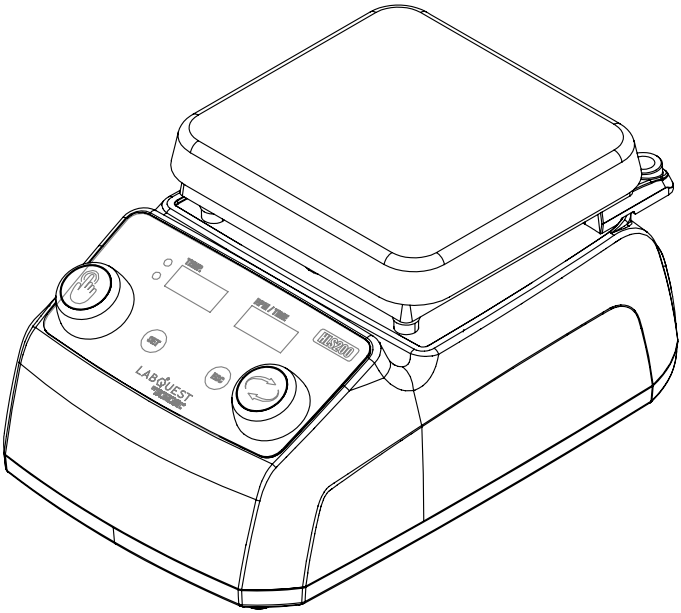
LABQUEST BY BOROSIL®

HOT PLATE MAGNETIC STIRRER

OPERATING MANUAL
HLS200P



DEALER :

THANK YOU NOTE

We Borosil, one of India's most customer oriented brands truly appreciate your business and express our gratitude for the trust you have placed on us.

We hope your choice serves you well in your scientific endeavors and aspire to have the pleasure of doing business with you for years to come.

INTRODUCTION

The manual provides important information regarding the safety information of the Hot plate magnetic stirrer.

Hot plate magnetic stirrer has a plate temperature upto 320^{0}C, speed range upto 1500 RPM, timer of 999 mins and infinite time.

The body of the unit is made up of PBT 30% glass filled which will have minimum chemical reaction if the chemical spillage takes place and also has low body thermal conductivity which prevents any accidental heat burns.

Read this manual thoroughly before attempting to operate the unit. All persons operating this piece of equipment should review the safety precautions section of this manual.

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PACKING LIST

Sr. No	Description	Quantity
1	HLS200P Unit	01 No.
2	Power Cable	01 No.
3	Stir Bar	01 No.
4	External Probe	01 No.

PRODUCT SPECIFICATION

PARAMETERS	HLS200P
Stirring position	1
Max Capacity	2L
Heater Wattage	325W
Speed Range	300 - 1500 RPM
Plate Temperature	Ambient - 320°C
Temperature Accuracy	1 - 2^{0}C for slow mode and 4 - 5^{0}C for fast mode
Temperature Control	PID and Digital Energy Regulator
Safe Temperature Setting	Yes
Hot Indication	Yes (above 50°C)
External Temperature Probe	PT 100
External Probe Temperature	Ambient - 170°C
Speed Accuracy	±25 RPM
Speed Control	PID and Digital Energy Regulator
Speed Feedback	Yes
Display	LED 7 Segment
Controlling	Rotary Knobs & Push Keys
Timer	0 - 999 min & infinite
Top Plate Material	SS304
Top Plate Dimension (LxB)	150mm X 155mm
Product Dimensions (LxBxH)	285mm x 190mm x 150mm
Magnetic Stir Bar	25mm
Fuse Rating	2 Amps
Power Consumption	2A, 230V, 330W

CAUTION

- Always use proper protective equipment. (Clothing, gloves, etc.)
- Always follow good hygiene practices.
- Each individual is responsible for his / her own safety.
- Always wear shatter proof eye protection.

SAFETY AND WARNING

- When the **'AUTO RESTART'** feature is Enabled, the unit may start heating or opertaing on power supply.
- Ensure mains are switched off or unplugged when the product is not in use.

Important operating and maintenance instructions. Read the accompanying text carefully.

POTENTIAL ELECTRICAL HAZARDS

- Only qualified persons should perform procedures associated with this Symbol.
- Equipment being maintained or serviced must be turned off to prevent possible injury.
- Inadequate earthing at the installation facility can lead to hazardous electrical shocks.
- The manufacturer is not liable for any injury or death resulting from electrical hazards due to faulty earthing in the lab.

