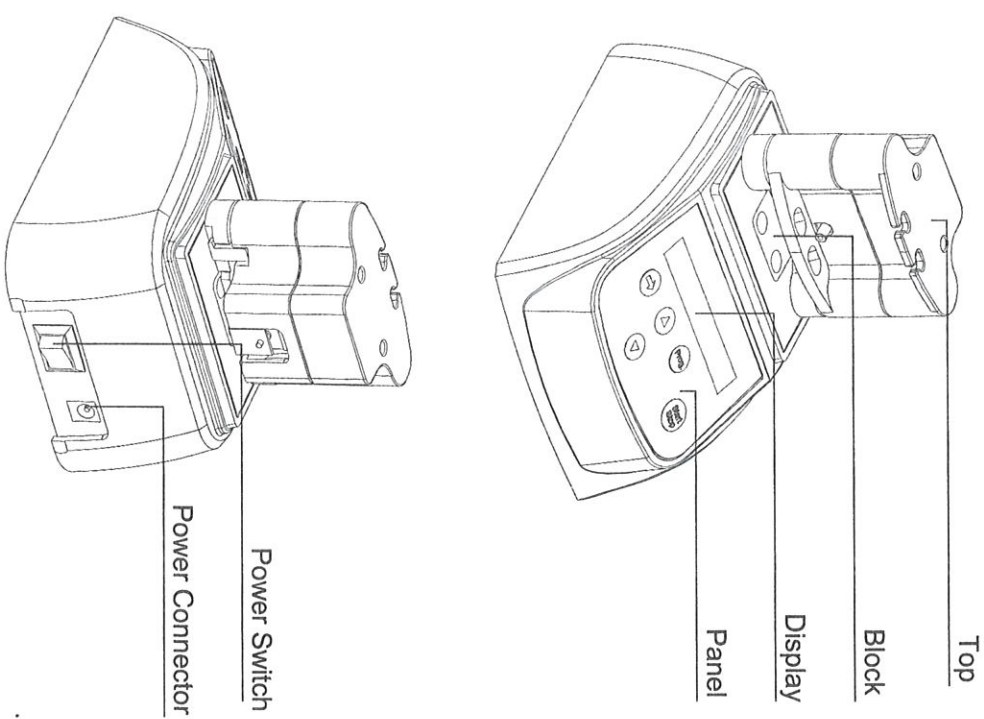
Power off when you finish your work. Pull off the connector plug when the Incubator is not used during a long period and cover it with a cloth or plastic paper to prevent from dust.

4. Technical data

Model	APP032-APP052
Power supply	DC12V
Power	15 W
Temperature range	RT+5°C ~ 75°C
Timing range	1sec ~ 999sec or 1min ~ 999min
Accuracy of the temperature	$\leq \pm 0.5^\circ\text{C}$
Display accuracy	0.1°C
Heating time (from 20°C to 75°C)	$\leq 5\text{min}$
Ambient temperature	5°C ~ 35°C
Dimensions (W×D×H)	110mm × 148mm × 120mm
Weight	0.5 kg

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5. Structure Description



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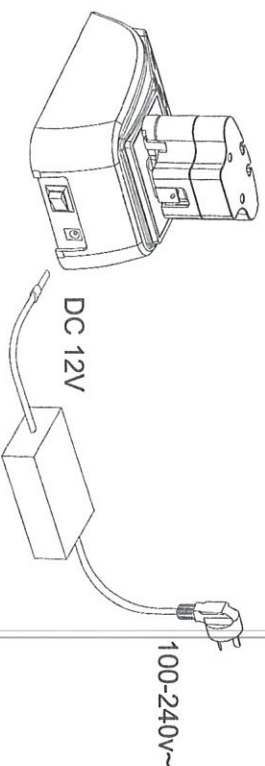
6. Operation guide

6.1. Control elements

- START/STOP**----- to start or stop the procedure
- PROG**..... to select various programs
- ▲▼----- to set the temperature and the time
- ➡----- remove the cursor

6.2. Installing the device and running a test

- Place the Heatsensor-DUO/OCTO onto a level, horizontal surface.
- Connect the device to a power source via the power transformer and an adapter provided in the delivery package.



