CAPP®

DENMARK

CRS-22H

USER MANUAL

TABLE OF CONTENT

1. INTRODUCTION

This manual provides important safety information for this Hot Plate Magnetic Stirrer. It should be kept near the equipment for quick & easy reference. This stirrer is specially designed for precise control of stirring speed and temperature which allows gentle to vigorous mixing with speed ranging from 200 to 2200 RPM with a maximum capacity of 20 liter beaker in various laboratory procedures. The multipurpose digital display assist users by displaying various parameters like actual & set temperature, speed, mode of operation, etc. It also comes with a programmable pulse mode for better mixing. The space saving Stirrer is designed with utmost safety & stirrer is a concealed design meeting IP21 protection.

2. INTENDED USE

The hotplate stirrer is suitable to use for mixing and/or heating the liquids with maximum capacity of 20Ltr. It is designed for use in general laboratories, pharmacies, schools and universities.

3. SAFETY INSTRUCTIONS

In order to use this equipment properly & safely every user must read the user manual & observe safety instructions.

1. Place device on a flat, stable, clean, non-slippery and fire-proof surface.
2. Ensure that only trained staff use the device. Keep the instructions manual in place where it can be accessed easily.
3. Beware of the possible effects of magnetic field on pacemakers, data media, etc.
4. Do not touch the hotplate surface when temperature of hotplate is over 50°C, this could result inserious burns or injury. Pay attention to the residual heat after switching off.

3. SAFETY INSTRUCTIONS

5. Properly lift the device with both hands while moving or installing. Also, the device should only be moved from its position once it attains the room temperature.
6. Make sure that power supply cord or temperature sensor cable must not come in contact with the heated mounting plate.
7. Process and heat any media whose flashpoint lies above the set safety temperature limit.
8. Do not place any steel or magnetic material on the top surface except the recommended magnetic stirring bar with beaker or flask in between. Doing this can affect the magnetism of device. ⚠ WARNING
9. Wear your personal protective equipment in accordance with the hazardous category of the media to be processed. Otherwise, there is a risk from:
   - ☞ Splashing and evaporation of liquids.
   - ☞ Ejection of parts.
   - ☞ The release of toxic or combustible gases.
10. The top surface must be clean and kept intact. Wear protective gloves while cleaning the device. Usea soft mild cloth to clean.
11. Do not use damaged beaker, flask, stirring bar or any other component for operation. It may affect the efficiency of the device. ⚠ WARNING
12. Reduce the speed if:
    - ☞ If the medium splashes out of the vessel due to high speed.
    - ☞ If the appliance is not running smoothly.
    - ☞ If the container moves on the base plate.

3. SAFETY INSTRUCTIONS

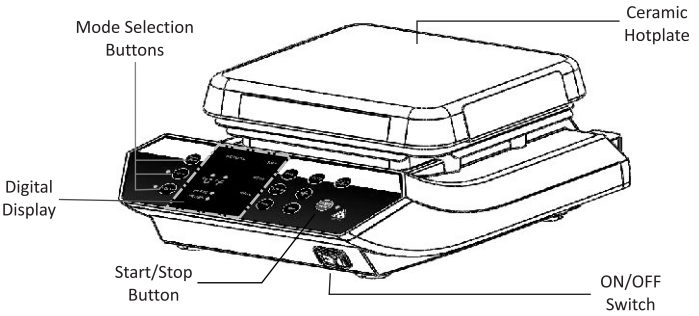
13. Do not move the device when it's connected to power supply or during its operation.
14. Ensure that the product is used only for specified operation. It should not be used for shaking hazardous or reactive solutions.
15. Give specific attention to the risks associated with:
    - ☞ Flammable materials
    - ☞ Flammable media with low steam pressure
    - ☞ Overfilling of medium
    - ☞ Incorrect vessel size
    - ☞ Unstable vessel
    - ☞ Glass breakage

