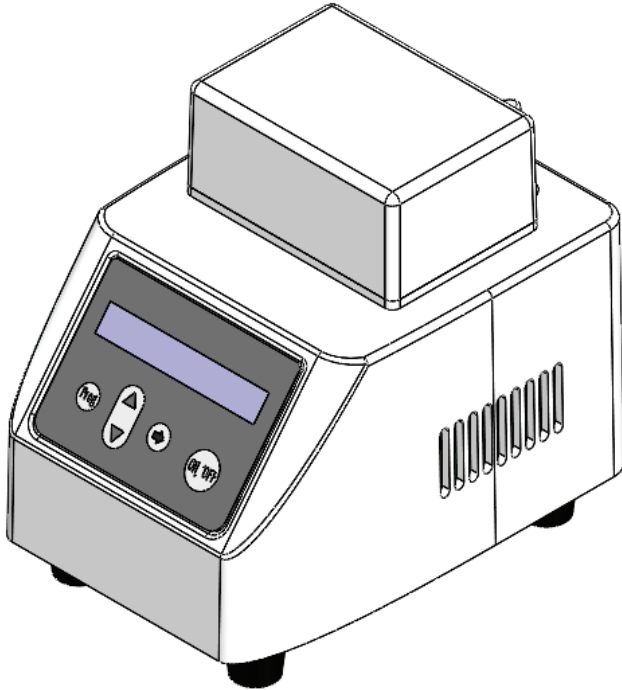


Mini Dry Bath

Heating Mini Dry Bath

Heating & Cooling Mini Dry Bath

Heating & Cooling Mini Dry Bath with Hot Lid



Please carefully read the Instructions, and use the product safely under the direction of the Instructions.


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1. Safety notes

 **Caution!**

- Please carefully read the Manual before operating the product, and observe the specifications on safe operation.
- The product can be operated only by one who has been specially trained.

 **Caution Hot!**

- Please touch the base and the heating module with care. The maximum temperature of the heating module is as high as 100°C (specific temperature shall be subject to technical parameter).
- After the shutdown of the product, care should be taken not to be scalded by the afterheat on the heating module.

 **Ground protection for safety!**

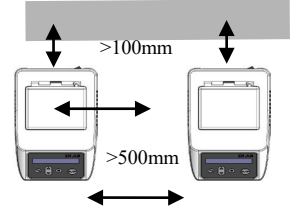
- For the purpose of safety, please confirm the power socket has been properly grounded before putting the product into service.

- Please make sure that the power voltage meets the voltage requirement specified on the nameplate.
- Please use the product indoors. Don't use it in dangerous environment or in water.
- The instrument shall be put at a place with low humidity and less dust, far away from water source and without the perpendicular incidence of sunshine and intense light source. The room shall be well-ventilated, free of corrosive gases or strong magnetic interference, and far away from heating gas, fire and all other heat sources.
- There are air vent holes at the bottom and both sides of the device. During the operation of device, these air vents must be not blocked or shielded by any object but well-ventilated.
- Before each startup of the product, please confirm that the product and its accessories are undamaged. For the purpose of safety, please use the standard accessories listed in the chapter "Accessories" in accordance with the Manual. Accessories must be firmly connected to the product in a way that avoids separations.
- During the work of the product, please wear proper protective equipment. You need to make clear the possibility of and be held responsible for the dangerous circumstances above by yourself.
- The power cable must be kept away from the surface of heating module rather than shield the device.
- Please prevent water from splashing on the electrical elements of the product.
- The power supply can be fully disconnected only if the power plug is pulled out. Before assembly, disassembly, cleaning or maintenance, the main power plug must be pulled out.

2. Product overview

2.1 Scope of application

- The product is intended for heating liquids in the environments like school, laboratory and factory. An environment where the product works should meet the following requirements.
- Voltage fluctuation: within the range of -10%~+10% of normal value (the product is designed for indoor socket);
- Min. distance between instruments, instrument and wall:



The product is unusable in residential area or under the restrictions specified in Chapter 1.