- Switch on the Heatsensor by pressing the main power button (main switch is on the rear of the device). Push "I" to power on the device, and push "O" to power off the device. The incubator is ready to operate when the display becomes visible.
- To select a program, press "Prog" and while holding it, press "▼" or "▲".
- The device starts to heat automatically according to the set temperature. It shows "NOTOK" at the display. When it reaches the target temperature, it shows "OK" at the display.
- Open the top and place a reagent microwell into the block.
- Close the top and press the "START/STOP" button to start the test.

- Place a dipstick in the top. It will go down automatically into the reagent microwell after the first incubation time.
- After the second incubation time, when the sound-signal is heard and when the display shows "PROGRAM END xxxS", take the dipstick out and press the "START/STOP" button to stop the device.
- "xxxS" means that the program is over since xxx seconds.

6.3. List of the pre-installed programs (see Appendix I)

6.4. Create a new program

Press "Prog" key, and while holding it, press "▲" or "▼" to select the right program, from P01 to P30(see table of programs on appendix 1). If P08 is selected (to create a new program on P08), press "➡" key, and while holding it, press "Prog" key. The cursor will display on the screen (P08). Then press "➡" to remove the cursor from left to right and press "▲" or "▼" key to set a new value. The program name (P08, the first temperature (corresponding to the first incubation), the first timing, the second temperature (corresponding to the second incubation) and the second timing can be set. The sign "■" appears when settling the first temperature and first time while the sign "■" appears when settling the second temperature and second time (see picture below).

P08 50.0 003min ■

First temperature and time

P08 40.0 006min ■■

Second temperature and time

After ~8 seconds without pressing any key, the device returns automatically to the main interface.

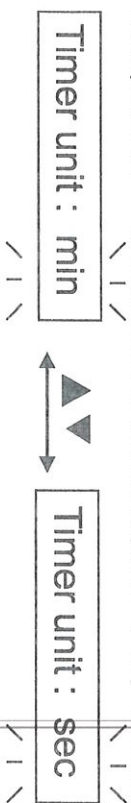
P08 36.2°C NOTOK

↔ Return to main interface

6.5. Min or sec

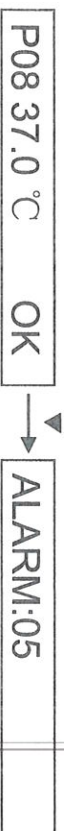
In the setting interface, the timer unit can be selected (Minute or Second). Press **→** key for 2 seconds continuously.

Then press **▲▼** to select min or sec; then press **→** key to confirm.



6.6. Bell mode at the end

In the main interface, press “▼” key for 2 seconds continuously. Then coming in the Bell mode interface, modify the alarm times by pressing the “▼” or “▲” key. After ~8 seconds without pressing any key, the device returns automatically to the main interface.



Meaning of the alarm value: 00 (non-stop bell), 01, 02, 03...99 (duration of the bell in the seconds)

6.7. Temperature calibration

The temperature of the instrument has been calibrated before selling it. But if there is deviation between the actual temperature and the displayed temperature due to some reasons, a correction can be done as detailed below.

Note: The Instrument uses double temperatures adjustment to ensure its veracity. This means it is linearly calibrated on 40°C and 75°C two points. The temperature veracity will be within +0.5°C after the double temperature adjustment. Both the circumstances and the block temperature should be lower than 35°C

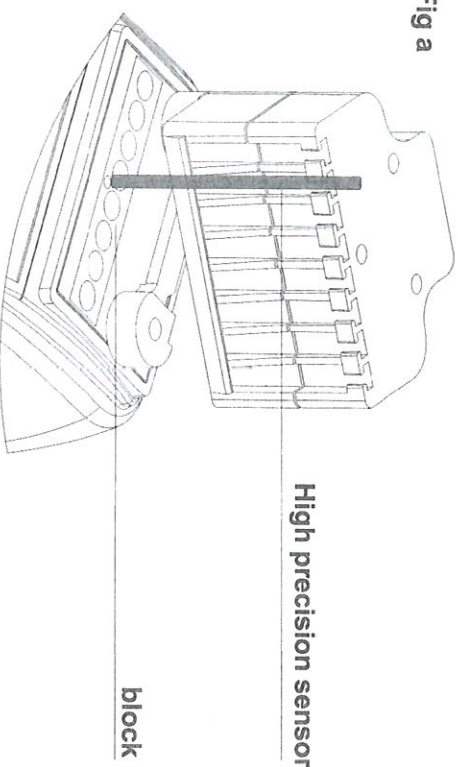
Adjustment methods:

- After the startup of the Instrument, it enters waiting interface. Make sure the temperature in display is below 35°C. If the temperature is higher than 35°C, you should wait until the temperature is below 35°C.