    ⚠ CAUTION
16. Note that, there is a possibility of contamination or unwanted chemical reaction.
17. The RTD (PT 1000) sensor must always be immersed in the medium by at least 20mm.
18. The rating of power supply must match with the specified rating.
19. The value of Safe Temperature must be set to +25°C to the operating temperature.
20. The top surface will be hot after any heating operation. Do not touch the top surface till the hot LED indication glows. **DANGER**
21. Process pathogenic materials only in a closed vessel under a suitable extractor hood. Do not operate the appliance in explosive atmospheres, with a hazardous substance or under water.
22. Only that liquid should be used for mixing which does not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in **ATTENTION**

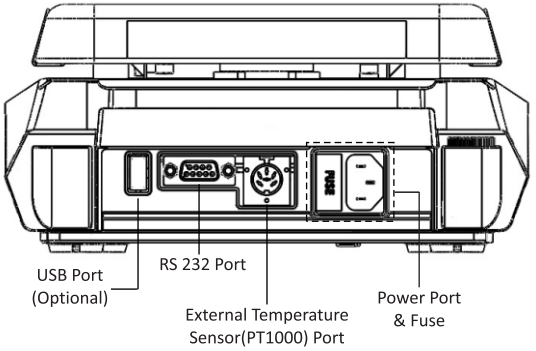
other ways. For example: Through light irradiation, through surrounding temperature etc.

23. Abrasion of the dispersion equipment or the rotating accessories can get into the medium you are working on.
24. The chemical reaction of PTFE can occur when in contact with molten or dissolved alkaline earth metals, as well as with fine partied powders of metals of the 2 and 3 group of the periodical system at temperatures above 300-400 °C. Only elementary fluorine, chlorine trifluoride and alkaline metals do attack PTFE, halogen hydrocarbons have a reversible swelling effect. Only glass-coated magnetic rods should be used in combination with solute alkali metals or alkaline earth metals or at a temperature above 250°C.
25. In the case of power failure or mechanical interruption, stirrer will not start automatically after the restoration of power if its auto start mode is not activated. Due care should be taken. ATTENTION
26. To protect do not cover the device, even partially, with elements such as metallic plates or sheets otherwise it may overheat. Ensure that mounting plate remains clean.
27. The socket must be earthed (protective ground contact)
28. Do not use the device if the ceramic set-up surface is damaged e.g. scratches, splinters or corrosion. A damaged set-up surface could break if used.

4. STANDARD PARTS



Front Side



Rear Side

5. ACCESSORIES

- PT 1000 Temperature Sensor and Sensor Attachment Stand
- Magnetic Stirring Bar
- Power Cord
- User Manual and Warranty Card
- Threaded plug

6. INSTALLATION

The hot plate stirrer is provided in a box. Open the box, then remove the packaging and gently place the device on the firm & leveled surface. Take care while unpacking & removing all accessories. The user manual should be kept with the device for easy access. Please keep all packaging in safe storage for at least two years for warranty purpose.

6. INSTALLATION

6.1 LOCATION & MOUNTING

Place the stirrer on a flat and leveled surface & ensure that all the four legs of this stirrer stand on the surface firmly. Avoid installing on a slippery surface or surface prone to vibration.

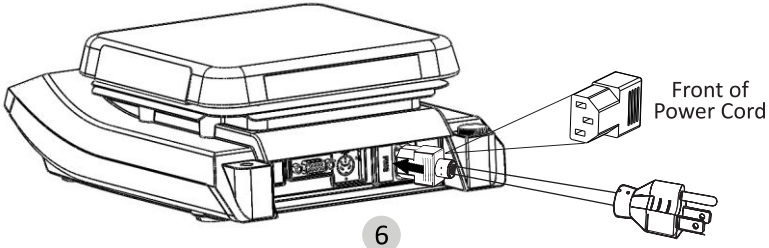
1. Ideal ambient temperature is 25°C ± 1°C; avoid placing the unit in direct sunlight.
2. Keep clearance of at least 20 cm from all side to guarantee the cooling efficiency.
3. Keep the unit away from heated solution to avoid sample temperature issues.
4. Do not place the equipment at a place where it becomes difficult to operate it.

6.2 ASSEMBLING SUPPORT ROD STAND

1. Remove the threaded plug.
2. Screw in the support rod manually until it cannot be tightened any further.
3. Tighten the nut using an open-end spanner.
4. Assemble the accessories mentioned in Section 6 using the clamp.