POTENTIAL HEAT HAZARDS

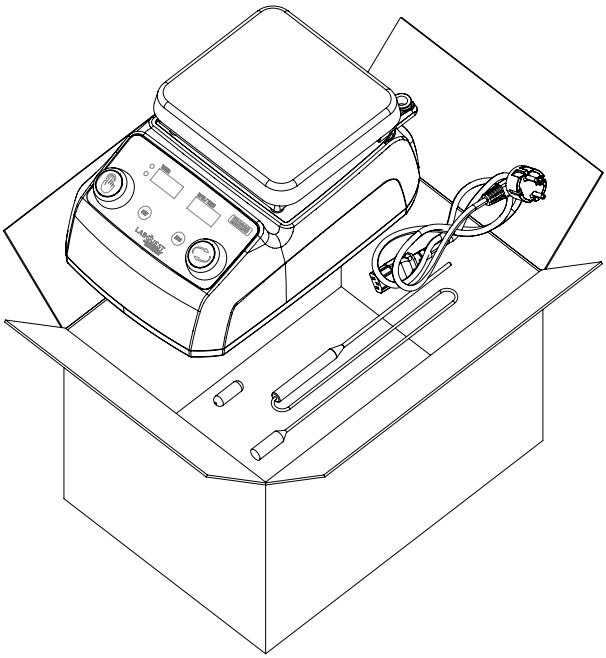
- Only qualified persons should perform procedures associated with this Symbol.
- Do not touch the hot plate in case of HLS200P directly when the unit is in hot condition.

SAFETY PRECAUTIONS

The following precautions should be taken when operating or working near the Hot plate magnetic stirrer :

- Do not operate the Hot plate magnetic stirrer without the load on top plate. This can reduce the life of the heater due to over heating.
- Do not START the process while the external temperature probe is out of the solution.
- Always supervise the hot plate magnetic stirrer or hot plate when it's set to high temperature.
- Do not use the product if there is any electrical or mechanical damage.
- Stir hazardous samples in appropriate containment vessels.
- Repair should be performed only by qualified individuals.
- Do not use accessories which are not recommended by the manufacturer as it may affect the performance.
- Do not use the unit in hazardous atmosphere or with hazardous material for which the unit is not designed.
- Always use the unit on a level & stable surface for best performance and maximum safety.
- The instrument is designed to be used in the laboratory environment.
- Clean the unit with a damp cloth using a mild detergent only. Do not use chemical cleaning agents.
- If liquid is spilled on the unit, first disconnect the unit from the external (main) power supply and then clean the unit with damp cloth.

UNBOXING



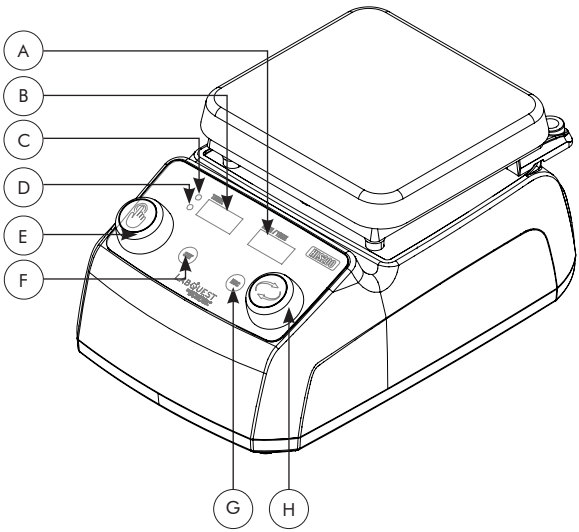
1. Place the carton box in the proper direction.
2. Check the exterior of the carton box for any damages.
3. Unbox the carton box from the top. If there is any physical damage found on the product report to the dealer / delivery agent.
4. Remove the accessories and the unit from the box safely.
5. Compare the items present in the carton box with the packaging list and the unboxing image. If any of these items are missing, contact Labquest's Customer Service Department immediately.

