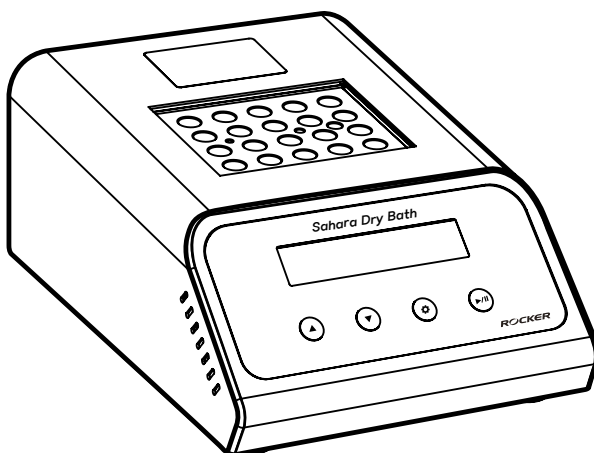# *Instruction Manual*

Sahara 310 / 320
Dry Bath

ROCKER

Please read this instruction manual before using this product.

Important Notice

This instrument is designed for laboratory usage only. Please read this manual carefully before installing and operating. The instrument shall not be modified in any way. Any modification will void the warranty and may result in potential hazard. We are not responsible for any injury or damage caused by any non-intended purposes and modifying the instrument without authorization.

1. Check the voltage specified on the name plate and ensure it matches the line voltage in your location.
2. Please operate the instrument in well ventilated area and keep away from inflammables.
3. The surface temperature of the instrument is very high during or after work, please don't touch it to avoid being burnt.
4. Please change heating blocks with block lifter.
5. Do NOT contact the sharp objects prevent from PTFE coating damage.
6. Keep vents dry and clean when it is used as water bath to avoid any hazard.
7. Operating condition
   (a) Ambient temperature: 5~ 40℃
   (b) Relative humidity: 80% RH Max.
   (c) Power supply: 100~120V, 50/60Hz or 200~240V, 50/60Hz
   (d) Fuse for Sahara 310: T1.5A, 250V for 100~120V or T1A, 250V for 200~240V
       Fuse for Sahara 320: T3A, 250V for 100~120V or T1.5A, 250V for 200~240V
   (e) Altitude: up to 2000 m   (f) IP20
   (g) Pollution degree: II   (h) Overvoltages category: I
   (i) Indoor use

   Caution: Hot surface

   The equipment must be disconnected from the mains supply before replacing the fuse link.

Unpacking

When unpacking, notice if the instrument is in good situation. If not, please keep the serial number along with packing case and contact the distributor or contact us by e-mail: export@rocker.com.tw immediately for assistance.

Item	Content
1	Sahara 310/320 Main Unit
2	Power Cord
3	Block (Optional)
4	Instruction Manual

Main Part Diagram

(1). Main Part

Position	Designation	Position	Designation
1	Power Switch	5	Block (Optional)
2	Power Plug and Fuse Holder	6	Hole for Mercury Thermometer
3	Chamber	7	Hole for Block Lifter
4	Operation Panel		

(2). Operation Panel
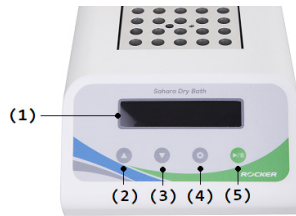
Position	Designation	Position	Designation
1	Display	4	Setting / Calibration Button
2	UP Button	5	Start / Stop Button
3	Down Button		

Button / Symbol / Display Explication

(1). Buttons

Position	Designation	Description
▲	Up Button	Select program or change setting value. (Hold the button to change value continuously)
▼	Down Button	Select program or change setting value. (Hold the button to change value continuously)
✿	Setting / Calibration Button	1. Set heating temperature and timer 2. Set calibration temperature
▶ / ‖	Start / Stop Button	1. Start or stop heating 2. Stop setting or calibration

(2). Symbols

Symbol	Designation	Description
\ | / –	Timer / Counter indication	Symbols alternate every 0.5 sec
_ . : ↑	Heating indication	Symbols alternate every 0.5 sec

(3). Display
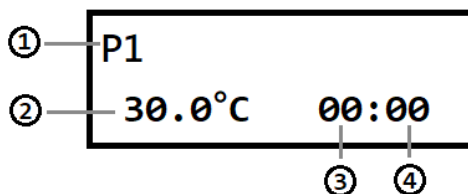
Position	Designation	Position	Designation
1	Program Name (P1~P3)	3	Timer (Hour)
2	Actual / Setting Temperature	4	Timer (Minute)

Operation

1. Chamber Operation

One-piece chamber with PTFE coating which can be used with block(s), water and Armor beads for wide applications.

