

# Thermo Control & Thermo Mix

## User Manual

Heating & Cooling Thermo Mix

Heating Thermo Mix

Heating & Cooling Thermo Controller



*Please read the User Manual carefully before use, and follow all operating and safety instructions!*

*We cannot be responsible to inform at real-time if the outline and specifications are subject to change for improvement.*

Ver. 20180830

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## **Preface**

Welcome to the Thermo Control & Thermo Mix User Manual . Users should read this Manual carefully, follow the instructions and procedures, and be aware of all the cautions when using this instrument.

## **Service**

When help needed, you can always contact the Service Department of manufacturer for technical support in the following ways:

Please provide the customer care representative with the

following information :

- Serial number ( on the rear panel )
- Certification
- Description problem (i.e., hardware or software)
- Methods and procedures adopted to resolve

the problems

- Your contact information

## **Warranty**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This

equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for a period of 24 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of improper installation, improper connections, misuse, accident or abnormal conditions of operation.

For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim

## 1. Safety Instructions

	<p>Warning!</p> <ul style="list-style-type: none"> <li>• Read the operating instructions carefully before use.</li> <li>• Ensure that only trained staff works with the instrument.</li> </ul>
	<p>Risk of burn!</p> <ul style="list-style-type: none"> <li>• Caution when touch the housing parts and the dry bath which can reach temperature of 110°C. (Please refer to technical parameters)</li> <li>• Pay attention to the residual heat after switching off.</li> </ul>
	<p>Protective ground contact!</p> <ul style="list-style-type: none"> <li>• Make sure that socket must be grounded (protective ground contact) before use.</li> </ul>

- When working wear personal safety guards to avoid the risk from:
  - Splashing and evaporation of liquids
  - Release of toxic or combustible gases
- Set up the instrument in a spacious are on a stable,

clean, non-slip, dry and fireproof surface. Do not operate the instrument in explosive atmospheres, with hazardous substances or under water.

- Temperature must always be set at least 50°C lower than the fire point of the media used.
- Be aware of hazards due to:
  - Flammable materials or media with a low boiling temperature
  - Overfilling of media
  - Unsafe container
- Process pathogenic materials only in closed vessels.
- Check the instrument and accessories prior to each use.
- Do not use damaged components. Safe operation is only guaranteed with the accessories provided by the manufacturer. Accessories must be securely attached to the device and can't come off by themselves. Always disconnect the plug before fitting accessories.
- The instrument can only be disconnected from the main power supply by pulling out the main or the connector plug.

- The voltage stated on the label must correspond to the main power supply.
- Ensure that the main power supply cable does not touch the dry bath. Do not cover the device.
- The instrument may only be opened by experts.

## 2. Proper Use

The instrument is designed for heating liquids in schools, laboratories or factories.

- Observe the minimum distances between the devices, between the device and the wall and above the assembly (min. 100 mm)

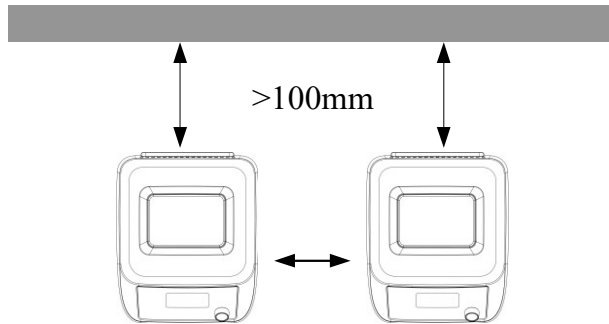


Figure 1

This device is not suitable for using in residential areas or other constraints mentioned in Chapter 1.

## 3. Inspection

### 3.1 Receiving Inspection

Unpack the equipment carefully and check for any damages which may have arisen during transport. Please contact manufacturer/supplier for technical support.



**Note:**

If there is any apparent damage to the system, please do not plug it into the power line.