6.3 CONNECTING POWER CORD

1. Connect one end of the power cord to the rear side of the stirrer and another end to the power supply as shown in the figure below.
2. Push the power cord firmly for proper connection and turn ON the main switch.
3. Make sure that input power source is according to stirrer requirement



6. INSTALLATION

6.4 SETTING SAFE TEMPERATURE

This is a safety feature where if the temperature of heater exceeds the value saved in safe mode then operation (heating & stirring) will stop & display will show Error 4.

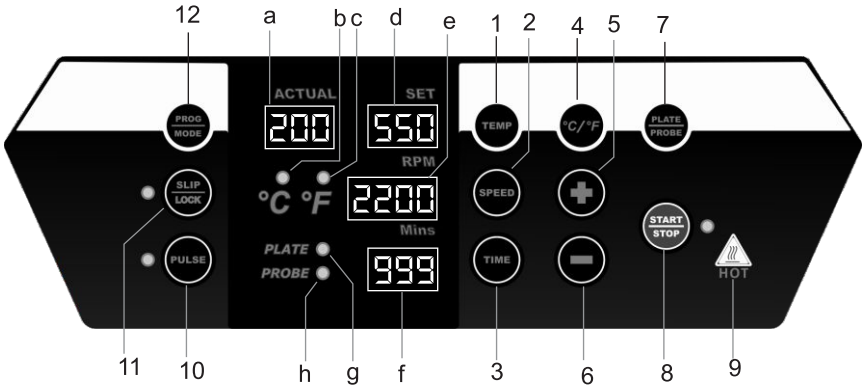
The safe temperature limit must always be set to at least 25 °C lower than the fire point of the media used.

Immediately after Switching ON the unit, Safe Temperature Setting mode will be initialized. The “ACTUAL” display of device will display “safe” and “SET” display will show the respective value of safe temperature.

By pressing +/- buttons, one can set the value of safe temperature. The maximum value of safe temperature can be set up to 375/575°C. After selecting the desired safe temperature value, it will get saved when “SET” display showing the value will blink for 5 times.

(**Important Note**: The safe temperature must not be less than 25°C in any case and it should not be more than 25° for optimum performance from the operating temperature.)

7. USER INTERFACE & DISPLAY



7. USER INTERFACE & DISPLAY

Display

Display shows current **speed** & **time** values	LEDs indicates in which unit temperature is displayed	Display shows Set and Actual **Temperature value**	LEDs indicates temp. displayed is of PLATE or PROBE

User Interface

1) Temp	**:** Press “Temp” to select Temperature value. Then press “+/-” to set Temp value in °C.
2) Speed	**:** Press “Speed” to select Speed value. Then press “+/-” to set Speed value in RPM.
3) Time	**:** Press “Time” to select time value. Then press “+/-” to set Time value in minutes.
4) Temp Unit Selection :	Press “°C/°F” to change the unit in which Temperature is displayed.
5) Increment	**:** Press “+” to increase values.
6) Decrement	**:** Press “-” to decrease values
7) Plate/Probe	**:** Press “Plate/Probe” to display Temperature of plate or probe at Actual Temp Display
8) Start/Stop	**:** Press “Start/Stop” to Start or Stop any operation.
9) HOT LED	**:** Glow when ceramic plate of the stirrer is HOT above 50°C
10) Pulse Mode	**:** Press “Pulse” to activate the pulse mode in any operation. Long pressing “Pulse” lets user select timings for pulse mode from 30sec to 99sec.
11) Pulse LED	**:** Pulse LED glow to indicate Pulse mode activation.
12) Slip/Lock	**:** Short Press “Slip/Lock” to activate Slip detection feature **OR** by long pressing “Slip/Lock” Keypad LOCK mode safety feature gets activated.
13) PROG/MODE Button:	Short Press “Prog/Mode” to activate Heating Mode **OR** Long press “Prog/Mode” to activate Program Mode.
Important Note	**:**By default, motor rotates in clockwise direction.