- Put the high precision sensor into the 3.5mm hole. Make sure the precision of the sensor is within 0.1°C. It is very important that the sensor must fully touch the hole of the block. It might be needed to add silicone heat sink compound in the hole (see Fig a).

Note! The temperature can be corrected only after the instrument reaches the set temperature for 20 minutes to ensure the precision of the temperature.

Fig a



Press “▲” and “▼” key simultaneously, practical temperature shows 20.5, and rise to 40.0 at once, at the same time the sign “**” flickers ceaselessly. When the practical temperature reach 40.0, the sign “ADJ” and “**” flicker ceaselessly together.

After 20 minutes, if the actual temperature of high precision sensor is 38.8°C, then press “▲” or “▼” key to amend the display value to 38.8, and press “start” key to confirm.

Then the incubator rises to 75.0°C automatically and “**” flicker ceaselessly.

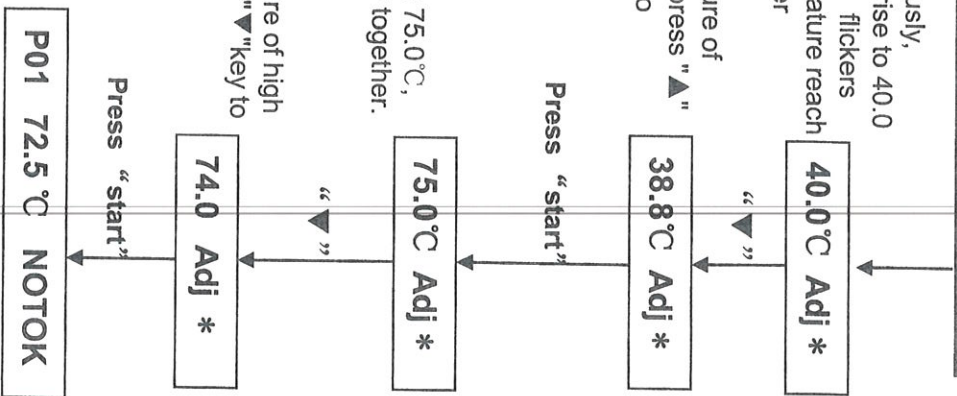
When the practical temperature reaches 75.0°C, the sign “ADJ” and “**” flicker ceaselessly together.

After 20 minutes, if the actual temperature of high precision sensor is 74.0°C, press “▲” or “▼” key to amend the display value to 74.0 and press “start” key to confirm.

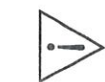
Then the screen returns to the main interface.

After the Temperature calibration, the temperature displayed is the same as the practical temperature of the block.

Note! During Temperature calibration, press “▲” and “▼” key simultaneously to cancel the calibration. The system keeps the former calibration. **So don't press “▲” and “▼” key simultaneously unless need calibrate the temperature!**



7 Maintenance and cleaning



The well in the block should be cleaned by a cloth stained with alcohol to assure good heat translation between the block and the test tube and no pollution. If there are smutches on the Instrument, clean them with a cloth.



Power off when cleaning the Instrument.
When cleaning the well, don't drop the cleaning liquid in the well.
Corrosive cleaning liquid is strongly prohibited.

6 Troubleshooting

Error	Cause	Solution
No display	No main power connection. Power failure.	Plug in mains cable on both sides. Check the mains fuse
“Close Test-top”	The top not close	Close the top and Press Start
“OPEN” in the display with the alarm of “du...”	Broken sensor or loose contact of the module	Contact service.
“SHO” in the display with the alarm of “du...”	The sensor is short	Contact service.
No heating of the block	Heater failure	Contact service.
Press invalid	Keyboard failure	Contact service.