Fig. 2.1

2.2 Technical parameters

Model	Heating & Cooling Mini Dry Bath with Hot Lid	Heating & Cooling Mini Dry Bath	Heating Mini Dry Bath
Display	LCD	LCD	LCD
Range of temperature setting [°C]	0~100	0~100	25~100
Range of temperature control [°C]	Room temperature -23~100	Room temperature -23~100	Room temperature +5~100
Accuracy of temperature control [°C]	±0.5	±0.5	±0.5
Accuracy of temperature adjustment [°C]	0.1	0.1	0.1
Heating time (25°C~100°C)	≤20min	≤20min	≤20min
Cooling time (20°C~0°C)	≤25min	≤25min	/
Maximum heating rate	8°C /min	8°C /min	6.5°C /min
Maximum refrigeration rate	3°C /min	3°C /min	/

Range of timing	0~999min/ 0~999sec	0~999min/ 0~999sec	0~999min/ 0~999sec
Program	9 pcs (2 stages for each)	9 pcs (2 stages for each)	9 pcs (2 stages for each)
Fast calibration	Supported	Supported	Supported
USB interface protocol	Supported	Supported	Supported
Error code hint	Supported	Supported	Supported
External dimension [L x W x H mm]	110x162x140	110x162x14 0	110x162x140
Weight of whole machine [kg]	≤1	≤1	≤1
Power supply [v]	100~240V, 50/60Hz	100~240V, 50/60Hz	100~240V, 50/60Hz
Maximum Power [w]	60	60	60
Operating temperature [°C]	+10~40	+10~40	+10~40
Operating humidity[% rH]	≤80	≤80	≤80

2.3 Components

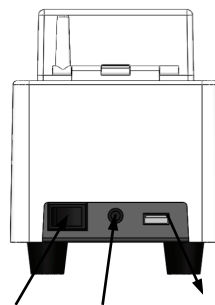
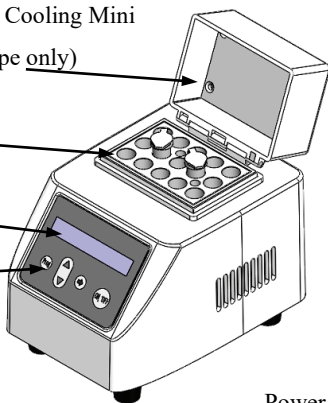
Hot cover (for Heating & Cooling Mini

Dry Bath with Hot Lid type only)

Heating module

Display screen

Operation
panel



Power switch Power line

USB interface

Fig. 2.3.1

Fig. 2.3.2

Name	Description
ON/OFF	Start / stop program
Prog.	Select a program

▲ ▼	Set time / temperature parameter
➡	Enter parameter setting / move the cursor

Table 2

3. Operating instructions

3.1 Open-package inspection

Open-package inspection aims to confirm the completeness of associated parts. The packing list is given below:

Name	Qty.
Main unit	1
Power line	1
Power adapter	1
Handle	1
Operating manual	1

If you find any damage on the package, please specify the damage on the receipt. If you find any internal damage after opening the package, please contact local supplier or manufacturer.



Caution:

If you find any visible damage on the product, please don't connect the product to power supply.

3.2 Operation

3.2.1 Preparation

- The device shall be steadily placed on a work platform, especially a ventilated place without flammables or explosives.
- Inspect whether the grid voltage falls within the working voltage range specified on the nameplate;
- Make sure the power socket is well-grounded;
- Connect power line well, and open power switch.

3.2.2 Create a program

- To press the “Prog.” key, and select a program;
- For example, select P1, and then press “➡” key to enter the temperature/time parameter setting interface, later press “➡” to move the cursor and “▲” or “▼” key to modify temperature/time value.
- Every program may set two stages, “■” means temperature and time of the first stage, and “■” means temperature and time of the second stage.

P1	37	5min	■
P1	60	3min	■

Temperature and time of the first stage

Temperature and time of the second stage

The second stage may be closed and not used. For setting the time of the second stage, the “▼” key shall be pressed for a while till “OFF” appears, by then the second stage will be closed.

P1	60	OFF	■
----	----	-----	---

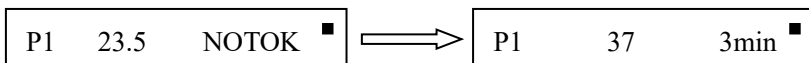
3.2.3 Modify the time unit

Please keep pressing the “Prog.” key and turn on the power switch, and please not release the “Prog.”Key until the setting interface of time unit pops up, and then press the “➡” key to select time unit between minute (min) and second (sec), finally press the “ON/OFF” key for confirmation.