Dry Bath

Water Bath

Bead Bath

2. Program Menu

Item	Program	Description	Remark
Program List		Continuous heating at 37°C	Temperature is adjustable, timer is fixed.
	P1	Preheating or continuous heating at 37°C	Both temperature and timer are adjustable.
	P2	Preheating or continuous heating at 60°C	Both temperature and timer are adjustable.
	P3	Preheating or continuous heating at 100°C	Both temperature and timer are adjustable.

Item	Program	Description	Remark
Parameter Setting	Temperature	0°C ~ 150°C	Operation temp. should be 5 °C higher than environmental temp.
	Timer / Counter	00:00 ~ 99:59	00:00 represents continuous heating and counter always starts from 00:00 (HH:MM).

3. Program Operation

(a). Continuous Heating Mode (Timer sets as"00:00" or "∞")

Step	Operation	Display
1	Switch on the instrument and LOGO shows on the screen.	**Sahara Dry Bath**
2	Last used program shows on the screen in 2 seconds [1].	**37.0°C** **∞**
3	Select desired heating program by using 「▲」 or 「▼」. (4 programs are selectable.)	**P1** **37.0°C** **00:00**
4	Press 「▶ / ∥」 to start heating[2].	**P1** **24.6°C↑** **00:00**
5	The counter starts from 00:00 when sett temperature has been reached.	**P1** **37.0°C** **00:01**
6	Press 「▶ / ∥」 to stop heating and back to program list after finishing experiment [3] [4].	**P1** **37.0°C** **00:00**

(1) The machine will memorize the selected program if the program is stayed more than 3 seconds. The same program will maintain when machine is switch on next time

(2) Press 「▶ / ∥」 to stop heating or timing immediately and return to program list.

(3) ∞ stands for continuous heating, only counter indication shows up.

(4) 00:00 stands for continuous heating. The timer will stop until 99:59 but machine still maintains heating with heating indication, stop heating by pressing 「▶ / ∥」.

(b). Preheating Mode (Timer should not be set as "00:00")

Step	Operation	Display
1	Switch on the instrument and LOGO shows on the screen.	**Sahara Dry Bath**
2	Last used program shows on the screen in 2 seconds [1].	**37.0°C**　　　　　**∞**
3	Select desired heating program by using 「▲」 or 「▼」. (4 programs are selectable.)	**P2** 　**60.0°C**　　　　**00:30**
4	Press 「▶ / ‖」 to start heating[2].	**P2** 　**25.3°C↑**　　　　**00:30**
5	Beep indicates set temperature has been reached and clock symbol shows up.	**P2** 　**60.0°C**　　　　**00:30🕐**
6	Press 「▶ / ‖」 to start counting down[2].	**P2** 　**60.0°C**　　　　**00:30**
7	The 15-sceond beeps indicate program is complete, press any button to stop beeping. Press 「▶ / ‖」 back to program list.	**P2** 　**60.0°C**　　　　**00:00**

(1) The machine will memorize the selected program if the program is stayed more than

　　3 seconds. The same program will maintain when machine is switch on next time

(2) Press 「▶ / ‖」 to stop heating or timing immediately and return to program list.

4. Temperature and Timer Setting

Step	Operation	Display
1	Switch on the instrument, select desired program by using 「▲」 or 「▼」 and press 「✿」 to enter setting status[1].	**P2** 　**60.0°C**　　　　**00:00**
2	Press 「▲」 or 「▼」 to modify the flash figure (temperature). Press 「✿」 to enter Timer Setting [2] [3].	**P2** 　**45.0°C**　　　　**00:00**
3	Press 「▲」 or 「▼」 to modify the flash figure (hours). Press 「✿」 to enter next parameter [2] [3].	**P2** 　**45.0°C**　　　　**02:00**
4	Press 「▲」 or 「▼」 to modify the flash figure (minutes) and press 「✿」 to finish setting [2] [3].	**P2** 　**45.0°C**　　　　**02:30**
5	「OK?」 shows up to confirm the setting correctness. Press 「✿」 to store the program, otherwise press 「 ▶ / ‖ 」 to quit setting status.	**P2**　　　　　　**OK?** 　**45.0°C**　　　**02:30**
6	Back to program list after finishing the setting status.	**P2** 　**45.0°C**　　　　**02:30**

(1) No name program can only adjust temperature. Timer is fixed for continuous heating.

