

User manual M3-D digital heating magnetic stirrer

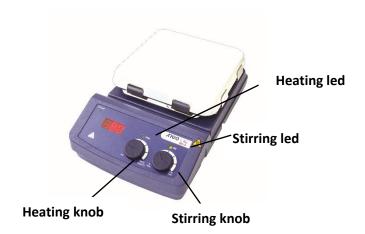
Safety instruction

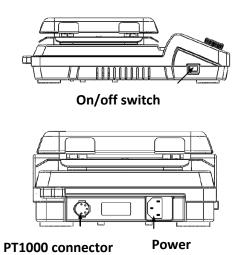
<u> </u>	 Read the instructions carefully before use Make sure that only qualified personnel use this tool Do not heat easily flammable or highly volatile substances
	Be very careful when touching the heating plate. It can reach a temperature of 550 ° C. Company to the second s
<u> </u>	 Be careful even when the instrument has been turned off because the plate remains hot even for a long time.
<u></u>	Before use, make sure that the instrument is connected to an earthed socket

- During work, staff must prevent risks of:
 - Splashing and / or evaporation of liquids;
 - o Emission of toxic or combustible gases.
- Place the instrument in a suitable area, on a stable, clean, non-slip, dry and fireproof surface;
- Do not use the instrument in explosive atmospheres, containing dangerous substances or under water;
- · Gradually increase the stirring speed;
- The set heating temperature must always be at least 25 ° C lower than the combustion temperature of the heated substance used;
- Pay close attention to the risks due to:
 - o Flammable materials or samples with low boiling temperature;
 - Excessive filling of samples;
 - Unsafe and / or unsuitable containers for heating;
- Use any pathogenic samples only in closed containers;
- Check that the instrument and accessories are in optimal condition before use. Never use damaged components. Optimal safety and operation are guaranteed only if the instrument and accessories described are in order. The accessories must also be firmly connected to the device;
- The instrument can be disconnected by disconnecting it from the power supply or by disconnecting the cable;
- The operating voltage indicated on the instrument label must correspond to that of the network to which it is connected;
- Make sure that the power cable does not touch the heating plate;
- The tool can only be opened by specialized technicians;
- Keep the instrument away from electromagnetic fields;
- Respect the minimum distance between the device and between the device and the wall (minimum 10 cm).



Controls and lights





connector

Control	Description
Stirring knob	Set the desired rotation speed between 0 and 1500 rpm.
	The stirring function is activated / deactivated by rotation the
	knob.
Stirring led	When the stirring function is active, the stirring LED is on.
Heating knob	Set the desired temperature between room temperature and
	550 ° C. The heating function is activated / deactivated by
	rotation the knob.
Heating led	When the heating function is active, the heating LED is on.
On/off switch	Turn the instrument on or off.

Display



When the heating function is active and the stirring speed adjustment knob is turned, the LEDs on the display show the temperature setting value and the value moves towards the real temperature value in a few seconds.

When the heating function is off and the plate temperature is still above $50\,^{\circ}$ C, the display shows the word "Hot" to indicate the danger of burns, otherwise it shows the word "0".



Operation

- Place the device on a stable surface, make sure that the temperature control knob is at minimum and connect the mains power supply.
- Turn on the power switch.
- Place a container with the solution to be stirred containing the magnetic anchor on the plate.
- Turn the speed adjustment knob to set the nominal rotation speed in the speed limit of 0-1500 rpm.
- Turn the temperature adjustment knob to set the nominal temperature in the 0-550 ° C safety limit.

If the above operations have been carried out in a normal way, the device is ready to work correctly. If these operations were not normal, the device may have been damaged during transport, so please contact the supplier for technical support.

Operation with external temperature probe inserted

If the external temperature probe is connected and the heating control knob is rotated, the display shows the set temperature and changes towards real value in 5 seconds. An automatic temperature comparison system plate and that detected by the external probe allows more precise control of the sample temperature.

If you need the external temperature probe, it is it is advisable to connect it before switching on the tool.

Make sure the external temperature probe is well connected and inserted in the sample before warm it up.

Note: do not connect or disconnect the probe outside during heating.



Malfunctions

- In case of instrument failure, it is recommended to turn it off;
- Turn off the main ON / OFF switch for a few seconds and turn the unit back on;
- The stirring function will continue to operate at the set speed before the fault occurs;
- The heating function will continue to operate at the set temperature before the fault occurred;
- If the problem is not resolved, contact technical support.



Cleaning and maintenance

- Proper maintenance of the instrument guarantees its good condition and extends its life;
- Disconnect the power supply cable during cleaning;
- During cleaning, be careful not to spray the detergent inside the instrument;
- Use only non-aggressive detergents that do not contain corrosive substances;
- Before proceeding with cleaning or with any decontamination, the user must ensure that the method adopted does not damage the instrument;
- Wear appropriate protections when cleaning with chemicals;
- If the instrument is to be sent to technical assistance, it is necessary to provide for proper cleaning and possible decontamination by pathogens of the same. It is also advisable to put the instrument back in its initial packaging to send it to the repair service.

Reference standards

The instrument was built in compliance with the following safety regulations:

EN 61010-1 UL 3101-1

CAN/CSA C22.2(1010-1) EN 61010-2-10

The instrument has been manufactured in compliance with the following EMC standards: *EN 61326-1*

European guidelines:

EMC-guidelines: 89/336/EWG Machine guidelines: 73/023/EWG

Technical features

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Alimentation	220V – 50/60 Hz	
Absorbed power	550 W	
Maximum stirring quantity (water)	10 liters	
Maximum size of the anchor	80 mm	
Engine	Without brushes	
Stirring speed	0 – 1500 rpm	
Speed indication	LCD display	
Material Working plate	Ceramic	
Working plate	184 x 184 mm	
Heating power	1000 W	
Heating ramp	6 °C/min	
Temperature range	From ambient to 550 °C	
Temperature indication	LCD digital display	
Temperature resolution	1 °C	
Temperature accuracy	0,5 °C	
External temperature probe	PT1000	
Accuracy of temperature control with external sensor	0,5 °C	
Dimensions (L x P x A)	215 x 360 x 112 mm	
Weight	4,5 kg	
Use temperature	5 – 40 °C	
Max. Use humidity	80%	
IP protection	IP21	



Disposal of electronic devices



Electrical and electronic equipment marked with this symbol cannot be disposed of in public landfills. In accordance with EU directive 2002/96 / EC, European users of electrical and electronic equipment have the option of returning the used equipment to the Distributor or Manufacturer when purchasing a new one. Abusive disposal of electrical and electronic equipment is punished with a pecuniary administrative sanction.