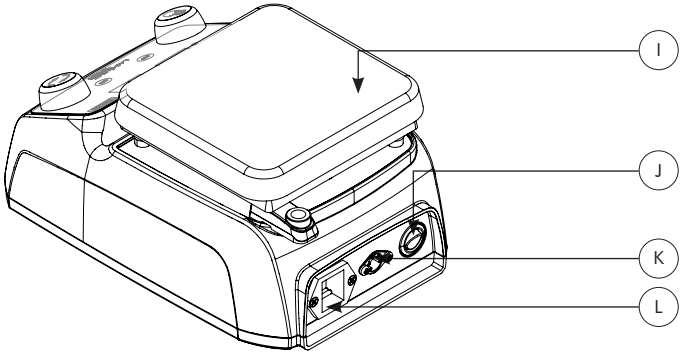
Refer page no. 6 to know what is present in the carton box with respect to the product.

(Read Manual before installation on the lab bench.)

PRODUCT IDENTIFICATION

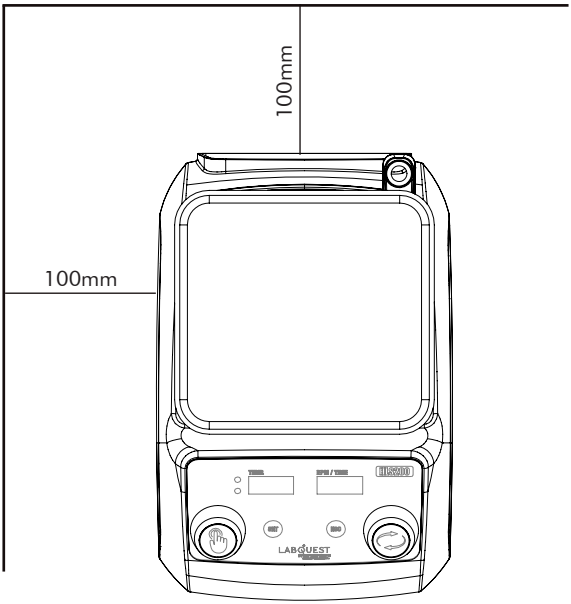
A. RPM & TIME DISPLAY
B. TEMPERATURE DISPLAY
C. SET INDICATOR (GREEN LED)
D. PROCESS INDICATOR (RED LED)
E. SELECTOR KNOB
F. SET KEY
G. ESC/BACK KEY
H. SPEED KNOB
I. SS TOP PLATE
J. POWER SWITCH
K. DIN CONNECTOR
L. POWER SOCKET





PRODUCT INSTALLATION

- Locate the unit on a level, stable surface near a grounded electrical outlet.
- The surface should be clean and free of dust and also ensure that there are no flammable substances present near the unit .
- Allow sufficient clearance on all sides of the unit for proper ventilation.
- With the power switch in the OFF position, plug the power cord into a grounded receptacle.
- Make sure that a minimum 100 mm gap is maintained between the unit, wall and also with other instruments present in the lab as shown in the figure below.
- Please ensure there is a fuse in the fuse holder.
- Connect the male end of the power cable to the wall socket.
- The unit is ready to operate for first usage.