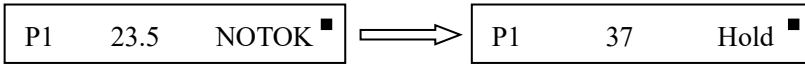
3.2.4 Run a program

- To press the “Prog.” Key, and select one of the 9 Preset Programs P1,P2...P9.
- For example, after selecting Preset Program P1, the “ON/OFF” key may be pressed to run it, and the device will start to run the first stage of program. When the temperature rises, “NOTOK” will be displayed on the right side of display screen; when the temperature reaches the set value, a long beep will sound to prompt this, and the countdown will begin, and the set time, e.g. “3 min”, will be displayed on the right side of display screen, and the icon “■” of the first stage of program will flash.



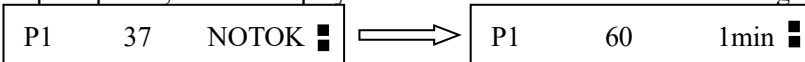
If the time of the first stage of program is set as “0min”, when the temperature of the first stage reaches the set temperature, a long beep will sound to prompt this, the

constant temperature state will begin, and “Hold” will be displayed on the right side of display screen.



- After the timekeeping of the first stage ends, the device will automatically run the second stage of program, similarly, when the temperature rises, “NOTOK” will be displayed on the right side of display screen; when the temperature reaches the set value, a long beep will sound to prompt this, and the countdown will begin, and the set time, e.g. “1 min”, will be displayed on the right side of display screen, and the icon “■” of the second stage of program will flash.

After the timekeeping of the second stage of program ends, a long beep will sound to prompt this, and the display interface will turn back to the first stage.



3.2.5 Stop a program

During program running, if the “ON/OFF” key is pressed, the program will stop and the timekeeping will end.

Normal work of the product during the operations above means the product can be put into normal service. If abnormal work occurs, it means the product may be damaged during transport, please contact the after-sales service center of local supplier or manufacturer.

3.2.6 Restore the factory settings

Please keep pressing the “➡” key and turn on the power switch, and please not release the “➡” key until the “System Reset?” interface pops up in the display screen, and press the “ON/OFF” key to confirm the restoration of factory settings.

3.2.7 Temperature calibration

Before delivery, the temperature of device has been calibrated, but the actual temperature may deviate from the real temperature for some reasons, and the temperature deviation may be corrected by temperature calibration.

It is recommended that the temperature must be calibrated every time based on temperature calibration function after change of module, in order to ensure temperature control accuracy.

The device adopts the three-point temperature calibration method, i.e. synchronous linear calibration at the three temperature points 37°C, 60°C, 90°C. The linear calibration of the three temperature points guarantees that the accuracy of the three temperature points of the system within $\pm 0.5^{\circ}\text{C}$.

At the time of temperature calibration, the ambient temperature must be 15 to 25 °C.



Caution:

Before delivery, the temperature of device has been calibrated, so please don't use this function at will!

Calibration procedure:

- To fill silicone oil in the center hole of module, and put the probe of thermometer in the hole (The thermometer shall be accurate to 0.1°C, and its probe must be fully immersed in the hole.);
- To keep pressing the “ON/OFF” key and turn on the power switch, please not release the “ON/OFF” key until the “System Cali?” interface pops up in the display screen, finally press the “ON/OFF” key to confirm the entry to the calibration interface;
- The device will first automatically control temperature at 37°C, and remain at the constant temperature for 20min, then the reading of thermometer shall be read, if the reading is 36.5°C, the “▲” or “▼” key shall be pressed to modify the displayed value in the screen to be 36.5, finally the “ON/OFF” key shall be pressed for confirmation;

P0	37	36.2
----	----	------

- After the confirmation by the “ON/OFF” key, the device will automatically rise to 60°C, and remain at the constant temperature for 20min, then the reading of thermometer shall be read, if the reading is 60.5°C, the “▲” or “▼” key shall be pressed to modify the displayed value in the screen to be 60.5, finally the “ON/OFF” key shall be pressed for confirmation;

P0	60	60.3
----	----	------

- After the confirmation by the “ON/OFF” key, the device will automatically rise to 90°C, and remain at the constant temperature for 20min, then the reading of thermometer shall be read, if the reading is 90.5°C, the “▲” or “▼” key shall be

pressed to modify the displayed value in the screen to be 90.5, finally the “ON/OFF” key shall be pressed for confirmation;

P0	90	90.2
----	----	------

- After the calibration of all the three points, if the display screen alternatively shows the “Cali Successful” interface and the K, B value interface, it can be considered that the calibration ends; if the display screen only shows the “Cali Failed” interface, the input value of calibration may be wrong, and the temperature calibration shall be repeated once in this case.