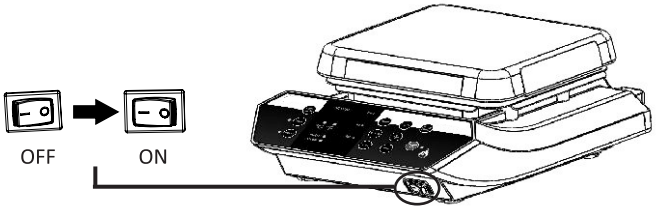
8. FEATURES

1. High performance stirrer - optimum use of laboratory space
2. Variable speed and time setting with digital display
3. Temperature setting from ambient to 350/550°C
4. Homogeneous temperature distribution across heating plate using the plurality of sensors.
5. Brushless DC motor for long life and maintenance - free operation.
6. Simultaneous display of actual and set temperature via digital display.
7. Noiseless and consistent stirring.
8. Hot indication LED for safety
9. Closed design allows easy cleaning and protects the equipment against penetration of liquids.
10. Programmable pulse mode for vigorous stirring.
11. Nonslip strength rubber feet.
12. Stirring bar Slip detection feature.
13. Keypad lock feature for safety.
14. Inbuilt memory storage for various programs.
15. Remote operation with the data logger.
16. Smart programmable heating modes.
17. Auto-Start Mode.
18. This hotplate stirrer is specially designed in a way that both stirring and heating functions can be used individually.

9. OPERATION

9.1 Switching On the device

Plug the power cord into its socket on the rear panel, now connect the power cord to AC power output. Now switch ON the mains and switch ON the stirrer from the front side, as shown in figure. The power LED on its front panel will glow.



Important Note: Values of any parameter or mode will get set saved only after the respective display blinks for 5 times.

9.2 Setting Time

The time in the display will show in minutes. The stirrer timer set for operation is in between 1min to 999mins and infinite. Infinite time is seen as "∞". To set time, press "TIME" button and then set the value by pressing "+/-" button. When time button is pressed, the "Mins" display will blink indicating the time value is selected. Once time value is selected, single press "+/-" will increase or decrease time value by 1min.

Long press increment or decrement button to quickly increase or decrease time value. Time value gets saved after 5 blinks. The timer is a countdown timer showing remaining time left. Once time is over, the stirrer stops.

9.3 Setting Speed

Speed is displayed as RPM. The minimum and maximum speed of stirrer is 200 RPM and 2200 RPM respectively. When the equipment is used for the 1st time, the speed will be set to zero and shown as "0". Once speed value is selected, single press "+/-" will increase or decrease speed value by 10 RPM. Long press

"+/-" to quickly increase or decrease speed value. Speed value gets saved after 5 blinks.

To operate the device as a heater set the time and temperature as informed in the previous section and set the speed of the stirrer to zero by pressing "+/-".

9.4 Setting Temperature

Initially on every startup the temperature function will be in OFF state. To set Temperature, Single press "Temp" button to select Temperature value and then press "+/-" to set temperature value. SET temperature gets saved after display blinks for 5 times.

Temperature value can be set from Ambient temperature to 350/550°C. Once Temperature value is selected, pressing "+/-" to will increase or decrease temperature value by 1°C. Long press "+/-" to quickly increase or decrease the temperature value. Temperature value gets saved after 5 blinks.

One can select units of temperature (°C) OR (°F) by pressing the "°C/°F", whichever temperature is selected its respective LED will glow. As per the selected unit, the Actual Value and Set value of temperature will change accordingly.

To operate the device only in stirring mode select the speed and time as mentioned in previous sections, for temperature single press the temperature button to select temperature then press "+/-" until the SET temp display show "AbE" (Ambient Temperature) then press the Start button to start the stirrer.

9.5 Working with External Temperature Sensor

Plug the connector of the temperature sensor to the temperature sensor socket on the rear side of the instrument. The PROBE LED will glow indicating that probe is selected and theACTUAL display will automatically show the temperature of Probe. One can select the Plate or Probe manually by pressing PLATE/PROBE button.

9. OPERATION

Probe selection will work only if the external temperature sensor is connected.

The user can not select plate/probe option when stirrer is under operation.

9.6 Slip Detection Mode

To activate the slip detection mode single press the “SLIP” which makes the LED near the “SLIP” glow indicating that slip detection mode is activated.