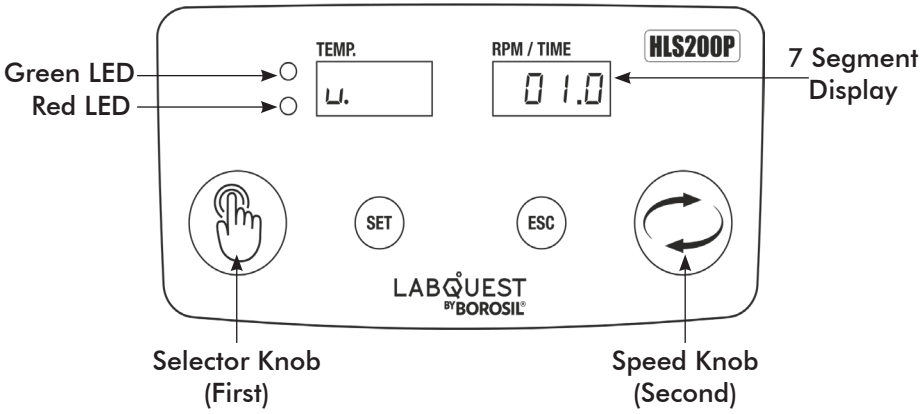
OPERATING INSTRUCTIONS

- All operating controls are located on the front panel and back panel of the unit.
- The power switch, power socket and din connector are located on the back panel.
- Press the power switch, display will turn ON showing the current temperature of the unit.
- The selector knob can be both pressed and rotated, whereas the speed knob is only rotatable.
- Rotate the selector knob in clockwise or anticlockwise to adjust the temperature and time.
- Rotate the speed knob in clockwise or anticlockwise to adjust the RPM.
- If the external probe is not connected then the unit will show the heater temperature. In this mode the temperature range can be selected from ambient to 320^{0}C.
- If the external probe is connected then the unit will show the probe temperature. In this mode the temperature range can be selected from ambient to 170^{0}C.
- First set the desired temperature by rotating the selector knob. Once this is confirmed, single press the selector knob to start the process.
- Speed regulation will be 300-1500 RPM and time regulation will be from 1-999mins.
- If one rotates the second knob when the process is ON then the speed increases or decreases directly based on the rotation of the knob.

- If one wants to know the set temperature during the process then single press the SET button/key.
- If one wants to interrupt the process in between then long press the first knob or by pressing the ESC key twice.
- If the stir bar slips out then reduce the speed to zero so that the stir bar comes back to its rotating zone.
- The unit can only be used as a stirrer, by setting the temperature below the ambient and speed to required RPM.
- Once the parameter in the unit is set and the process is started then the unit will show the temperature and time or speed.

NOTE:
Do not use a stir bar which has lost its magnetic property this will cause slipping of it at high speed.

DESCRIPTION OF KNOB AND LED



Version Display

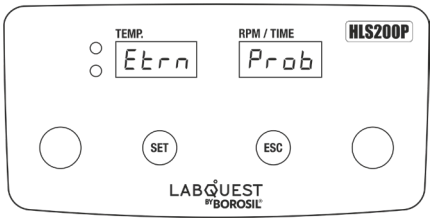
When the power supply is turned ON, the unit will display the current software version for 2 seconds. During this time, both LEDs will remain OFF.

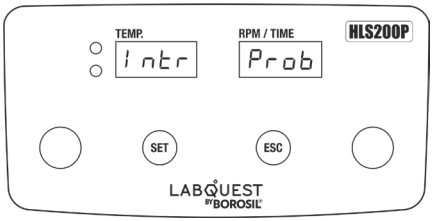
1. **Selector Knob**
   - Clockwise Rotation
     - » To increment the set parameter value.
   - Anti Clockwise Rotation
     - » To decrement the set parameter value.
2. **Switch**
   - Single Press : To select the particular parameter value.
   - Long Press: To reset the set parameter, to exit the process and to jump into the settings.
3. **Green LED**
   - This indicates the set parameter.
4. **Red LED**
   - This indicates the process.

TEMPERATURE PROBE STATUS

After the version display, the unit will check the probe status:

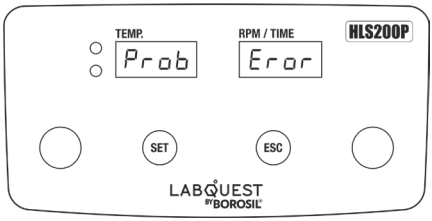
- If an **external probe** is connected, the 1st display will show "**Etrn**" and the 2nd display will show "**prob**" for 2-3 seconds with a buzzer beep.
- If an **external probe** is not connected, the 1st display will show "**Intr**", and the 2nd display will show "**prob**" for 2-3 seconds with a buzzer beep.
- Both LEDs will remain OFF.





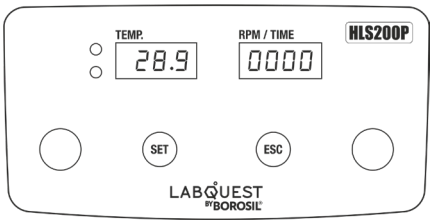
PROBE ERROR

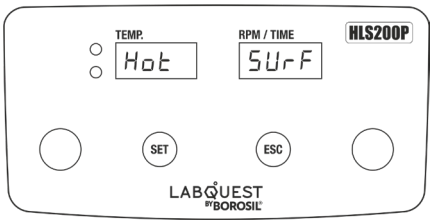
- If the internal probe is not connected or faulty, the 1st display will show "**Prob**" & 2nd display will show "**Eror**" with the display blinking and a buzzer sound.
- Both LEDs will remain OFF.