4. Cleaning and Maintenance

Operate and maintain the product properly, so that it is in a good working state, which can extend the service life of the product. In routine service, keep the product dry and clean, remove the spilled liquid quickly, clean the outer surface with a non-grinding cleaner, and do not connect the power supply until all surfaces are dry. If liquid or moist solid enters the product, please disconnect the power supply quickly and leave off, and contact the manufacturer / supplier for more advice.

- The deep hole of module shall be regularly cleaned by clean soft rag with a little of anhydrous alcohol so that the test tube fully contacts the hole wall to realize good heat conduction and avoid pollution.
- Stains on the surface of device, if any, shall be cleaned by clean soft rag with detergent.
- Keep the product clean, and the cleaning solution is not allowed to flow into the machine.
- Power must be disconnected before maintenance and cleaning, and please use our recommended methods to clean the product.
- It’s forbidden to clean the module or the device by corrosive cleaning solution.
- When the product is not used for a long time, please store the product with power off and place it in a dry, clean and smooth place in normal temperature.



Warning!

Before any maintenance or inspection, the power cable must be pulled out of the socket.

Please refer to *Service Manual* for details on machine maintenance.

5. Fault diagnosis

The advanced production technology and testing method are used for the dry bath and a rigorous testing is conducted for each instrument before delivery, so that this product has good reliability. In service, the common failures are generally caused by improper operation or setting. If there are faults that cannot be handled, please record the fault phenomenon and notify the local dealer, or contact us directly.

The common phenomena of the dry bath in the application are shown as follows:

Fault phenomena	Causes	Solutions
Error 1	Fault of circuit board or sensor	Return to depot for repair
Error 2	Fault of hot cover circuit board or sensor	Return to depot for repair
Error 3	The displayed temperature exceeds the temperature control range.	1. Restore factory settings; 2. Return to depot for repair
Error 4	Hot cover temperature exceeds the temperature control range.	1. Restore factory settings; 2. Return to depot for repair
The display screen does not turn bright after power-on	Loose connection of power cable	To inspect whether the power cable is firmly connected
	Poor contact of switch	Change switch
	Controller damage	Return to depot for repair
The module does not get hot or cold	Damage of internal circuit	Return to depot for repair

Product certification

Our company has certified that the product meets applicable national product standards and industrial product standards of China as well as ISO9001 standards, and further certified that the product meets applicable standards published by other members of the ISO.

Warranty

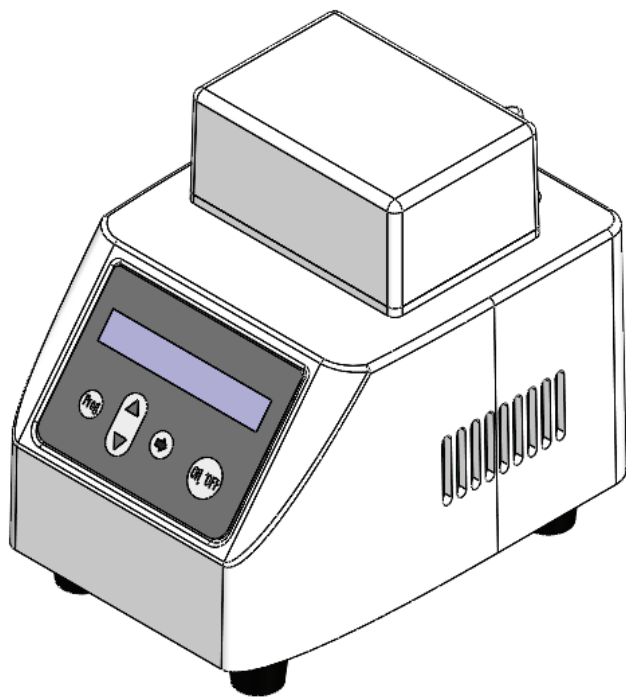
According to the manufacturer's warranty clause, the warranty period of the product is 24 months provided that it is used by the normal operation method under the normal service conditions specified in the Manual. If a problem covered by the manufacturer's warranty clause occurs, please contact local supplier. Or, you can directly mail the product to the manufacturer with the packing list and a problem description attached. You need to bear the transportation expense incurred by such mailing.