Working of Slip Detection Mode

When the slip detection mode is active and if the stirrer bar slips away from the stirring motion, then the system will restart by reducing the value of SET RPM by 100 RPM. If still the stirrer bar slips then again the system will restart by reducing the SET RPM value by 100 RPM till 200 RPM (minimum value).

Note : *This is applicable only when the speed reaches the SET RPM. It is not applicable during its RAMP UP or RAMP DOWN.*

9.7 Pulse Mode Operation

Press “Pulse” to start pulse mode operation. In pulse mode, the stirring direction will change between clockwise and counter-clockwise direction for every 30 seconds which can be set from 30 to 99 seconds. Upon the selection of “PULSE”, pulse button will glow. Again press the “Pulse” button to STOP pulse operation.

9.8 Programmable Pulse Mode Operation

By default, the pulse mode cycle time is 30 seconds (i.e. 30 seconds clockwise and 30 seconds anti-clockwise). With programmable pulse mode, the user can modify cycle time from 30 secs to 99 secs. Long press the pulse button to select pulse mode cycle time. The time display will change to “s 30” where “30” means pulse cycle time in seconds - this indicates that user can now modify pulse cycle time. Then press increment or decrement button to modify cycle time between 30 secs to 99 secs.

9. OPERATION

9.9 Program Mode

Program mode operation is the feature which allows user to save 99 programs which can have different speed and time and temperature parameters. The user can use any of this program simply by turning ON the program mode.

To turn ON the program mode, Long press “PROG” the “ACTUAL” display will blink and show “P01” indicating program mode is activated. The user can select any program from “P01 to P99” by pressing “+/-”. Once require program is selected, press “Speed” to select and set speed value, press “Time” to select and set time value, and press “Temp” to select and set temperature value.

Once all values are set the “ACTUAL” display will blink 5 times and after that, all the selected values of different parameters will get saved in respective program. If the user wants to set another program then while the “ACTUAL” display is blinking press the “+/-” to move to the next program and set the values in next program. If the user wants to modify previously saved program than first Long press the “PROG” to activate program mode, select the program which you want to modify by pressing “+/-”.

Now the selected program will show previously saved values of parameters. The user can change the values of parameters as per need, once all parameters are fed the program will be saved automatically with new values after the ACTUAL display showing the selected program number blinks for 5 times.

9.10 Line Program selection

To turn ON the line program, long press “PROG” button. The user can find LP 1 either before P01 i.e, by pressing “-” button or after ATS mode i.e, by pressing “+” button. After selection of LP 1, the user can set all parameters like speed, temperature etc and then the selected program will get saved after 5 blinks. After filling all the parameters in LP 1, LP 2 will appear and the user can repeat the above process to save all the parameters. This particular product has 5 line programs.

9. OPERATION

After user inputs all the parameters in the line programs as per his/her discretion, press “START” to run the line programs.

If user wishes to save and run only 2 line programs or 3 line programs etc, he/she can set the value as per the number of line program and when screen goes to the next line program, set speed value to 0 (zero) and temperature value to Ambient (abt).

Then by pressing time button select END at time display by pressing “+/-” button to end further addition. Following this, home screen would be displayed and the user can run the Stirrer.

9.11 Auto Restart Mode

In the case of power failure or disconnection of AC power cord, when stirrer is restarted the previous set values of parameters will appear on display but it will not count the time for which it has already been used. To keep the count you have to operate the stirrer in Auto Restart mode.

To select Auto Restart Mode Long Press the “PROG” to enter into program selection menu. In program mode between P99 and P01 Auto Restart Mode can be selected by pressing “+/-”. The ACTUAL display will show “ATS” indicating that the Auto Restart Mode is activated.

9.12 Keypad Lock Mode

This mode is useful when the user doesn't want to change set values of parameters while the stirrer is operating. This mode enables you to lock your operating keys. By Long Pressing the “LOCK” this mode will be activated which is indicated at RPM display which shows “LON”.

After setting the values of parameters and activating Keypad Lock Mode press “Start” to start the operation of the stirrer with the keypad lock. While operating stirrer in Lock Mode only the “Start/Stop” and “Lock” will remain active and rest of the buttons will not operate when the stirrer is running.