HOME SCREEN

- After displaying the probe status, the unit will show the current temperature on the 1st display and the RPM on the 2nd display.
- If temperature of top plate greater than 50C then '**Hot SurF**' message will appear frequently to prevent direct touch on the hot plate.
- The user can set the RPM directly on the home page by rotating the second knob.
- Both LEDs will remain OFF.





SET PARAMETER

Single press the 1st knob to enter the parameter-set mode.

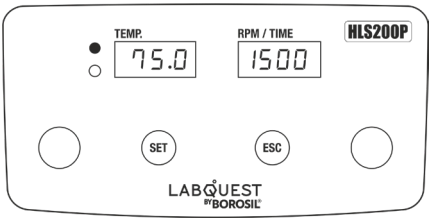
Set Temperature:

1. Rotate the 1st knob clockwise or counterclockwise to vary the set temperature.
2. During this time, the 1st display will blink and show the set temperature.
3. Single press the 1st knob to confirm and fix the set temperature and also to start the process.

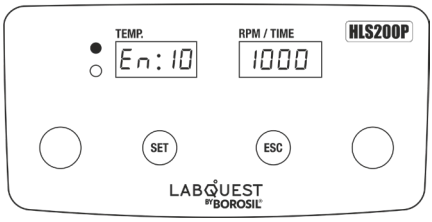
Set Energy Value:

1. Rotate the 1st knob to adjust the energy value.
2. During this time, the 1st display will blink and show the set energy value.
3. Single press the 1st knob to confirm and fix the set energy value and to start the process.

- Rotate the 2nd knob clockwise or counterclockwise to set or vary the RPM value. During this time, the 2nd display will show set RPM.
- The Green LED will remain ON while adjusting the temperature, energy regulator value, and RPM.
- Single press the '**ESC**' key or long press the 1st knob to return to the home screen.



If Heat mode is 'Prob'



If Heat mode is 'EnrG'

IN PROCESS

Heat in 'Prob' Mode:

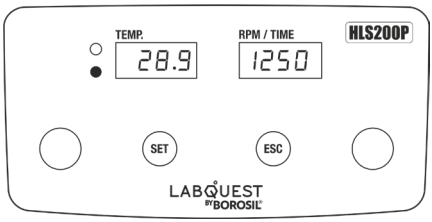
- If time is '**Dsbl**':
  1. The unit displays the actual temperature (Internal/External) on the 1st display.
  2. The actual RPM will be shown on the 2nd display.

- If time is 'Pros/Soak':
  1. The unit displays the actual temperature (Internal/External) on the 1st display.
  2. The 2nd display toggles between actual RPM and elapsed time.

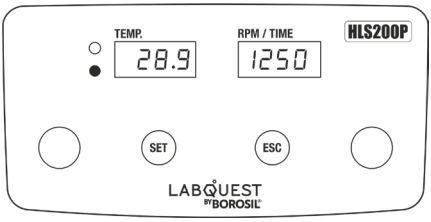
Heat in 'EnrG' Mode:

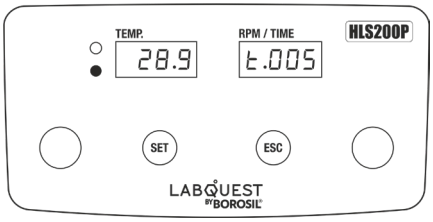
- If time is '**Dsbl**':
  1. The unit displays the Set energy value on the 1st display.
  2. The actual RPM will be shown on the 2nd display.

- If time is 'Pros/Soak':
  1. The unit displays the actual temperature (Internal/External) on the 1st display.
  2. The 2nd display toggles between actual RPM and elapsed time.



If time is 'dsbl'



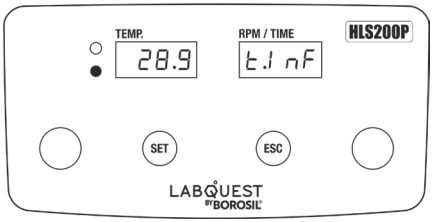


If time is 'ProS/Soak',2nd display toggles between actual RPM and elapsed time

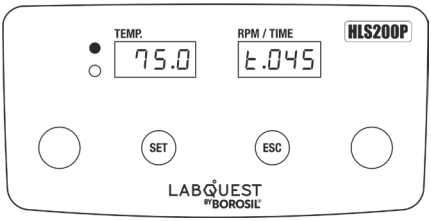
- Time Mode - 'dsbl':
  - » A **count-up timer** will start automatically.

