



HOTPLATE MAGNETIC STIRRER

USER MANUAL

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INTRODUCTION

Welcome to the Square Hotplate & Magnetic Hotplate Stirrer user manual. Users should read this Manual carefully, follow the instructions and procedures, and be aware of all the cautions when using this instrument.

CAT NO.	DESCRIPTION
400.100.021	Stirrer Magnetic up to 20L
400.100.120	Stirrer Magnetic Hotplate up to 20L
ACCESSORIES	
400.100.215	Sensor Temperature PT1000 100mm
400.100.218	Sensor Temperature PT1000 230mm
400.100.219	Sensor Temperature PT1000 230mm
400.100.225	Clamp Support for PT1000 Sensor

WARRANTY




This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for a period of 12 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.

DELIVERY

This unit is supplied with 1 x main unit, power cable & user manual

1. SAFETY INSTRUCTIONS

	<p>Warning!</p> <p>Read the operating instructions carefully before use.</p> <p>Ensure that only trained staff works with the instrument.</p>
	<p>Risk of burn!</p> <p>Caution when touch the housing parts and the hotplate which can reach temperature of 340°C.</p> <p>Pay attention to the residual heat after switching off.</p>
	<p>Protective ground contact!</p> <p>Make sure that socket must be grounded (protective ground contact) before use.</p>

- 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 area on a stable, clean, non-slip, dry and fireproof surface. Do not operate the instrument in explosive atmospheres, with hazardous substances or under water.
- Gradually increase the speed, reduce the speed if:
 - Stirring bar breaks away due to high speed
 - The instrument is not running smoothly, or container moves on the base plate
- Temperature must always be set to 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.
- If the case of the stirrer bar is PTFE, please note:
 - Elemental fluorine, three fluoride and alkali metals will corrode the PTFE and halogenated alkanes make it expansion at room temperature
 - Molten alkali, alkaline earth metals or their solution, as well as the powder in second and third ethnic of the Periodic Table of Elements will have chemical reaction with PTFE when temperature reaches 300 ~ 400 °C .
- Check the instrument and accessories prior to each use. Do not use damaged components. Safe operation is only guaranteed with the accessories recommended by manufacturer. Accessories must be securely attached to the device and cannot come off by themselves. Always disconnect the plug before fitting accessories.
- When the external temperature sensor is needed, the tip of the measuring sensor must be at least 5-10mm from vessel bottom and wall.
- The instrument can only be disconnected from the main power supply by pulling out the main 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 hotplate. Do not cover the device.
- The instrument may only be opened by a trained technician.
- Keep away from high magnetic field.

2. PROPER USE

The instrument is designed for mixing and/or 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)

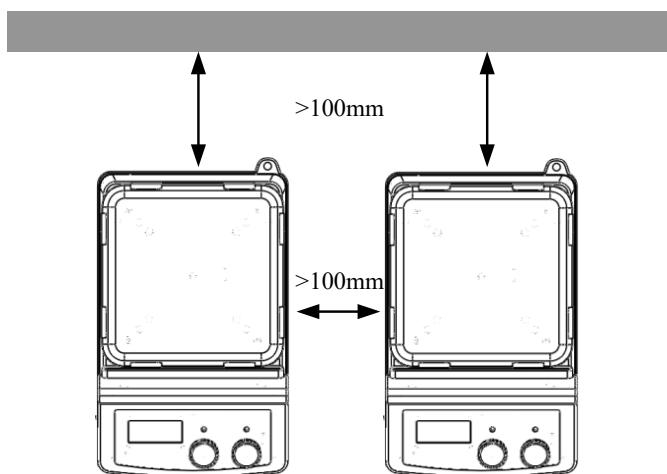


Figure 1

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

3. INSPECTION

Receiving Inspection

Unpack the equipment carefully and check for any damages which may have arisen during transport.