9. OPERATION

To deactivate Keypad Lock Mode long press the “LOCK” and the “RPM” display will show “L OF” indicating Keypad Lock Mode is deactivated.

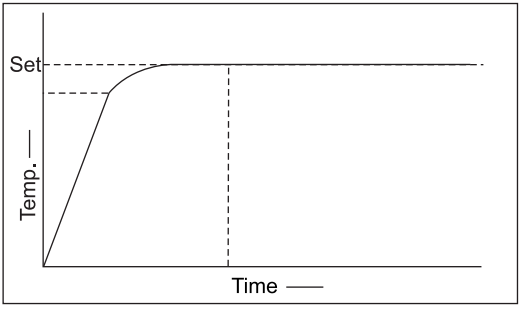
9.13 Heating Mode

This is a specially designed mode for the various heating purpose. There are three different heating modes H01, H02 and H03 which can be selected by single pressing “PROG”.

After pressing “PROG” the ACTUAL display will blink and show “h01” indicating H01 heating mode is activated. The user can set values of Temperature, Speed and Time in the H01 heating mode as instructed in Section 10 OR User can select another heating mode (H02/H03) by pressing “+/-” while the H01 is blinking at the ACTUAL display.

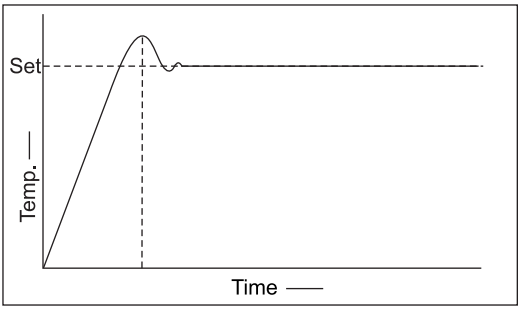
Working of Heating Modes

1) H01 : Slow heating with High Accuracy



This mode is very useful for the solutions which are very sensitive to a change of temperature. After setting a l l parameters when user presses “Start”, the initial temperature of device will rise quickly to a point below the set value of temp., then the temperature will rise slowly with high accuracy to set value & once it attains the set value then the temperature will remain constant for the remaining time with the high accuracy of +/-1°C .

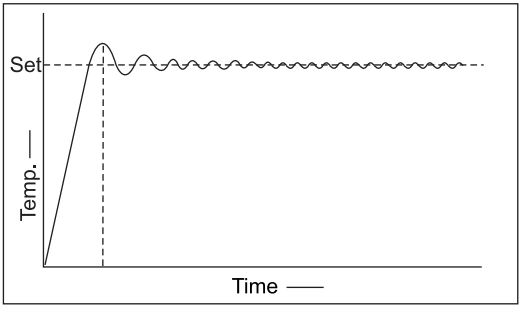
2) H02 : Fast heating with High Accuracy



This mode is useful when the user wants to heat the solution quickly. In this mode after setting all parameters when the user presses "Start", temp. of unit rises quickly to the set value point & then it stabilizes to set value. Initially, temperature may vary up to +/-15°C. After stabilizing, temperature of the plate will remain constant with high accuracy of +/-1°C.

3) H03 : Rapid Heating with Overshoot

This mode of heating is useful when user wants to heat the solution rapidly without the concern of accuracy of temperature. In this mode after setting all parameters when user presses "Start", initial temperature of device will rise very fast to the set value of temperature and once it reaches the



the set value device will slowly stabilize the temperature to the set value. In this mode, heating will be much more rapid then previous two modes and possible overheating could be up to +/-15°C.

10. TROUBLESHOOTING

Any type of malfunction during operation can be identified by the error message on display. Proceed as follows in such cases.

1. Problem : No Display

Solution : 1) Check main power is available

2) Check that power adaptor is working properly and it is properly connected at both ends.