### 3.2 Listing of Items

The package includes the following items:

Items	Qty
Main unit	1
Power cable	1
Block	1

User Manual	1
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Table 1

## 4 Control & display

### 4.1 Control

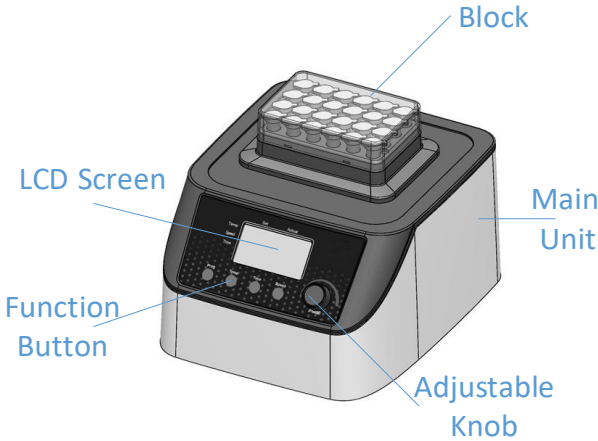


Figure 2 Thermo Control

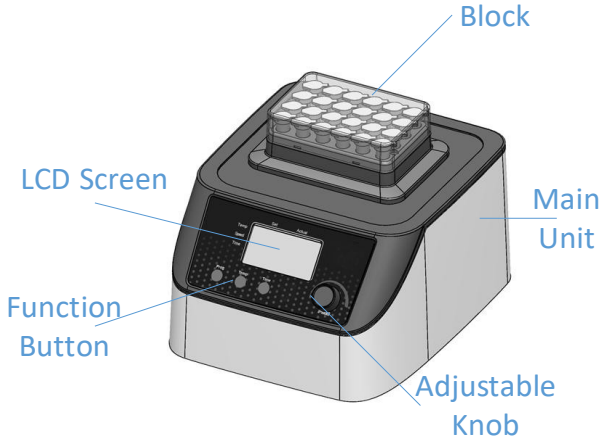


Figure 3 Thermo Mix

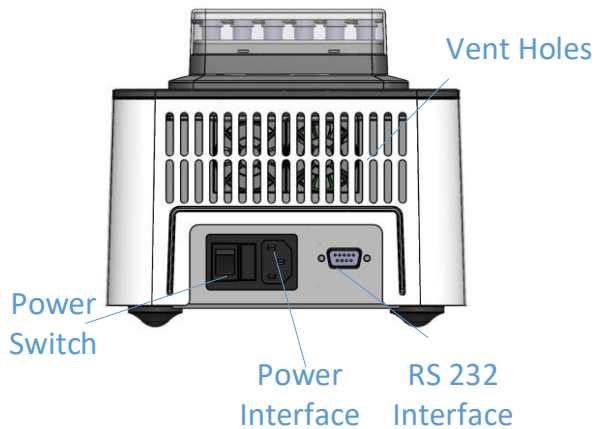


Figure 4 Interface & Power Switch

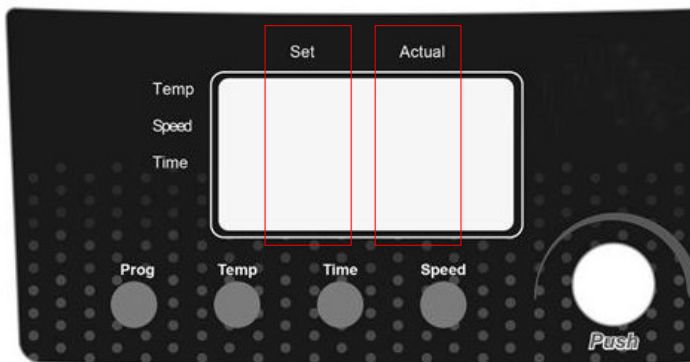
Adjustable Knob	At parameter setting state, rotate this knob can input values; After setting, push it to start work. At working state, short push to pause; Long push to stop working
RS232 Interface	Used for temperature calibration
Power Interface	Connect the power cable
Power Switch	Power on/off