Note:

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

4. CONTROL

Control elements

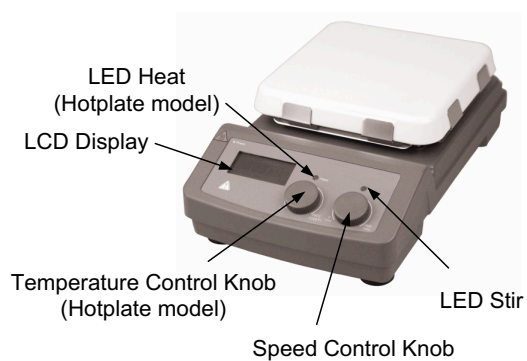


Figure 2

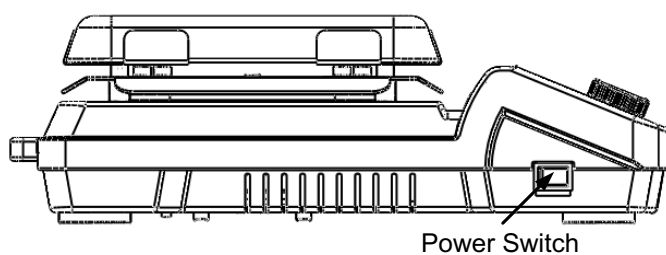


Figure 4

	ITEMS	DESCRIPTIONS
LCD DIGITAL MODEL	Stirring knob Stir	Set the rated rotary speed. The function "Stirring" is switched ON or OFF via push ON/OFF the knob.
	Heating knob Heat (Hotplate model)	Set the rated temperature. The function "heating" is switched ON or OFF via push ON/OFF the knob.
	LCD	LCD displays the real working state and all settings.
	LED Heat (Hotplate model)	When the heating function is switched ON, the LED Heat light is lit.
	LED Stir	When the stirring function is switched ON, the LED Stir light is lit.
	Power Switch	Switch ON or OFF the instrument.

Table 2

Display

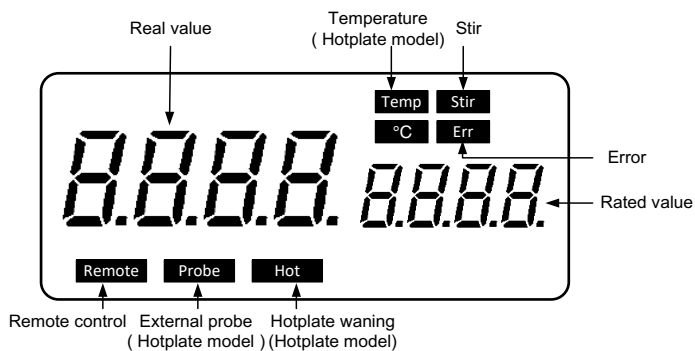


Figure 5 LCD digital model

CHARACTERS	DESCRIPTIONS
TEMP AND °C (HOTPLATE MODEL)	Display temperature when the heating function is switched ON.
STIR	Display stirring state when the stirring function is switched ON.
HOT	Display hot warning if the heating plate temperature is above 50°C after switching OFF the heating function.
PROBE	Display when using external probe.
REMOTE	Display in case of remote control.
ERR	Display in case of error happening.
RATED VALUE/REAL VALUE	Display value in case of heating or stirring function switching ON.



Note: If both heating and stirring functions have been started at the same time, heating function always has higher priority. If in this case speed is changed via the stirring knob, it displays stirring speed and reverses to temperature in the duration of 5 seconds.

5. TRIAL RUN

1. Make sure the required operating voltage and power supply voltage match.
2. Ensure the socket must be properly grounded.
3. Plug in the power cable, ensure the power is on and begin initialising.
4. Add the medium into the vessel with an appropriate stirring bar.
5. Place vessel on the work plate.
6. Set the target stirring speed and begin.
7. Set the target temperature and start heating (hotplate model).
8. Stop the heating and stirring functions.

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



Warning!

Do not transfer the vessel when the instrument is working.

6. WORKING WITH EXTERNAL TEMPERATURE SENSOR (HOTPLATE MODEL)

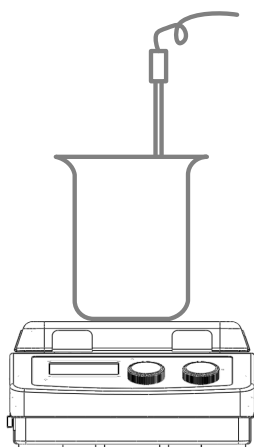


Figure 7

The external temperature sensor PT1000 is manufacturer's standard accessory. If the sensor is plugged in, the probe light will show on the LCD digital display to indicate the sensor is operating. The setting value of external temperature sensor and actual temperature are displayed. Safe circuit controls the hotplate temperature. Comparing with the temperature control of the hotplate, the external temperature sensor can control the medium's temperature more precise. The heating function will be stopped automatically under abnormal conditions. Please operate follow the instructions below:

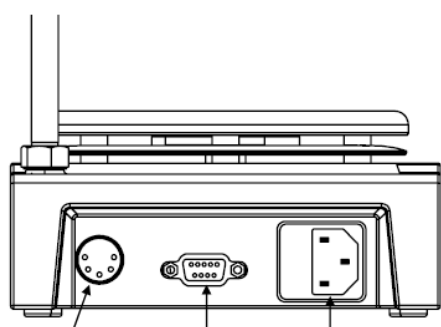
- Switch OFF the instrument.
- Ensure the external temperature sensor is inserted in the media heated.
- Switch ON the instrument and run heating function.