(2) Press 「 ▶ / ‖ 」 to stop setting status and return to program list.

(3) Beep indicates the setting is reached limit value.

5. Temperature Calibration

Insert thermometer* into tube** which filled with glycerol and touches the thermometer to bottom of tube. Insert the tube on the center of heating block as shown on the right and calibrate temperature as following procedure.

Digital or mercury thermometer can be used for calibration, please make sure thermometer is calibrated regularly or certified by standard organization to ensure the accuracy.
General lab thermometers are often not accurate enough for calibration.
**Choose the tube according to heating block you used to calibrate.*

Step	Operation	Display
1	Hold 「⚙」 for 1 second to enter temperature calibration mode during heating or timing status.	**P1** **27.1°C↑**　　**00:00**
2	The set temperature of current program [1] will be calibrated and start heating [2].	**P1**　　**CAL** **27.6°C**　**Heating↑**
3	A 60-min timer is necessary for temperature stabilization after set temperature has been reached, and temperature adjusting page appears after timer is complete [3].	**P1**　　**CAL** **37.1°C**　**Wait 60**
4	Press 「▲」 or 「▼」 to modify the temperature which is identical to thermometer and press 「⚙」 to store and finish calibration [3].	**P1**　　**CAL** **ADJ:**　　**36.5°C**

(1) The calibration parameters in each program are independent.

(2) "Cooling "shows up when current temperature is higher than setting temperature.

(3) Press 「 ▶ / ‖ 」 to stop calibration then"Stop CAL Temp.?" shows up.
　 Press 「⚙」 to quit otherwise press 「 ▶ / ‖ 」 to continue the calibration

Maintenance

1. Please operate the instrument in well ventilated area.
2. If liquid overflows or is spilled, please switch off the instrument immediately. Clean the instrument while it cools down.
3. Incorrect power source may cause fuse blew. A spare fuse is available in fuse holder and can be taken out with flathead screwdriver.
4. Keep vents dry and clean when it is used as water bath to avoid any hazard. Please remove the liquid carefully with beaker.
5. Do **NOT** switch on the machine when liquid flow in vents, please contact the distributor for immediately assistance.

Note. If machine is forced to switch on when liquid flow in, it might cause serious damage, such as electric shock, short circuit, burn out, etc.

Troubleshooting

Issue	Cause and Solution
Fail to start or Abnormal Display	• Loose plug → Reconnect plug to power supply. • Fuse blew → Replace a new fuse. • Instrument is over temperature → Cool the instrument down and operate in well-ventilated circumstance. • Display or components failure → Contact distributor for assistance.
Liquid spilled during heating process	• Incorrect temperature setting → Reset heating temperature. • Incorrect temperature of block → Calibrate the temperature.
Temp. Error!!	• Temp. of sensor is 5 °C higher than setting temp → Cool the instrument down and operate in well-ventilated circumstance.
Others	• Please contact distributor for assistance

Ordering Information

179310-11(22)	Sahara 310, Dry Bath (without block) AC110V,60Hz (AC220V,50Hz)
179320-11(22)	Sahara 320, Dry Bath (without block) AC110V,60Hz (AC220V,50Hz)
179300-01	Block module, 6.4 mm diameter, 0.2 ml, 64 well (depth: 17 mm)
179300-02	Block module, 8.2 mm diameter, 0.5 ml, 20 well (depth: 25 mm)
179300-03	Block module, 10.2 mm diameter, 1.5 ml (or 2.0 ml), 20 well (depth: 33 mm)
179300-05	Block module, 13 mm diameter, 20 well (depth: 36 mm)
179300-06	Block module, 20 mm diameter, 12 well (depth: 45 mm)
179300-07	Block module, 25 mm diameter, 6 well (depth: 45 mm)
179300-10	Block module, 17 mm diameter, for 15 ml centrifuge tube, 12 well (depth: 45 mm)
179300-00	Armor Beads (500 ml)
179250-43	Protective Lid

179300-01   179300-02   179300-03   179300-05

179300-06   179300-07   179300-10