Table 2

## 4.2 Display

Item	Introduction
Block	Changeable unit, suit for different tubes
LCD Screen	Display the setting and actual parameters
Function Button	Switch the input parameters or programming





Item	Introduction
Set value area	Displays the setting parameters
Actual value area	Displays the actual parameters
Prog	Program button, used for programming
Temp	Temperature setting button,

	when press this button, the temperature characters of the setting area are flashing
Time	Time setting button, when press this button, the time characters of the setting area are flashing
Speed	Mixing speed setting button, when press this button, the speed characters of the setting area are flashing (Thermo mix models)
Adjustable knob	At parameter setting state, rotate this knob can input values; When finish the parameters setting, push it to start work. At working state, short push to pause; Long push to stop working

## 5 Operation

## 5.1 Parameter setting methods

- a. Respectively, press the function button, the corresponding characters of the setting area are flashing
- b. Rotate parameter knob, input the target parameters.
- c. Wait 3s, the corresponding character will stop blinking, complete parameter setting.

Note: when power on, the setting area of the screen will display parameters of the last run.

When the time is adjusted to 00:00, means the product will run the continuous mode.

## 5.2 Start and Stop

**Start:** When finish the parameter input, push the adjustable knob to start work. And in the last line in the actual value area will display the characters “Run”. Refer to below figure.

	Set	Actual
Temp.	30.5	30.5
Speed	1500	-----
Timer	07:00	07:00
Prog.		Run

**Pause:** In the working state, short push the adjustable knob to pause. And in the last line in the actual value area will display the characters “Pause”. When in this state, only the timer and mixing functions are paused, the temperature control function is still working. (Thermal Control doesn't support mixing function). Refer to below figure.

	Set	Actual
Temp.	30.5	30.5
Speed	1500	----
Timer	07:00	07:00
Prog.		Pause

Resume: In the pause state, push the adjustable knob, will resume to working state. And in the last line in the actual value area will display the characters “Run” again.

Stop: In the working state, long push the adjustable knob to stop the current work. Mixing, temperature control and timer all stop. (Thermal Control doesn't support mixing function). Refer to below figure.

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.		

Note: To prevent from misoperation, if 10 minutes no action since pause, device will stop working and power off automatically.

## 5.3 Running

### 5.3.1 Single Step Work Without Saving

When power on, the screen shows the parameters of the last run, or factory settings. Push the Temp, Speed, Time button respectively, the corresponding characters will flash. Rotate the Adjustable knob to set the parameters. If time is set to 00:00, it means continuous working mode. After the setting completed, push the adjustable knob to start work.

Refer to below figure.

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.		

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.		RUN

### 5.3.2 Multiple Step work without Saving

a The program set in the single step is the first step

by default. Refer to below figure.

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.	1-1	

b Push the Prog. button, start to set the second step. The last line of in the Set column shows 1-2 now. Refer to below figure.

	Set	Actual
Temp.	---. --	
Speed	-----	
Timer	--:--	
Prog.	1-2	

Note: Before the setting of the second step complete, system consider there is only one step by default. But after the setting complete, the actual steps will be shown correctly. Refer to below figure.

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.	2-2	

c In the same way, complete the later steps. Then push the adjustable knob to start work. Refer to below figure.

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.	2-2	RUN

Note: (1)After rotate the adjustable knob to set the parameters, please wait 3 seconds, parameters will take effect automatically.

(2)Before the time is set, the step will not take effect. If set time to 00:00, it means continuous working mode.

(3)Before complete the setting for the current step, can't enter next step.

### 5.3.3 Program with Saving mode

Programming method is similar with Multiple Step without Saving mode. After the programming complete, long push the adjustable knob, program name characters flash (refer to the red part in below figure). Rotate the

Adjustable knob to input the number of the name, then push the adjustable knob to complete the input. The program saving is complete now.

