

CAPP

CRS-21H



USER MANUAL

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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 10 Ltrs. The multipurpose digital display assists users by displaying various parameters like actual & set temperature, speed, mode of operation, etc.

2. INTENDED USE

The hotplate stirrer is suitable to use for mixing and/or heating the liquids with the maximum capacity of 10 Ltrs (H₂O). It is designed for use in general laboratories, pharmacies, schools and universities.

NOTE: Before using the instrument, please read this user manual carefully. This user manual is intended to assist with the operation and care of the unit only and not its repair. For repair please contact the supplier. This manual should be always kept near instrument for guidance.

3. KEY FEATURES

- Powerful motor delivers constant speed under varying load conditions
- Temperature setting from ambient to 320°C
- Variable speed setting from 200 to 2200 RPM & long timer range from 1-999 mins & infinite mode
- Microprocessor controlled with last run memory feature
- Large & clear display shows critical parameters for easy reading
- Comes with PT-1000 temperature probe to accurately measure temperature of medium
- Small footprint saving valuable bench space
- Safe temperature setting up to 345°C

4. ACCESSORIES

- Magnetic Stirring Bar (25 mm)
- Power Cord
- User Manual and Warranty Card

5. TECHNICAL SPECIFICATIONS


Motor	DC
Number of stirring position	1
Max Stirring Quantity on Equip(H ₂ O)	10 L
Speed range	200 to 2200 RPM

Speed control	10 RPM / Step
Temp. range	Room Temp. to 320°C
Safe Temp	345°C
Temperature control	1°C
Time range	1 to 999 minutes & Infinite
Temp Accuracy [+/-K]	1
Set-up plate dimensions	140 mm
Dimensions (L x B x H)	265 x 192 x 101 mm
Heat output	600 W
Protection class according to DIN EN	IP 21
Permissible ambient temp.	5 - 40°C
Permissible relative humidity	80%
Weight	2 kgs
Input Voltage (VAC)	110V / 220V $\overline{\text{---}}$ 2.65A
Motor rating input & Output	5-7W
Total Power Consumption	620 W



Maximum recommended bar size	Maximum Speed
25mm (10 Liter)	2200 RPM
35mm (10 Liter)	1650 RPM
50mm (10 Liter)	1050 RPM
60mm (10 Liter)	880 RPM

6. SAFETY INSTRUCTIONS

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

1. Place the device on a flat, stable, clean, non-slippery and fire-proof surface.
2. Ensure that only trained staff uses the device. Keep the instructions manual in a 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 in serious burns or injury. Pay attention to the residual heat after switching off. 
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

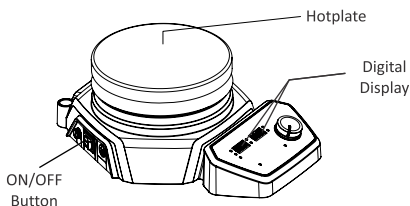
come in contact with the heated mounting plate.

7. 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.
8. 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.  WARNING
 - ☞ The release of toxic or combustible gases.
9. The top surface must be clean and kept intact. Wear protective gloves while cleaning the device. Use a soft mild cloth to clean.
10. Do not use damaged beaker, flask, stirring bar or any other component for operation. It may affect the efficiency of the device.
11. 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.
12. Do not move the device when it's connected to power supply or during its operation / hot.
13. Ensure that the product is used only for specified operation. It should not be used for shaking hazardous or reactive solutions.
14. Give specific attention to the risks associated with:
 - ☞ Flammable materials
 - ☞ Flammable media with low steam pressure
 - ☞ Overfilling of medium  CAUTION
 - ☞ Incorrect vessel size
 - ☞ Unstable vessel
 - ☞ Glass breakage
15. The RTD (PT 1000) sensor must always be immersed in the medium by at least 20 mm.
16. The rating of power supply must match with the specified rating.
17. The top surface will be hot after any heating operation. Do not touch the top surface till the hot LED indication glows.

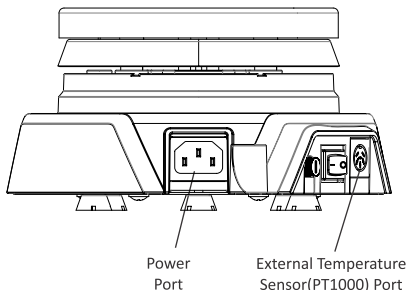
18. Process hazardous materials only in a closed vessel under a suitable extractor hood. Do not operate the appliance in explosive atmospheres, with the hazardous substance or under water.
19. The chemical reaction of PTFE can occur when in contact with molten or dissolved alkaline earth metals, as well 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 the temperature above 250°C.
20. 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.
21. The socket must be earthed (protective ground contact)
22. 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.

7. STANDARD PARTS

Front Side



Rear Side



8. INSTALLATION

The hot plate stirrer is provided in a box. Open the box, then remove the packaging. Take care while unpacking & removing all accessories. Please keep all packaging in safe storage for at least two years for warranty purpose.

8.1 LOCATION & MOUNTING

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

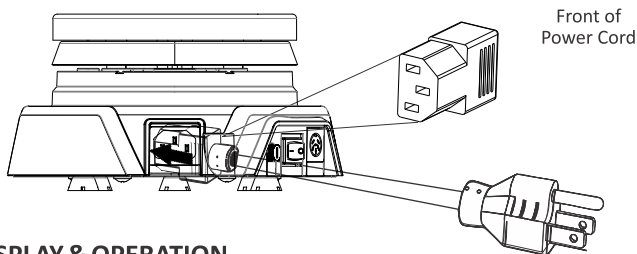
1. Ideal ambient temperature is $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$; avoid placing the unit in direct sunlight.
2. Keep clearance of at least 20 cm from all side to increase the cooling efficiency.
3. Keep the unit away from heated solution to avoid sample temperature issues.