3) If the problem still persists then call authorised service person

2. Problem : Err 3

Root Cause : Pendent not Connected

Solution : 1) First switch off the equipment, plug it out and Plug it in again

2) Check and Replace Faulty cable

3) If the problem still persists then call authorised service person

3. Problem : Err 4

Root Cause : Actual Temp more than Safe Temp

Solution : 1) Switch off & let it cool down then Restart the device

2) If the problem still persists then call authorised service person

4. Problem : Err 5

Root Cause : External Temperature Sensor(PT 1000) not connected/Probe not in medium

Solution : 1) Plug-out and Plug-in the external temp. sensor

2) If the problem still persists then call authorised service person

5. Problem : Err 6

Root Cause : Heater not working

Solution : 1) Restart device

2) If the problem still persists then call authorised service person

10. TROUBLESHOOTING

6. Problem : Err 7

Root Cause : Internal Temperature of device exceeds 80°C

Solution : 1) Switch off the device and allow it to cool down then Switch On

2) If the problem still persists then call authorised service person

7. Problem : Err 8

Root Cause : Thermocouple not connected / damage

Solution : 1) Switch Off the device and call authorised service person

11. MAINTENANCE & CLEANING

1. Before cleaning the device, allow the instrument to attain room temperature remove the power cord from the mains.
2. To clean the housing of the device from dyes, building materials or cosmetic materials use isopropyl alcohol as the cleaning agent.
3. To clean the housing of the device from food materials or fuels, use water containing detergent as cleaning agent.
4. Wear proper protective gloves while cleaning the instrument.
5. Be careful that no liquid enters the device during cleaning.
6. Kindly contact suppliers before using any other methods for cleaning.

This instrument is maintenance free. However, it is subjected to natural wear and tear on parts and their statistical failure rate. If it requires any service kindly contact the suppliers.

12. TECHNICAL SPECIFICATIONS

Product	HP 550	HP 350
Motor Type	BLDC	BLDC
Number of Stirring positions	1	1
Stirring quantity in Ltr(max)	20 Ltr	20 Ltr
Motor Rating Input-Output	15-20 W	15-20 W
Heating Temperature range	Room Temp to 550°C	Room Temp to 350°C
Heat Output	1200 W	600 W
Speed Range	200 - 2200 RPM	200 - 2200 RPM
Accuracy in RPM	+/- 1 RPM	+/- 1 RPM
Accuracy in Temperature	+/- 1°C	+/- 1°C
Recommended Stirring bar length	25 mm	25 mm
Hot Plate material	Ceramic Plate	Ceramic Plate
Set-up plate dimensions	180 x 180 mm	180 x 180 mm
Dimensions (W x D x H)	330 x 220 x 115 mm	330 x 220 x 115 mm
Weight	5.4 Kg	5.4 Kg
Permissible ambient temp.	5 - 40°C	5 - 40°C
Permissible relative humidity	80%	80%
Protection class according to DIN EN	IP 21	IP 21
RS 232 Interface	Yes	Yes
Input Voltage	230/110VAC, 50Hz/60Hz	230/110VAC, 50Hz/60Hz
Power Consumption	1220 W	635 W

TECHNICAL DATA

Product	Units	HP 550	HP 350
Operating voltage range/Frequency	VAC/Hz	230+/-10% / 50	230+/-10% / 50
Or	VAC/Hz	115+/-10% / 60	115+/-10% / 60
Display			
Timer	Minute	999 & Infinite	999 & Infinite
Display timer resolution	Minute	1	1
Timer measuring resolution	Second	1	1

Stirring			
Number of Stirring position	-	1	1
Motor	-	Brushless DC motor	Brushless DC motor
Max. power input of motor	W	60	60
Max. power output of motor	W	30	30
Speed range	rpm	200...2200	200...2200
Increment Step	rpm	10	10
Default direction of rotation	CW/CCW	CW (Clockwise)	CW (Clockwise)
Speed variation, No load, 115/230V, at 2200rpm, RT 25°C	%	(+/-) 0.22	(+/-) 0.22
Speed control	-	Keypad	Keypad
Stirrer bar length min.	mm	24	24
Stirrer bar length max.	mm	60	60
Self heating of hot plate at max. speed (Duration:1h, RT:25)	°C	15	15