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.	P1	5-2

### 5.3.4 Working mode

Refer to the figure, Set column in the left shows the set parameters, the Actual column in the right shows the actual temperature and speed. In timed working mode, the time shows the countdown time. In continuous working mode, the time show running time. Refer to below figure.

	Set	Actual
Temp.	30.5	30.5
Speed	1500	1500
Timer	07:00	06:59
Prog.		Run

In Multiple Step Without Saving mode, Prog. shows the program and step number. Refer to the figure, there are 5 steps totally, now it's the second step. Refer to below figure.

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.	5-2	RUN

In Multiple Step with Saving mode, it shows P1, 5-2, which means program 1 has 5 steps,

currently running the second step. Refer to below figure.

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.	P1 5-2	RUN

### 5.3.5 Load Program

In the power on state, long push the prog. button , enters the load program mode. Rotate the adjustable knob to show the saved program, from P1 to the last, at most 9 programs. Switch to the program you want, and short push the prog. Button to check the program in detail. Then push the adjustable knob to start the program.

### 5.3.6 Single function running

If Temp. is set to ---., then it means working

without temperature control function. If Timer is set to 00:00, it means work continuous. If speed is set to ----, it means work without mixing function.

## 6 Trial Run

- Make sure the required operating voltage and power supply voltage match.
- Ensure the socket must be properly grounded.
- Add the medium into the vessel
- Place vessel on the block.
- Plug in the power cable, ensure the power is on and begin initializing.
- Set the target parameters or programming
- Start working
- Observe the LCD display
- Stop working, and power off.

If these operations above are normal, the device is ready to operate. If not, the device may be damaged during transportation, please contact manufacturer/supplier for technical support

## 7 Faults

- Instruments can't be power ON
  - Check whether the power line is unplugged
  - Check whether the fuse is broken or loose
- Fault in power on self test
  - Switch OFF the unit, then switch ON and reset the instruments to factory default setting.

*If these faults are not resolved, please contact manufacturer/supplier.*

## 8 Maintenance and Cleaning

- Proper maintenance can keep instruments working properly and lengthen its lifetime.
- Do not spray cleanser into the instrument when cleaning.
- Unplug the power line when cleaning.
- Only use recommended cleansers:

Dyes	Isopropyl alcohol
Construction	Water containing tenside /



materials	Isopropyl alcohol
Cosmetics	Water containing tenside / Isopropyl alcohol
Foodstuffs	Water containing tenside
Fuels	Water containing tenside

- Before using other method for cleaning or decontamination, the user must ascertain with the manufacturer that this method will not harm the instrument. Wear the proper protective gloves during cleaning of the instrument.



**Note:**

- Electronic device can not clean with cleanser.
- If you require maintenance service, must be cleaned the instrument in advance to avoid pollution of hazardous substances, and to send back into original packing.
- If the instrument will not use for a long time, please switch off and place in a dry, clean, room temperature and stable location.

## 9 Associated Standards and Regulations

Construction in accordance with the following safety standards:

EN 61010-1

UL 3101-1

CAN/CSA C22.2(1010-1)

EN 61010-2-10

Construction in accordance with the following EMC standards:

EN 61326-1

Associated EU guidelines:

EMC-guidelines: 89/336/EWG

Instrument guidelines: 73/023/EWG

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Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is

operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## 10 Specifications

Functions	Heating & cooling & mixing	Heating & cooling	Heating & mixing
Temperature range	15°C below room temp. ~100°C	25°C below room temp. ~110°C	room temp.+5°C ~ 100°C
Temperature setting range[°C]	0.1°C/100°C	-5°C/110°C	15°C/100°C
Control accuracy [°C at20-45°C]	±0.5	±0.5	
Uniformity [°C at20-45°C]	Max ±0.5	Max ±0.5	Max ±0.5
Max heating rate[°C/s]	5.5	5.5	5.5
Max cooling rate[°C/s]	5 (100°C-Room temp.) 0.5 (Below room temp.)	5 (110°C-Room temp.) 0.5 (Below room temp.)	-
Speed range [rpm]	200-1500	-	200-1500