8.2 ASSEMBLING SUPPORT ROD STAND

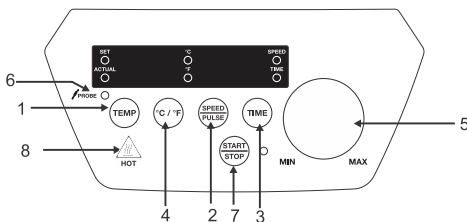
1. Screw in the support rod manually until it cannot be tightened any further.
2. Assemble the accessories mentioned in Section 6 using a clamp.

8.3 CONNECTING POWER CORD

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. Turn ON the main switch.



9. USER DISPLAY & OPERATION



Display			
RPM 2200	Min 999	°C °F	ACTUAL 200 SET 320
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 PROBE

Item	Name	Function
1	Temp	Press "Temp" to select Temperature value. Turn knob from left to right for increment (Abt to 320°C) value get saved after 5 blinks.
2	Speed	Press "Speed" to select Speed value. Turn knob from left to right for increment to set Speed value in RPM
3	Time	Press "Time" to select time value. Turn knob from left to right for increment to set Time value in minutes
4	°C/°F Selection	Press "°C/°F" to change the unit in which Temp. is displayed
5	Increment / Decrement	Turn knob left to right for Increment or right to left for decrement values
6	Probe	To display Temperature of probe at Actual Temp Display
7	Start/Stop	Press "Start/Stop" to Start or Stop any operation
8	HOT LED	Glows when top plate of the stirrer is HOT equal or above 50°C

10. OPERATION

10.1 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.

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 "SPEED/TIMER" display will show the respective value of safe temperature to be set.

By rotating the knob from left to right or right to left, one can set the value of safe temperature higher or lower respectively. The maximum value of safe temperature can be set up to 345°C. After selecting the desired safe temperature value, the value gets saved automatically after blinking for 5 times in the display panel.

IMPORTANT NOTE: The safe temperature must not be less than 25°C from ambient & it should be more than 25°C from operational temperature for optimum performance.

10.2 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 ". Press speed/pulse button, to change the speed value by rotating knob from left to right to increase speed or turn right to left to decrease the speed . Speed value get saved after 5 blinks.

To operate the device as a heater set the stirring speed to zero using knob while temperature can be set to maximum. Timer can be set as needed.

10.3 SETTING TEMPERATURE

The temperature will be at ABT as default factory setting. To set Temperature, press “Temp” button & turn the knob from left to right to increase the value up to 320°C and to reduce the temperature turn the knob from right to left. Temperature value can be set at the increment of 1°C SET temperature gets saved automatically after display blinks for multiple times.

The machine has last run memory, thus upon turning on the machine next time, the temperature would be at the last set temperature.

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 instructed to & set the temperature to ambient as shown as “ Amb ” in display.

10.4 SETTING TIME

The time in the display will show in minutes. The stirrer timer set for operation is in between 1min to 999 mins and infinite. Infinite time is seen as “][”. To set time, press “TIME” button and then set the value by turning knob . The timer will increase or decrease by 1min. The timer is a countdown timer showing remaining time left. Once time is over, the stirring & heating stops.

10.5 ATS MODE

ATS mode is a auto power intermittent mode. Which means in case of any power failure the machine will automatically start for the remaining timer after power resumption with set Speed & Temperature.

ATS mode can be activated by long press of timer key. ATS mode can be activated for both timed & infinite mode. Once the operation completes the ATS mode automatically exits. To exit out of the ATS mode, long press timer & then press stop key.

10.6 LOCK/UNLOCK FUNCTION

Lock function is to lock the control panel to avoid any accidental changes in parameters. During LOCK function only start/stop keys remains functional.

By long press, LOCK function gets activated with a display of “LOC” on the display panel.

To exit out of lock function long press knob. The message will be “Unlo” on the display panel.

10.7 PULSE MODE

Pulse mode is for effective mixing of the samples. Pulse mode is run-pause-run.

To activate Pulse mode, long press speed/pulse key. The activated pulse mode will show “Puls On” on display. The pulse mode run-pause-run is at the interval of 30secs.

To deactivate pulse mode, long press Speed/Pulse key with message “Puls Off”.

10.8 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 an ACTUAL display will automatically show the temperature of probe. Never remove or insert PT 1000 probe when the equipment is in running mode.

To insert or remove PT 1000 probe, first stop the operation, switch off the equipment, insert or remove PT 1000 probe and then switch on the equipment to carry out the operation. If this procedure is not followed, the equipment will show ERROR 5 (see troubleshooting for all the errors).

11. TROUBLESHOOTING

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

1. Problem : No Display

Root Cause : No main power connection

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 authorized service person

2. Problem : Err 4

Root Cause: Actual temp. more than SET temp/temp measurement, not in range

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

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

3. 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 authorized service person

4. Problem : Err 6

Root Cause : Heater not working

Solution : 1) Restart device

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

5. 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

12. 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 a 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.

13. WARRANTY STATEMENT

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

- 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 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.

Note: 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 merchant-ability or of fitness for any intended purpose and there are no other remedies or warranties, implied, which extend beyond the description on the face of the agreement. This warranty is only applicable to the original purchaser.

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

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

For you reference, make a note of serial number, date of purchase and supplier here.	
Serial No.:	Purchase Date:
Supplier:	

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 business sphere, to which this product is assigned, may no longer be disposed off 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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