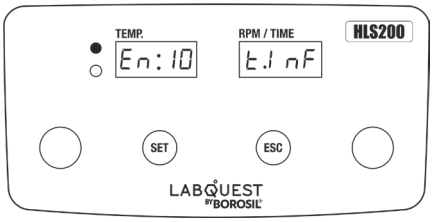
- Time Mode - 'Pros':
  1. When the process starts, the unit will prompt to enter the time. 2nd Display will blink and show 't.InF' for 10 sec.
  2. Rotate the 1st knob during this prompt to set the **defined time**. If no action is taken, the time defaults to '**InF**'.
  3. If a defined time is set, a **countdown timer** will start.

- Time Mode - 'Soak':
  1. When the process starts, the unit will prompt to enter the time.
  2. Rotate the 1st knob during this prompt to set the **defined time**. If no action is taken, the time defaults to '**InF**'.
  3. If a defined time is set, the **countdown timer** will begin once the **actual temperature** reaches the **setpoint**.



- RPM Adjustment in Process:
  - » Rotate the 2nd knob clockwise or counterclockwise to vary the RPM during the process.
- Set Temperature Adjustment in Process:
  1. Rotate the 1st knob to change the set temperature during the process.
  2. Single press the knob to confirm the set temperature.
- A single press of the SET key during the process will display the set parameters:
  1. Set temperature/energy value on the 1st display.
  2. Elapsed time (for 'dsbl' mode) or Set time (for 'Pros'/'Soak' modes) on the 2nd display.



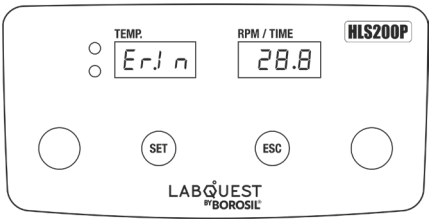


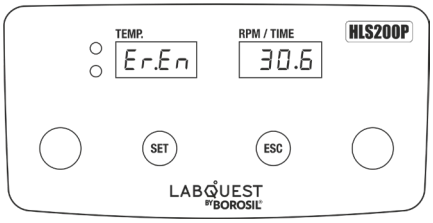
- The RED LED will remain ON throughout the process.
- When the process starts or stops, the buzzer will beep for 2 to 3 seconds as an alert
- Stopping the Process:
  1. If the ESC key is pressed once, the 1st display will show 'stop' and the 2nd display will show 'pros' for 5 seconds.
  2. If the ESC key is pressed again within this duration, the process will stop.
  3. If not, the process will resume.

SETTINGS MENU

SINGLE POINT CALB

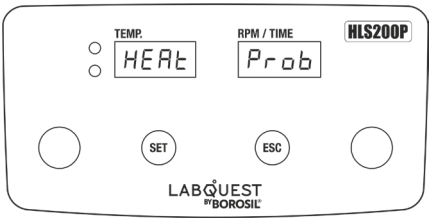
- Long press the 1st knob for 7 seconds on the Home Page to enter the Setting Menu.
- Rotate the 1st knob to select the Calibration Mode.
- The unit will display:
  1. 'Er.In' on the 1st display if the external probe is not connected.
  2. 'Er.En' on the 1st display if the external probe is connected.
  3. The current temperature will be displayed on the 2nd display.
- Press the 1st knob once to enter the Calibration Mode.
- Rotate the 1st knob to set the master temperature.
- Press the 1st knob again to save the settings and exit.
- Long press the 1st knob to return to the Home Page.