Mixing diameter [mm]	3	-	3
LCD display	LCD	LCD	LCD
Program	6 stages, 9 programs	6 stages, 9 programs	6 stages, 9 programs
Voltage	100-240V	100-240V	100-240V
Frequency	50/60Hz	50/60Hz	50/60Hz
Power	200W	180W	200W

Table 4

# 恒温振荡仪&恒温金属浴

## 使用说明书

加热制冷型恒温振荡仪

加热型恒温振荡仪

加热制冷型恒温金属浴



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。

外形和性能指标如有变动，概不另行通知。

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## 前言

欢迎使用《恒温震荡器和恒温金属浴使用说明书》。用户在使用本仪器前应仔细阅读本说明书，按说明书指导进行操作，并了解各种注意事项。

## 如何获取帮助

如果您在安装和使用的过程中遇到任何问题或需要帮助，请及时与制造商/供货商的售后服务部门取得联系。

请您准备以下资料：

- 产品序列号（仪器铭牌上）
- 质保卡
- 问题现象的描述
- 您为了解决问题所采取的方法及操作步骤
- 您的电话、传真和 Email 地址等联络方式

## 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条件和操作方法下使用该仪器时，该仪器的保修期为 24 个月（自购买之日起）。由于错误安装与操作、私自拆卸与维修以及其他违反说明书中规定的操作条款造成的仪器性能下降和损坏，不能按照本质量保证进行维修。

如出现质保条款中的相关问题，请联系制造商/供货商。

## 1 安全事项

	<p>警告!</p> <ul style="list-style-type: none"><li>操作仪器前请认真阅读本说明书并遵守安全操作规范。</li><li>经过专业培训的人员才能操作本仪器。</li></ul>
	<p>小心烫伤!</p> <ul style="list-style-type: none"><li>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 110° C（具体温度以技术参数为准）。</li><li>仪器关闭后模块会有余温，请避免烫伤。</li></ul>
	<p>安全接地保护!</p> <ul style="list-style-type: none"><li>为保证安全，使用本仪器前请确认电源插座已良好接地。</li></ul>

- 工作时，请穿戴合适的防护设备，否则可能由于以下事项引发危险：
  - 释放出的有毒、易燃气体

- 请把仪器置于宽敞通风的区域内使用，并确保工作台面平稳、干净、防滑、干燥及防火。请勿在室外、危险物质环境及水中运行本仪器。
- 设置温度必须低于样品燃点 50° C。
- 注意避免进行以下危险操作：
  - 沸点低的易燃样品
  - 搅拌样品过量灌装
  - 使用不安全的容器
- 加热致病样品时，必须使用密闭的容器。
- 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。在装卸配件之前请先断电。
- 仪器只能通过拔掉电源插头才能完全断电。
- 请确保使用电源电压跟铭牌要求的一致。
- 确保电源线远离加热盘，不要遮盖仪器。
- 只有经过专业训练的人员才能打开本仪器。



## 2 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：

- 海拔不超过 2000 米
- 温度在 5℃ 到 40℃
- 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±10%
- 仪器间、仪器与墙壁的最小距离为 100mm。

