MS-H280-Pro Round Ceramic Coated Steel Hotplate/Stirrer with LED display

USER MANUAL

1200464

Contents

Preface

Thank you for purchasing this Camlab Choice product. For your safety and to get the best product performance, please read these instructions carefully prior to use.

Camlab Choice products are carefully selected from leading worldwide manufacturers to offer outstanding performance and value. All of our Camlab Choice range products are put through their paces by our product team and fully inspected by our engineers. Please contact us if you have any questions or require technical application support.

The MS-H280-Pro round ceramic coated Steel Hotplate/Stirrer has a double LED display and heats up to 280℃, with a stirring speed range of 100-1500rpm. Heating and stirring are controlled independently and each function can be used separately or in combination. This instrument has the ability to connect a PT1000 external temperature sensor (available separately) to enable real-time monitoring of the temperature of the stirred sample itself, rather than just the plate temperature. It is Capable of stirring up to 3L of liquid with a maximum viscosity of 100mPas. For samples with a viscosity of 100-300mPas, it is recommended that the unit is operated at a speed of no more than 500-600rpm. For samples with a viscosity greater than 300mPas, we recommend the use of an overhead stirrer

Important safety notices

Users of the MS-H280-pro should read this manual carefully prior to use, following the instructions and notices with caution. Do not operate the hotplate stirrer in a manner not described in this user manual. Whilst these safety instructions are here to help prevent all incidents it is important you are alert for any unexpected occurrences.

Warning!

- Read operating instructions carefully before use

Caution! Risk of burns

- Be aware of residual heat once switched off
- Do not touch instrument and housing when it is switched on

Grounding

- Ensure the instrument's electrical connection is well protected before use

- Make sure the operating voltage and mains power supply voltage match and ensure the socket is properly grounded
- When working with the MS-H280-Pro, use appropriate PPE to avoid risk of injury caused by:
    - Splashing and evaporating liquids
    - The release of toxic or combustible gases
- Ensure instrument is set up on a stable, flat surface in a dry and fireproof environment.
- Gradually decrease the speed of the stirrer if:
    - Stirring bar breaks away due to high speed
    - The instrument is not running smoothly, or liquid container has moved to an unsteady position on the base plate
- Ensure the temperature is set to at least 50°C lower than the flash/fire point of the liquid being heated.
- Do not use with flammable materials or liquids with a low boiling point.
- Ensure you select a suitable container shape, size and material for the task and do not overfill container.
- Inspect instrument and accessories for damage prior to each use. Do not use

you notice any damage.

- Safe operation is only guaranteed with the described accessories. Accessories must be securely attached to device ensuring they remain connected during operation. Always disconnect from the mains before fitting accessories to the instrument.
- When an external temperature sensor is used, 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 mains power supply by pulling out the connector plug.
- Ensure that the mains power supply cable does not touch the hotplate.
- Do not cover the device.
- Do not put pressure on ceramic hot plate surface, as this may lead to breakage.
- Keep away from strong magnetic fields.
- Ensure all users of the instrument are trained in its safe operation.

Unboxing and Set Up

What's in the box?

Unpack the equipment carefully and check the contents of the box along with an inspection for any damage which may have arisen during transport. If you note any damage on receipt, do not use the equipment and contact sales@camlab.co.uk to report the damage.

Included in the box is the following:

Item	Qty
Main unit	1
Power cable	1
User manual	1
Magnetic Spin Bar (50mm x 8mm Ø)	1

Permitted conditions of operation

This device is designed to operate under the following conditions:

- Indoor use only
- Use in well ventilated area
- Permitted ambient temperature range – 5 - 40°C
- Maximum permitted humidity – 80%
- Minimum clearance of 10cm from walls and any other items
- Capable of stirring up to 3L of liquid with a maximum viscosity of 100mPas. For samples with a viscosity of 100-300mPas, it is recommended that the unit is operated at a speed of no more than 500-600rpm. For samples with a viscosity greater than 300mPas, we recommend the use of an overhead stirrer

Setting up

You must observe a minimum distance of 10cm between the unit and any other object, including the wall.