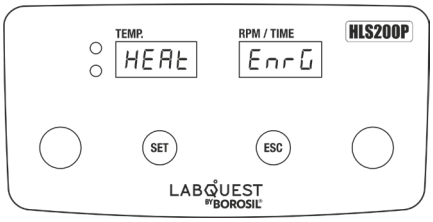




HEAT MODE

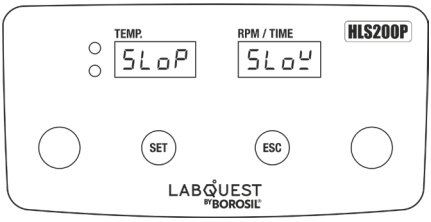
- Rotate the 1st knob to select the Heat mode.
- The unit will show 'HEAt' on the 1st display and 'Prob/Enrg' on the 2nd display.
- Press the 1st knob once to enter Heat mode.
- Rotate the 1st knob to choose between 'Prob' or 'Enrg'.
- Press the 1st knob again to save the selection and exit.
- Long press the 1st knob to return to the Home Page.

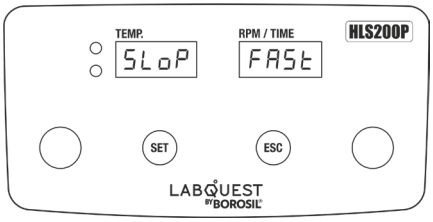




SLOW/FAST HEATING

- Rotate the 1st knob to select the SLOP mode.
- The unit will show 'SLOP' on the 1st display and 'Slow/FASt' on the 2nd display.
- Press the 1st knob once to enter SLOP mode.
- Rotate the 1st knob to choose between 'Slow' or 'FASt'.
- Press the 1st knob again to save the selection and exit.
- Long press the 1st knob to return to the Home Page.

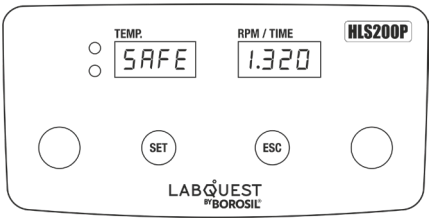


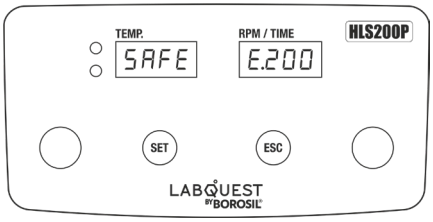


SAFE TEMPERATURE

- Rotate the 1st knob to select the safe temperature mode.
- The unit will show 'SAFE' on the 1st display and 'I.320/E.200' on the 2nd display.
- Press the 1st knob once to enter SAFE mode.
- Rotate the 1st knob to vary the safe temperature value(External/Internal).

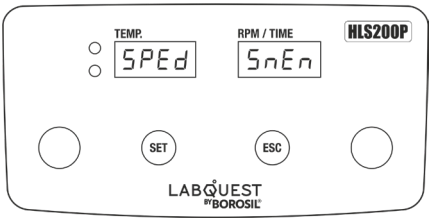
- Press the 1st knob again to save the safe value and exit.
- Long press the 1st knob to return to the Home Page.

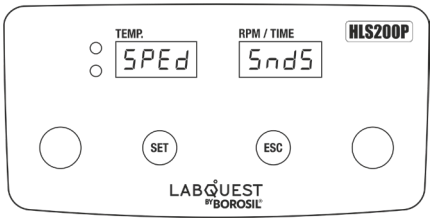




OPTIC SENSOR ENABLE/DISABLE

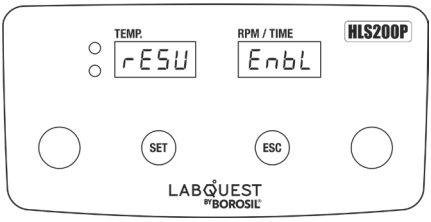
- Rotate the 1st knob to select the SPEd mode.
- The unit will show 'SPEd' on the 1st display and 'SnEn/SndS' on the 2nd display.
- Press the 1st knob once to enter SPEd mode.
- Rotate the 1st knob to choose between 'SnEn' or 'SndS'.
- Press the 1st knob again to save the selection and exit.
- Long press the 1st knob to return to the Home Page.