Mini 金属浴

加热型 Mini 金属浴

加热制冷型 Mini 金属浴

带热盖加热制冷型 Mini 金属浴



使用说明书

请仔细阅读说明书并在说明书的操作指导下安全使用本仪器。

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1. 安全事项



警告!

- 操作仪器前请认真阅读本说明书并遵守安全操作规范。
- 经过专业培训的人员才能操作本仪器。



小心烫伤!

- 当触摸仪器底座和加热盘时请注意，本仪器加热盘的最高温度为 100C（具体温度以技术参数为准）。
- 仪器关闭后模块会有余温，请避免烫伤。



安全接地保护!

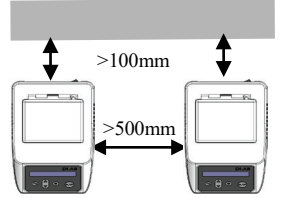
- 为保证安全，使用本仪器前请确认电源插座已良好接地。

- 请确保使用电源电压跟铭牌要求的一致。
- 本仪器是室内使用产品，请勿在危险环境及水中运行。
- 本仪器应放置在湿度低、灰尘少并远离水源，避免阳光及强光源直射的地方，室内应通风良好，无腐蚀性气体或强磁场干扰，远离暖气、火及其他一切热源。
- 本仪器底部及两侧是通风孔，仪器在运行时，在通风口处不允许有任何物体盖住通风口，确保通风良好。
- 每次开启仪器之前请确认仪器及其配件未损坏。请使用“配件”章节中列出的标准配件，并依照说明书使用配件，以确保安全。配件务必牢固的连接在仪器上，避免脱离。
- 工作时，请穿戴合适的防护设备，对于潜在危险可能性需要用户自己判断，自行承担 responsibility。
- 确保电源线远离加热模块表面，不要遮盖仪器。
- 请勿将水溅到电器元件上。
- 仪器只能通过拔掉电源插头才能完全断电，因此，在进行装卸配件、清洁和维护前必须先把手电源插头拔下。

2. 产品概述

2.1 使用范围

- 本仪器是为学校、实验室和工厂等应用环境设计的，用于对液体进行加热，供以下环境使用：
- 安装类型：产品是为了连接室内插座而设计的，电压波动不超过正常值的 $\pm 10\%$ 。
- 仪器间、仪器与墙壁的最小距离



本仪器不适合在住宅区以及第 1 章中规定的一些限制条件下应用。 图 2.1

2.2 技术参数

型号	带热盖加热制冷型 Mini 金属浴	加热制冷型 Mini 金属浴	加热型 Mini 金属浴
显示	LCD	LCD	LCD
温度设定范围[°C]	0~100	0~100	25~100
温度控制范围[°C]	室温以下 23~100	室温以下 23~100	室温+5~100
温度控制精度[°C]	± 0.5	± 0.5	± 0.5
温度调节精度[°C]	0.1	0.1	0.1
升温时间（25°C~100°C）	$\leq 20\text{min}$	$\leq 20\text{min}$	$\leq 20\text{min}$
降温时间（20°C~0°C）	$\leq 25\text{min}$	$\leq 25\text{min}$	/
最大加热速率	8°C/min	8°C/min	6.5°C/min
最大制冷速率	3°C/min	3°C/min	/
定时范围	0~999min/ 0~999sec	0~999min/ 0~999sec	0~999min/ 0~999sec
程序	9 个（每个 2 段）	9 个（每个 2 段）	9 个（每个 2 段）
快速校准	支持	支持	支持
USB 接口协议	支持	支持	支持
错误代码提示	支持	支持	支持
外形尺寸[长 x 宽 x 高 mm]	110x162x140	110x162x140	110x162x140
整机重量[kg]	≤ 1	≤ 1	≤ 1

电源[v]	100~240V, 50/60Hz	100~240V, 50/60Hz	100~240V, 50/60Hz
最大功率[w]	60	60	60
工作温度[°C]	+10~40	+10~40	+10~40
工作湿度[% rH]	≤80	≤80	≤80

2.3 结构配置

热盖(仅带热盖加热制冷型

Mini 金属浴款带加热)