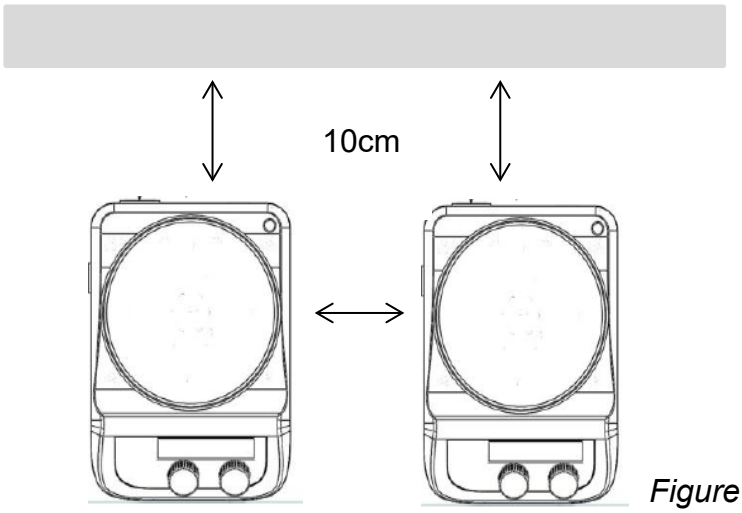

Figure 1

Operation

The MS-H280-pro magnetic stirrer hotplate has independent controls for temperature and speed. Both of these functions can be used together and separately if required. For the stirring function, an appropriate magnetic stirring bar is required.

Diagram & Controls

Figure 2a- Front View

Rear View photo needed

Control	Description
(1) Temperature	**Temperature control dial.** Rotate clockwise to increase temperature and counter-clockwise to decrease. Push button in to turn function on and off. Values range from room temperature (RT) up to 280°C
(2) Power Switch	**On/Off Switch.** Located on the left hand side of the unit
(3) Probe Holder Port	Port for external temperature probe holder
(4) Stir Speed	**Stirring speed control dial**. Rotate clockwise to increase speed and counter-clockwise to decrease. Push button in to turn function on and off.

Display

The LED displays the working temperature and stirring speed values. If an external temperature probe is used, the temperature measured by it will be displayed as the temperature value. Other characters displayed are summarised in the table below.

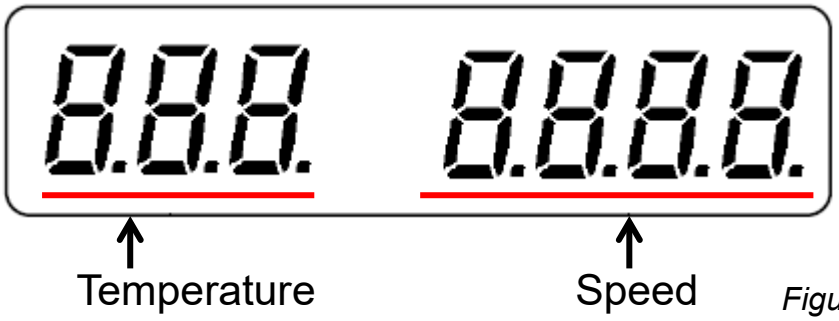

Figure 3

Characters	Description
HOT	Residual heat warning, displays HOT when temperature is above 50°C
	Probe icon to left of the LED display area is lit when a PT1000 is plugged into the instrument.

Warning:

Residual heat warning does not function when unit is turned off using the switch. It is advisable to turn functions off using dials until unit has cooled sufficiently and unit no longer displays 'HOT' before powering off fully.

Instructions for use

1. Set up the instrument in an appropriate location and connect to a power supply. Switch the unit on using the switch located on the side of the unit – labelled as (2) on *figure 2a*.
2. Fill an appropriate heat resistant vessel with the liquid to be stirred and/or heated and place on the work plate. If you are using the stirring function, add an appropriate magnetic stirring bar.
3. **Heating.** Rotate the temperature dial (*labelled (1) on figure 2*) clockwise to your desired target temperature and push in the dial to commence heating. To turn heating off, push the dial in again. When heating is not in use, the temperature LED will display as 'OFF'.
4. **Stirring.** Rotate the dial to your set speed and push in to turn the function on. It is advised to start the speed slowly and gradually increase as required, this will allow for stable operation with the stir bar. To turn stirring off, push the dial in again.
5. When finished, ensure each dial is pushed in and the LED displays 'OFF' for both temperature and speed. Use the ON/OFF switch located on the left hand side and unplug from the mains supply.

Using the temperature sensor

The external temperature sensors Pt1000 can be used as an accessory to this instrument and allows for more accurate monitoring of the temperature of the liquid being heated. When an external temperature sensor is used, the tip of the measuring sensor must be at least 5-10mm from vessel bottom and wall.

1. Ensure unit is fully powered off prior to plugging in temperature probe.
2. Attach the probe holder to the probe holder port. Plug the probe into the probe

socket at the rear of the unit and secure probe into the holder. Turn the instrument on.