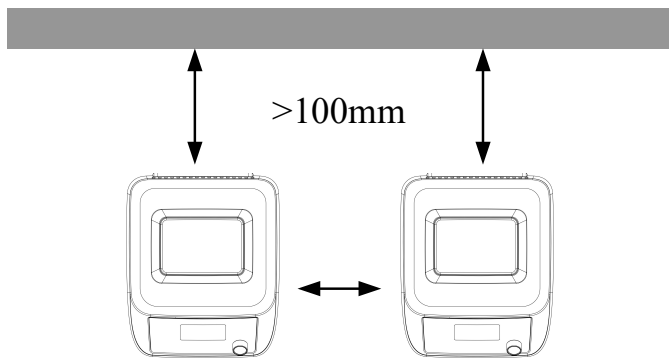


图 1

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。

## 3 检查

### 3.1 开箱检查

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，请联系制造商/供货商。



**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 装箱清单

名称	数量
主机	1 台

模块	1 块
电缆	1 根
使用说明书	1 本

表 1

## 4. 控制与显示

### 4.1 控制



图 2 恒温振荡器

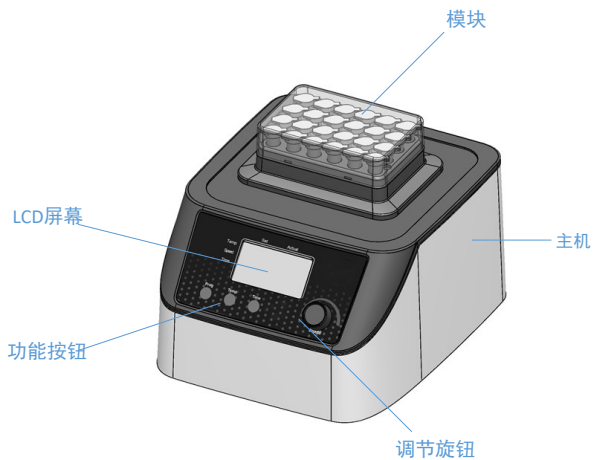


图 3 恒温金属浴

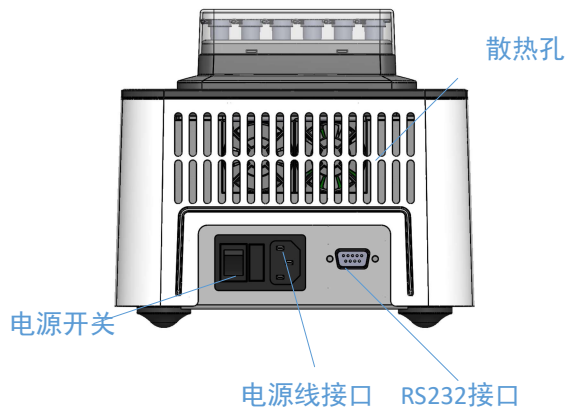


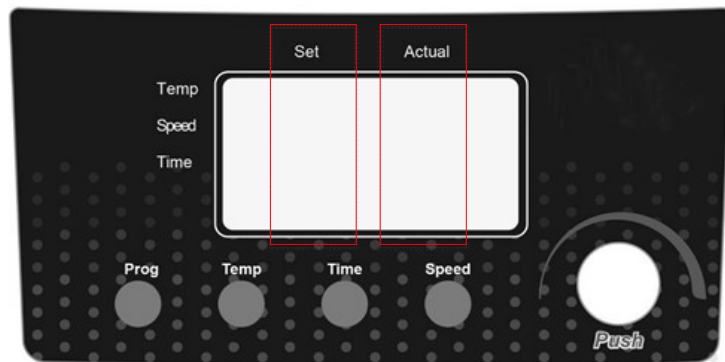
图 4 接口和电源开关

名称	说明
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模块	可更换模块，适用不同的样品管
LCD 屏幕	显示设定参数和运行参数
功能旋钮	可切换参数输入选项及编程
调节旋钮	参数设定状态，可调节参数输入值；设定完毕，点按开始工作。工作状态，点按暂停工作；长按停止工作。
RS232 接口	用于温度标定
电源线接口	连接电源线
电源开关	打开或者关闭电源

