FOUR E'S SCIENTIFIC

Operating Instructions

5 Inch LED Digital Magnetic Stirrer with Timer

MI0102008



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Safety Instructions



For your protection

- **Read the operating instructions in full before starting up and follow the safety instructions when in use.**
- Ensure that only trained staff work with the device.
- Socket must be earthed (protective ground contact)
- **Caution-Magnetism!** Effects of the magnetic field have to be taken in to account (e.g. data storage media, cardiac pacemakers…).
- Wear your personal protective equipment in accordance with the hazard category of the media to be processed. Otherwise there is a risk from:
  - Splashing and evaporation of liquids
  - Ejection of parts
  - Release of toxic or combustible gases
- Set up the device in a spacious area on an even, stable, clean, nonslip, dry and fireproof surface.
- Don't use damaged components.
- Gradually increase the speed and reduce the speed if
  - the medium splashes out of the container because the speed is too high
  - the machine is not running smoothly
  - the container moves on the heating plate
- Beware of hazards due to:
  - glass breakage
  - incorrect container use
  - overfilling of media
  - unsafe condition of container
- Don't use the machine in explosive atmospheres with hazardous substances.
- Process pathogenic materials only in closed containers under a suitable extractor hood.

- Only process media that will not react dangerously to the extra energy produced in other ways, e.g. through light irradiation.
- Accessories must be securely attached to the machine and can't come off by themselves.
- Always disconnect the plug before fitting accessories.
- The machine can only be disconnected from the mains supply by pulling out the mains plug or the connector plug.
- When using PTFE-coated magnetic bars, the following has to be noted:
  Chemical reactions of PTFE occur in contact with molten or solute alkali metals and alkaline earth metals, as well as with fine powders of metals in groups 2 and 3 of the periodic system at temperatures above 300°C-400°C.
  Only elementary fluorine, chlorotrifluoride and alkali metals attack it; halogenated hydrocarbons have a reversible swelling effect.
- The voltage stated on the type plate must correspond to the mains voltage.
- Don't cover the machine, even partially e.g. with metallic plates or film, which will result in overheating.
- Ensure the working plate is kept clean.
- Protect the machine and accessories from bumps and impacts.
- The minimum distance between the machines; the minimum distance between the machine and the wall is mini. 100mm.

Inspection

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

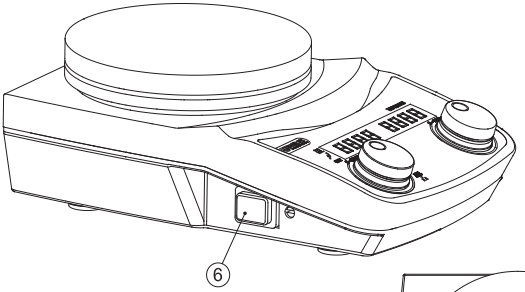


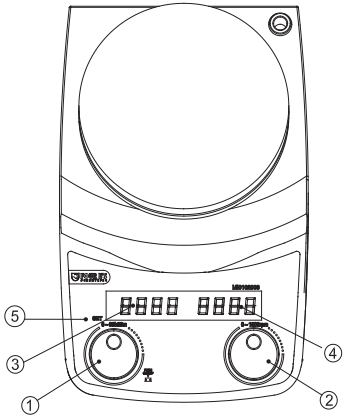
Note:
If there is any apparent damage to the device, please do not connect the power line.

Contents of package

Items	Qty
Main unit	1
Power cable	1
Screwdriver	1
Magnetic stirring bar	1
User Manual	1

Control





Item	Description
① Knob for time setting	Set the time by rotating the knob Start/stop timing by pressing the knob
② Knob for speed setting	Set the speed by rotating the knob Start/stop stirring by pressing the knob
③ Timer display	When timer function starts, it displays the remaining stirring time. It displays “OFF” when time is off.
④ Speed display	When stirring, it displays the target speed and the actual speed simultaneously. It displays “OFF” when the stirring stops.
⑤ Setting indicator	The light will flash when setting the timer or speed.
⑥ Power switch	Switch on/off

Trial run

- Make sure the required voltage corresponds to the mains voltage.
- Ensure the socket must be properly grounded.
- Switch on and start initializing.
- Add sample into the container with an appropriate stirring bar.
- Place the container on the working plate.
- Set the target speed and start stirring.
- Observe the stirring bar and the LED display.
- Set the time and start timing.
- Observe the actual speed and timing on the LED display.
- When timer function starts, the LED will display the remaining stirring time.
- Timer function is switched on/off by pressing the timer setting.

If the above operations are normal, the device is good to run. If these operations are abnormal, the device may probably be damaged during transit, please contact manufacturer/supplier for technical support.



Warning!
DO NOT move the container when the device is working.

Timing

Timing function is activated for stirring period timing ONLY when Stirring function is ON. LED displays the remaining stirring time limits. The stirring function will be automatically shut down when the timer display comes to zero. If timing function is off, or shut down in the halfway, the device will keep stirring.

Stirring

Stirring is switched on / off by pressing the speed setting knob. The speed is set by rotating the knob in the range of 50-1500rpm. When powered on, it displays the set speed of last operation.

Faults

- The device can't work when powered on
  - Check if the power line is connected properly
  - Check if the fuse is broken or loose
- Fault in power on self test
  - Power off the device and then restart
- Actual speed can't reach the set value
  - Media in high viscosity may probably cause abnormal speed reduction of the motor

Error codes

Error code	Error description	Solutions
Er5	Motor failure	Reduce the sample

If the instrument still can't work properly, please contact manufacturer / supplier for technical support.

Maintenance

Proper maintenance can make the device work well and extend its life.

- Do not allow moisture to get into the device when cleaning.
- Disconnect the main plug when cleaning.
- Wear protective gloves when cleaning.
- Only use the recommended cleansing agents.

Dyes	isopropyl alcohol
Constructions materials	water containing tenside / isopropyl alcohol
Cosmetics	water containing tenside / isopropyl alcohol
Foodstuffs	water containing tenside
Fuels	water containing tenside

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

Specifications

Items	MI0102008
Voltage [VAC]	200-240/100-120
Frequency [Hz]	50/60
Power [W]	40
Stirring point position quantity	1
Max. stirring quantity (H2O) [L]	5
Max. magnetic bar [L x Φ, mm]	55 x 10
Motor Type	Brushless DC motor
Max. power input of motor [W]	30
Max. power output of motor [W]	20
Speed range [rpm]	50-1500
Speed display	LED
Working plate material	Aluminum alloy with ceramic coated
Dimension of working plate (mm)	Φ135
Time setting range	0-99h59min
Timing display	LED
Dimensions [W x D x H, mm]	250x148x85
Weight[kg]	1.7
Permissible ambient temperature[°C]	5-40
Permissible relative humidity	80%
Protection class acc. to DIN EN60529	IP42

Warranty

The 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 doesn't cover any worn out parts, nor apply to any damage by improper use, insufficient care or maintenance not carried out in accordance with the instructions in this operating manual.

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