3. The temperature display will show the actual temperature of the sample as measured by the P1000 probe.

Maintenance and Cleaning

- Proper maintenance and cleaning can keep instruments working properly and will lengthen its lifetime.
- ABS casing will give some chemical resistance to weakly acidic and alkaline liquids.
- Do not spray your chosen cleaner directly on to the unit when cleaning
- Ensure the unit is unplugged from the power supply and cooled down completely before commencing with cleaning.
- Wear appropriate PPE equipment during the cleaning process.
- Only use recommended cleaners below:

Dyes	Isopropyl alcohol
Construction materials	Water containing surfactant/ isopropyl alcohol
Cosmetics	Water containing surfactant / isopropyl alcohol
Foodstuffs	Water containing surfactant
Fuels	Water containing surfactant

- If the instrument will not be in operation for an extended period of time, please switch off and store in a dry, clean environment.

Faults and Troubleshooting

Instrument is not powering on

- Check whether the power line is plugged in
- Check whether the fuse is broken or loose

Stir speed is not reaching set point

- Excessive medium viscosity may cause abnormal speed reduction of the motor. This instrument has only been verified for stirring water and mediums with a similar viscosity). Try the unit with a small quantity of water to check the

stirring function.

Unit is not powering off

- The residual heat warning may be showing as ‘HOT’ if unit is above 50°C but has not been fully powered off. Try using the switch on the side of the unit and unplugging from the mains to fully power off.

If these faults cannot be resolved, please contact Camlab Technical Support on 01954 233120 or at support@camlab.co.uk.

Standards and guidelines

This unit has been manufactured in accordance with the following standards and guidelines:

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:	EN61326-1
Associated EU guidelines:	EMC-guidelines: 89/336/EWG Instrument guidelines: 73/023/EWG

Specifications

Voltage [VAC]	200-240
Frequency [Hz]	60
Power [W]	515
Stirring point position quantity	1
Max. stirring quantity [H_2O L]	3
Max. magnetic bar [mm]	50x10
Motor type	DC brushless motor
Max. power input of motor [W]	5
Max. power output of motor [W]	3
Speed range [rpm]	200-1500 Increment: 10
Rotary speed display	LED
Plate material	Ceramic coated stainless steel
Dimensions of workplate [mm]	Diameter 135

Heating power [W]	500
Temperature range [°C]	Room temperature – 280 increment: 1
Temperature display [°C]	LED
Temperature display accuracy [°C]	±1
The safety temperature of the hotplate [°C]	320
Temperature sensor in medium	PT1000
Control accuracy of heating temperature with temperature sensor [°C]	±0.5
Residual heat warning	50°C
Dimensions [mm]	220x160x95
Weight [kg]	1.4
Permitted ambient temperature [°C]	5-40
Permitted relative humidity	80%
Protection class acc. To DIN 60529	IP21
RS232 interface	Yes

Accessories

We have a number of accessories available designed for use with your hotplate stirrer. If you need to order any of the below, we invite you to visit our website:

www.camlab.co.uk

Cat No.	Descriptions
1189944	PT1000A Temperature 230mm Probe for all Camlab Choice digital hotplates
1200336	Support clamp of PT1000 for MS-H280-Pro
1189932	Blue carrying plate to hold quarter pies
1189933	Blue Fixed Ring
1189934	Quarter pie 11 holes 4 ml reaction vessel Ø15.2mm 20mm depth
1189935	Purple quarter pie 4 holes 20 ml reaction vessel Ø28mm 24mm depth
1189936	Blue quarter pie 4 holes 30 ml reaction vessel Ø28mm 30mm depth
1189937	Black quarter pie 4 holes 40 ml reaction vessel Ø28mm 43mm depth
1189938	Green quarter pie 6 holes 8ml reaction vessel Ø17.8mm 26mm depth
1189939	Golden quarter pie 4 holes 16ml reaction vessel Ø21.6mm 31.7mm depth

Support

If help is required, please contact the Camlab Technical Support on 01954 233120 or support@camlab.co.uk.

Please provide the support team with the following information:

- Serial number (on rear panel)
- Description of problem
- Contact details

For serving enquiries please contact the Camlab Service department on 01954 233130 or service@camlab.co.uk.

Warranty

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 and is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged via improper installation, connections, misuse or by accident or abnormal operational conditions. If you experience any problems with your instrument, do not attempt to repair it yourself.

For information on claims under warranty please contact:

Camlab Sales - 01954 233 110

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