表 2

## 4.2 界面介绍



名称	说明
Set	设定参数显示区域
Actual	实际运行参数显示区域

Prog	程序按钮，用于编程或程序调用
Temp	温度设定按钮，点按该按钮，设定区域对应位置字符闪烁
Time	时间设定按钮，点按该按钮，设定区域对应位置字符闪烁
Speed	震荡速度设定按钮，点按该按钮，设定区域对应位置字符闪烁。（只有震荡款机型具有此按钮）
参数调节旋钮	参数设定状态，可进行参数输入；设定完毕，点按开始工作。工作状态，短按暂停工作；长按停止

	工作。
--	-----

## 5 操作

### 5.1 参数设定方法

A 分别点按对应的功能按钮，设定区域对应位置字符闪烁

B 调节参数调节旋钮，进行目标参数的输入

C 等待 3s，对应字符停止闪烁，完成参数设定。

**注意：**

开机界面会默认显示最后一次运行的参数。

当时间调整到 00:00 时，默认持续工作模式。

## 5.2 暂停和启动

启动：程序编辑完成状态下，点按调节旋钮，按设定参数启动工作。

	Set	Actual
Temp.	30.5	30.5
Speed	1500	----
Timer	07:00	07:00
Prog.		Run

暂停：仪器工作状态下，点按程序调节旋钮，暂停工作。

注意：暂停状态下，只是停止震荡和计时，不停止加热（恒温金属浴不具有震荡功能）。重新启动，震荡和计时继续进行。

注意：为防止误操作，暂停功能启动时，如

10min 不重新启动，仪器将自动断电，停止工作。

	Set	Actual
Temp.	30.5	30.5
Speed	1500	----
Timer	07:00	07:00
Prog.		Pause

重新启动：暂停工作状态下，再次点按调节旋钮，重新启动工作。

停止：工作状态下，长按功能调节旋钮，停止工作。

注意：停止状态下，震荡，控温及计时均停止。（恒温金属浴不具有震荡功能），右侧

实际参数部分不显示。

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.		

设定自动生效。

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.		

## 5.3 运行

### 5.3.1 单步不存储工作：

开机出现设定界面，分别按压温度、转速、时间按钮，对应参数字符闪烁，通过调节旋钮进行参数设定。如时间调为 00:00，为持续工作模式。设定完成后，按压旋钮，启动工作模式。

**注意：**通过旋钮调节参数后，等待 3s 中，参数

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.		RUN

### 5.3.2 多步不存储工作

A 单步的程序段自动默认为第一步。

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.	1-1	

B 点按 Prom. 按钮一次，开始编写第二步，此时左侧最后一行显示 1-2。

	Set	Actual
Temp.	----. -	
Speed	-----	
Timer	--:--	
Prog.	1-2	

注意：因为第二步还没有编程，系统会默认此程序段只有一段。最终确认后，会显示实际步数。



	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.	2-2	

C 同方法可继续编程。点按参数旋钮，启动工作。

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.	2-2	RUN

注意：

通过旋钮调节参数后，等待 3s 中，参数设定自动生效。

只有设定时间后，才默认此步程序生效。当设定为 00:00，默认连续工作模式。

程序编辑必须要连续，否则无法进行下一段程序的编辑。

### 5.3.3 编程存储模式

编程方法同多步不存储工作，编程结束后，长按参数旋钮，程序名称处字符闪烁（下图红色位置），通过旋钮输入数字名称，按压旋钮确认输入。程序存储完毕。

	Set	Actual
Temp.	30.5	
Speed	1500	
Timer	07:00	
Prog.	P1	5-2

	Set	Actual
Temp.	30.5	30.5
Speed	1500	-----
Timer	07:00	07:00
Prog.		Run

#### 5.3.4 工作模式

左侧 Set 显示设定值，右侧 Actual 显示实际的温度和转速。如是定时模式，时间为倒计时。如果是持续工作模式，时间为正计时。

多步不存储工作时，Prog. 处显示程序和步数。代表共有 5 段，执行到第 1 段。

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.	5-2	RUN

多步存储方式工作，显示 P1, 5-2 ， 代表程序 1，共 5 段，执行到第 2 段。

	Set	Actual
Temp.	30.5	30.5
Speed	1500	800
Timer	07:00	06:59
Prog.	P1 5-2	RUN

### 5.3.5 程序调出

开机状态，长 prog. 按键，进入程序调出界面，旋转旋钮，可切换不同的程序，依次显示 1-9 个程序。点按 prog，可以查看里面的程序的具体步骤。点按旋钮，启动该程序。