If the heating function does not work, please contact manufacturer/supplier for technical support.

7. RESIDUAL HEAT WARNING (HOT)

In order to prevent the risk of burns from a hotplate, the digital hotplate has a residual heat warning function. When the heating function is switched off and the heating plate temperature is still above 50°C, “Hot” will flash to warn that there is a hazard of burns from the hotplate. When the hotplate temperature drops to below 50°C, the unit will automatically switch off. If users want to turn off the LCD immediately, just pull out the plug directly. When the plug is pulled out, the residual heat warning function cannot be run.

8. REMOTE CONTROL



Connection PT 1000

RS 232C

Socket

Figure 7

The unit can be controlled from an external PC (using the dedicated software) via the RS232C serial interface fitted to the unit. Data communication from laboratory instrument to computer is only possible on demand of the computer.

- The functions of the interface lines between laboratory instrument and automation system are selected from the specified signals of the EIA-standard RS232C, corresponding with DIN66020 Part 1. The allotment of the bushing can be taken from Figure 7
- Transmission method: Asynchronous signal transmission in start-stop-operation.
- Mode of transmission: Fully Duplex. 1 start bit; 7 character bits; 1 parity bit [straight (even)]; 1 stop bit.
- Transmission speed: 9600 bit/s
- Start remote control knob LCD display “Remote”.



Note: DO NOT insert or remove the RS232C communication line when switch on!

9. 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.
- Stir speed cannot reach set point
 - Excessive medium viscosity may cause abnormal speed reduction of the motor


- Unit cannot be powered on when switched off.
 - Check if the residual heat warning function is still ON and hotplate temperature is above 50°C (the LCD still work and “Hot” flash).
- If these faults are not resolved, please contact your local dealer.

10. 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 MATERIALS	Water containing tenside / 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 proper protective equipment during cleaning of the instrument.



Note:

- Electronic device cannot clean with cleanser.
- If you require maintenance service, the unit must be cleaned in advance to avoid pollution of hazardous substances, and use the 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.

11. 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

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 your expense.

12. SPECIFICATIONS

ITEMS	SPECIFICATIONS
VOLTAGE [VAC]	200-240
FREQUENCY [HZ]	50/60
POWER [W]	*1050/50
STIRRING POINT POSITION QUANTITY	1
MAX. STIRRING QUANTITY (H ₂ O) [L]	20
MAX. MAGNETIC BAR [L×Ø, MM]	80x10
MOTOR TYPE	DC brushless motor
MAX. POWER INPUT OF MOTOR [W]	18
MAX. POWER OUTPUT OF MOTOR [W]	10
SPEED RANGE [RPM]	100-1500
ROTARY SPEED DISPLAY	LCD
PLATE MATERIAL	Glass Ceramic
DIMENSIONS OF WORK PLATE (MM)	184 x 184
*HEATING POWER [W]	1000
*TEMPERATURE RANGE [°C]	RT-550, increment: 1
*TEMPERATURE DISPLAY [°C]	LCD
*TEMPERATURE DISPLAY ACCURACY [°C]	±0.1
*THE SAFE TEMPERATURE OF HOTPLATE [°C]	580
*TEMPERATURE SENSOR IN MEDIUM	PT1000
*CONTROL ACCURACY OF HEATING TEMP WITH TEMP SENSOR [°C]	±0.2
*RESIDUAL HEAT WARNING	50°C
DIMENSIONS (MM)	215×360×112
WEIGHT [KG]	*5.3 and 4.6
PERMITTED AMBIENT TEMPERATURE [°C]	5-40
PERMITTED RELATIVE HUMIDITY	80%
PROTECTION CLASS ACC. TO DIN 60529	IP21
RS232 INTERFACE	Yes

*Hotplate model



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