加热模块

显示屏

操作面板

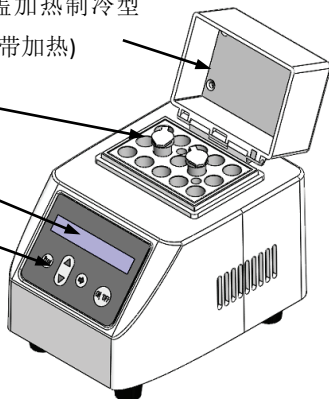
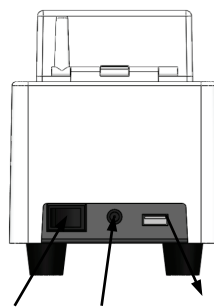


图 2.3.1



电源开关 电源线 USB 接口

图 2.3.2

名称	说明
ON/OFF	运行/停止程序
Prog.	选择程序
▲ ▼	设置时间/温度参数
➡	进入参数设置/移动光标

表 2

3. 操作说明

3.1 开箱检查

开箱检查确认随机配件都在，装箱清单如下：

名称	数量
主机	1 台
电源线	1 条
电源适配器	1 个
提手	1 个
使用说明书	1 件

用户如发现任何包装损伤，请在收据上注明。在打开包装后如果发现任何内部损伤，请同时与当地供货商或制造商取得联系。



注意：

如发现仪器上有任何明显的损伤，请不要将其连接到电源。

3.2 操作

3.2.1 仪器准备

- 将仪器平稳安放在工作台上，特别注意应该把仪器安放在周围没有易燃易爆物体且通风的地方
- 检查铭牌上指定的工作电压与电网电压是否匹配
- 电源插座要求接地良好
- 连接好电源线，打开电源开关

3.2.2 新建程序

- 按“Prog.”键，选择程序
- 如选择 P1，然后按“➡”键进入温度/时间参数设置。接着按“➡”可移动光标，按“▲”或“▼”键修改温度/时间值。
- 每个程序可设置两段，符号“■”表示第一段的温度和时间，“■”表示第二段的温度和时间

P1	37	5min	■
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第一段的温度和时间

P1 60 3min ■

第二段的温度和时间

第二段可以关闭不启用，在设置第二段时间时，一直按“▼”键会出现“OFF”值，表示第二段关闭。

P1 60 OFF ■

3.2.3 修改时间单位

打开机器电源开关前，按住“Prog.”键不松手，打开电源开关，直到出现时间单位设置界面后松开“Prog.”键，按“▶”键即可选择时间单位，可在 min（分）和 sec（秒）两种单位间切换选择，按“ON/OFF”键确认。

Time unit: min ←▶ Time unit: sec

3.2.4 运行程序

- 按“Prog.”键，可选择 P1,P2...P9 共 9 个预设程序
- 如选中预设程序 P1，按“ON/OFF”键运行程序，仪器先开始运行第一段程序。升温时，显示屏右侧显示“NOTOK”，当温度达到设定温度后，长蜂鸣提示，开始倒计时，显示屏右侧显示设定时间，如“3min”，第一段标识“■”闪烁。

P1 23.5 NOTOK ■ → P1 37 3min ■

若设定第一段时间为“0min”，则当第一段温度达到设定温度后，长蜂鸣提示，进入恒温状态，显示屏右侧显示“Hold”。

P1 23.5 NOTOK ■ → P1 37 Hold ■

- 第一段计时结束后，仪器自动运行第二段程序，同样，升温时，显示屏右侧显示“NOTOK”，当温度达到设定温度后，长蜂鸣提示，开始倒计时，显示屏右侧显示设定时间，如“1min”，第二段标识“■”闪烁。

P1 37 NOTOK ■ → P1 60 1min ■



第二段计时结束后，长蜂鸣提示，显示屏界面跳转回第一段。

3.2.5 中止程序

程序运行过程中，按“ON/OFF”键，程序中止，定时结束。

如果上述操作运行正常，说明仪器可以正常使用。如果运行不正常，仪器可能已经在运输过程中损坏，请与制造商/供货商服务中心取得联系。

3.2.6 恢复出厂设置

打开机器电源开关前，按住“”键不松手，打开电源开关，直到显示屏出现“System Reset?”界面后松开“”键，按“ON/OFF”键确认恢复出厂设置。

3.2.7 温度校准

1.本仪器出厂前温度已校准，但由于某些原因造成实际温度与现实温度之间存在偏差，可用通过温度校准修正温度偏差。

2.建议每次更换模块后根据温度校准功能进行校准，确保控温精度。

本仪器采用三点温度校准法：37℃、60℃、90℃三点温度同步线性校准法。经三点温度线性校准后，系统保证其温度点的温度准确度 $\leq \pm 0.5^\circ\text{C}$ 。