TECHNICAL DATA

Product	Units	HP 550	HP 350
Max. Stirring quantity	L	20	20

Heating System			
Heating plate Material	-	Glass Ceramic	Glass Ceramic
Size of heating plate (In use)	mm	180 x 180	180 x 180
Heating power (115/230V)	W	1200, (+/-) 5%	600, (+/-) 5%
Temperature range	°C	RT...550	RT...350
Temperature setting range min.	°C	Room Temperature	Room Temperature
Temperature setting range max.	°C	550	350
Temperature unit	-	°C/°F	°C/°F
Set temperature resolution	°C	1	1
Actual temperature resolution	-		
1. Medium temperature	°C	1	1
2. Heat transfer temperature	°C	1	1
Hot plate adjustable safety circuit	°C	50 - 575	50 - 375
Safety setting resolution	°C	1	1
Temperature sensor in medium	°C	PT1000 (Class A)	PT1000 (Class A)
Temperature sensor variation	°C	(+/-)0.15°C +0.0026°(T)	(+/-)0.15°C +0.0026°(T)
Temperature measuring (+) sensor variation	°C	(+/-)0.35 <100°C	(+/-)0.35 <100°C
	°C	(+/-)0.85 >100°C	(+/-)0.85 >100°C

TECHNICAL DATA

Product	Units	HP 550	HP 350
Heating plate temperature variation	°C	(+/-)15 without vessel at centre at 100°C	(+/-)15 without vessel at centre at 100°C
Control hysteresis with sensor (500ml water, 600ml beaker, 300rpm, 25mm stirrer bar, Pt1000)	°C	(+/-)0.25	(+/-)0.25
Heating rate (500ml water, 600ml glass beaker, 30mm stirrer bar, 800rpm, PT1000 sensor)	°C/min	6.0 to 7.0	3.0 to 5.0
Sensor in medium detection (Error 5)	-	Yes	Yes
Adjustable pulse mode	-	Yes	Yes
Break detection stirrer bar	-	Yes	Yes
Programs	-	yes (up to 99)	yes (up to 99)
Remote pendant	-	Optional	Optional
Keypad lock mode	-	Yes	Yes
USB interface	-	Optional	Optional
Stirrer autostart mode (in case of power cut off)	-	Yes	Yes
Permitted ambient temperature	°C	(+)5 to (+) 40	(+)5 to (+) 40
Permitted relative humidity	%	50	50
Protection class acc. DIN EN 60529	-	IP 21	IP 21
Weight range variation	%	2	2
Overvoltage category	-	-	-
Protection class	-	-	-
Dimensions	mm	220 x 330 x 115	220 x 330 x 115
Weight	kg	5.4	5.4
Subject to technical changes!			

13. WARRANTY STATEMENT

This product is warranted to be free from defects in material and workmanship for a period of two (2) years from the date of purchase. Your product will be duly repaired upon prompt notification in compliance with the following conditions:

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in this instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces or other causes not arising from defects in original material or workmanship. This warranty does not cover any incidental or consequential damages, commercial loss or any other damages from the use of this product.

The warranty is invalidated by any non-factory modification, which will immediately terminate all liabilities on us for the products or damages caused by its use. The buyer and its customer shall be responsible for the product or use of products as well as any supervision required for safety. If requested the products must be returned to the distributor in well packed and insured manner and all shipping charges must be paid.

Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. This warranty is given expressly in lieu of all other warranties, expressed or implied.

The purchaser agrees that there is no warranty of merchantability or of fitness for any intended purpose and that there are no other remedies or warranties, expressed or implied, which extend beyond the description on the face of the agreement. This warranty is only applicable to the original purchaser.

Products received without proper authorization will not be entertained. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. We will not be responsible for damage incurred by improper packaging.

13. WARRANTY STATEMENT

All items returned for service should be set postage prepaid in the original packaging or other suitable carton, added to avoid damage.

This warranty is valid only if the warranty is registered with the supplier within 30 days from the date of purchase.

14. PRODUCT DISPOSAL

In case the product is to be disposed of, the relevant legal regulations are to be observed.

Information on the disposal of electrical and electronic devices in the European Community

The disposal of electrical devices is regulated within the European Community by national regulations based on EU Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). According to these regulations, any devices supplied after 13.06.05 in the business to a business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. They are marked with the following symbol to indicate this.

As disposal regulations within the EU may vary from country to country, please contact your supplier if necessary.

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