### 5.3.6 单功能运行

调节温度对应项为---.-，则该项默认不工作。如时间 00:00，为持续工作。速度-----，为不震荡模式。

## 6 操作

- 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
- 样品管中注入待加热样品
- 把样品放到仪器模块里
- 打开电源，进行开机自检
- 设置参数或编辑程序
- 启动
- 观察液晶屏上显示的实际参数
- 实验结束后关闭仪器

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如果上述操作运行正常，说明仪器可以开始正式使用。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/供货商售后服务中心取得联系。

仪器开启时设置区的温度为上次关机时的设置温度。

在常用情况下，设置的加热温度显示值与以下实际温度可能有差异：

- 加热模块的不同位置
- 容器与容器中的样品

这些差异存在是由于热传导特性造成的。

## 7 故障诊断

- 打开电源仪器不启动
  - 请检查电源线是否连接牢靠
- 仪器开机自检不正常
  - 请关闭仪器，重新启动。

***如果故障没有排除，请联系制造商/供货商。***

## 8 维护和清理

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。常规工作中请保持仪器干燥与洁净，迅速除去溢出液体，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。如果液体或者潮湿固体进入仪器内部，请迅速断开电源不再使用，联系制造商/供货商获得更多建议。

- 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，请使用我们推荐的方法清理仪器。祛除方法：

染料	异丙醇
建筑材料	含活性剂的水溶液/异丙醇
化妆品	含活性剂的水溶液/异丙醇
食物	含活性剂的水溶液
燃油	含活性剂的水溶液

- 上表没有列出的材料，可以咨询制造商。在采用其他清理方法之前，用户必须与制造商/供货商确认该方法不会损坏仪器。清理仪器时，请戴上合适的防护手套。



注意：

- 电子设备不能用清洁剂清理。
- 送修仪器必须清理，同时避免危险物质的污染，并把仪器放回原始包装箱发送。
- 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、平稳处。

## 9 相关标准

仪器结构符合以下安全标准

EN 61010-1

UL 3101-1

CAN/CSA C22.2(1010-1)

EN 61010-2-10

仪器结构符合以下电磁兼容标准

EN 61326-1

符合以下欧盟标准

EMC 标准： 89/336/EWG

机械设计标准： 73/023/EWG

## 10 技术参数

功能	加热+制冷+震荡款	加热+制冷款	加热+震荡款
温度范围	室温以下 15℃~100℃	室温以下 25℃~110℃	室温 +5℃ ~100℃
温度设定范围	0.1℃/100℃	-5℃/110℃	15℃/100℃
控温精度[℃ at20-45℃]	±0.5	±0.5	±0.5

温度均一性 [℃ at20-45℃]	Max ±0.5	Max ±0.5	Max ±0.5
最大升温速率[℃/s]	5.5	5.5	5.5
最大降温速率[℃/s]	5 (100℃-室温) 0.5 (室温以下)	5 (100℃-室温) 0.5 (室温以下)	-
震荡速率 [rpm]	200-1500	-	200-1500
周转直径 [mm]	3	-	3
屏幕显示	LCD	LCD	LCD
程序	6段9个程序	6段9个程序	6段9个程序
电压	100-240V	100-240V	100-240V
频率	50/60Hz	50/60Hz	50/60Hz
功率	200W	180W	200W

表 4