校准温度时环境温度必须介于 15℃~25℃。



注意：

本仪器出厂前温度已校准，请勿随意使用此功能！

具体校准操作方法如下：

- 将硅油注入模块中心位置的孔内，并将温度计探头放入孔内（要求温度计精度 0.1℃，温度计探头必须能完全浸入孔内）。
- 打开机器电源开关前，按住“ON/OFF”键不松手，打开电源开关，直到显示屏出现“System Cali?”界面后松开“ON/OFF”键，再按“ON/OFF”键确认进入校准界面。
- 仪器自动先向 37℃控温，当温度达到 37℃后，再恒温 20 分钟，读取温度计上显示的数值，如读取数值为 36.5℃，然后按按“▲”或“▼”键修改显示屏中的数值为 36.5，按“ON/OFF”键确认。

P0	37	36.2
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- 按“ON/OFF”键确认后仪器自动向 60℃升温，当温度达到 60℃后，再恒温 20 分钟，读取温度计上显示的数值，如读取数值为 60.5℃，然后按按“▲”或“▼”键修改显示屏中的数值为 60.5，按“ON/OFF”键确认。

P0	60	60.3
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- 按“ON/OFF”键确认后仪器自动向 90°C 升温，当温度达到 90°C 后，再恒温 20 分钟，读取温度计上显示的数值，如读取数值为 90.5°C，然后按按“▲”或“▼”键修改显示屏中的数值为 90.5，按“ON/OFF”键确认。

P0	90	90.2
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- 三点全部校准完毕后，显示屏若交替出现“Cali Successful”界面和 K,B 值界面，表示校准完成；若显示屏出现“Cali Failed”界面，则可能由于输入的校准值有误，需退出重新进行温度校准。

4. 维护保养

正确地使用和维护仪器，使其处于良好的工作状态，可以延长仪器的使用寿命。常规实验中请保持仪器干燥与清洁，使用非研磨清洁剂清理外表面，在所有表面干燥之前请不要连接电源，如果液体或潮湿固体进入仪器内部，请迅速断开电源，联系制造商/供应商获得更多建议。

- 本仪器应定期用干净软布沾少量无水酒精清洗模块上的深孔，保证试管与孔壁接触充分、导热良好、避免污染。
- 本仪器表面如有污迹，可用软布沾清洁膏清洗。
- 保持仪器整洁，切勿使清洗溶液流入机内。
- 维护和清理之前必须断电，请我们使用推荐的方法清理仪器。维护和清理之前必须断电，请使用我们推荐的方法清理仪器。
- 模块和仪器不允许使用有腐蚀性的清洗液清洁。
- 当产品长期不用时，请将仪器断电存放，并置于干燥、洁净、常温、平稳的环境。



警告！

在进行任何维护或检查步骤前请先拔下电源线。

机器维护详情请参照《产品服务手册》

5. 故障诊断

金属浴采用了先进的生产工艺和测试手段，每一台在出厂前都进行了严格的测试，具有良好的可靠性。在使用过程中，常见的故障一般是操作或设置不当引起的。若发现无法处理的故障，请记录故障现象并通知当地代理经销商，也可直接与我们联系。

以下是金属浴在应用中可能出现的故障现象：

故障现象	原因分析	处理措施
Error 1	电路板或传感器故障	返厂维修
Error 2	热盖电路板或传感器故障	返厂维修
Error 3	显示温度超出控温范围	1、恢复出厂设定； 2、返厂维修
Error 4	热盖温度超出控温范围	1、恢复出厂设定； 2、返厂维修
打开电源显示屏不亮	电源线连接不牢靠	检查电源线连接是否牢靠
	开关不良	调换开关
	控制器损坏	返厂维修
模块不升温或制冷	内部电路损坏	返厂维修

产品认证

本产品认证符合中国国家产品标准和行业产品标准及 ISO9001 标准，并进一步认证本产品符合其他国际标准组织成员的相关标准。

质量保证

根据制造商的质量保证条款，在本说明书规定的正常使用环境和操作方法下使用该仪器时，该仪器的保修期为 24 个月，如出现质保条款中的相关问题，请联系当地供货商。您也可以直接把仪器邮递至制造商，请附寄装箱单和问题现象描述说明，发生的运输费用由您承担。