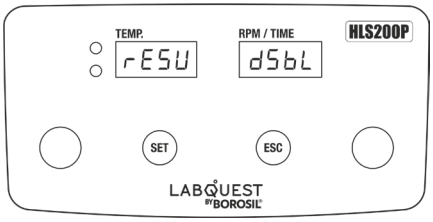




AUTO RESTART

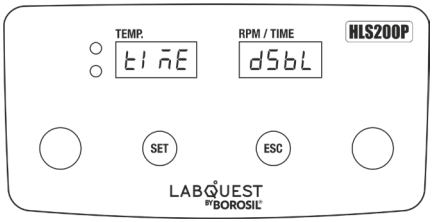
- Rotate the 1st knob to select the Auto restart mode.
- The unit will show 'rESu' on the 1st display and 'Enbl/dSbl' on the 2nd display.
- Press the 1st knob once to enter rESu mode.
- Rotate the 1st knob to choose between 'Enbl' or 'dSbl'.
- Press the 1st knob again to save the selection and exit.
- Long press the 1st knob to return to the Home Page.

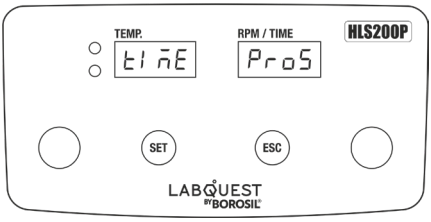


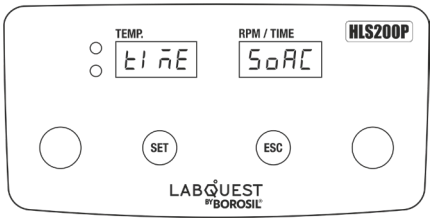


TIME MODE

- Rotate the 1st knob to select the Time mode.
- The unit will show 'timE' on the 1st display and 'dSbl/ProS/SoAC' on the 2nd display.
- Press the 1st knob once to enter timE mode.
- Rotate the 1st knob to choose between ''dSbl', 'ProS' or 'SoAC'.
- Press the 1st knob again to save the selection and exit.
- Long press the 1st knob to return to the Home Page.

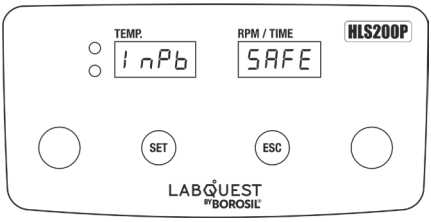


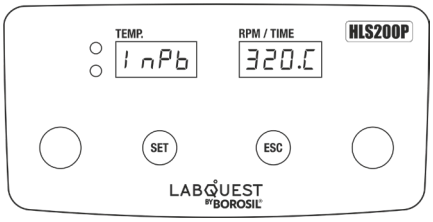




INTERNAL PROBE SAFETY TEMPERATURE

- Rotate the 1st knob to select the Internal probe safety mode.
- The unit will show 'InPb' on the 1st display and 'SAFE' on the 2nd display.
- Press the 1st knob once to enter 'InPb SAFE' mode.
- Rotate the 1st knob to vary the safe value.
- Press the 1st knob again to save the value and exit.
- Long press the 1st knob to return to the Home Page.





SAFETY ALERT

- Overheating Protection During Process:

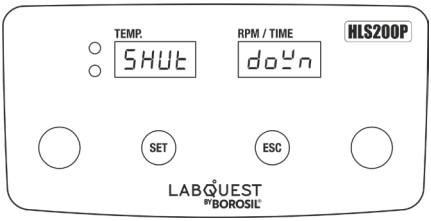
If the internal probe temperature exceeds 380°C during the process or out of the process due to triac failure, the unit will:

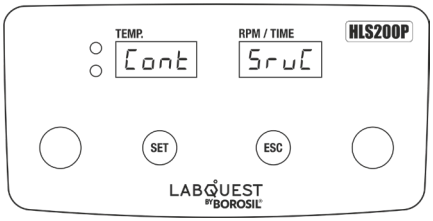
1. Display an alert message: 'shut down' and 'Cont SrvC'.
2. Cut off the power supply via the relay to prevent overheating.

- Gradual Temperature Rise Detection:

If the internal probe temperature gradually increases due to triac failure on the home page.(out of the process), the unit will:

1. Display an alert message: 'shut down' and 'Cont SrvC'.
2. Cut off the power supply via the relay to prevent overheating.





TROUBLESHOOTING

Sr. No.	PROBLEM	SOLUTION
1.	The unit is not turning ON.	• Check the supply in AC mains. • Make sure power cable is inserted to the socket properly. • Check whether the main switch is ON or OFF. • Check if the illuminated switch present in the unit is OFF or ON. • Check if the unit is running and the switch is not illuminating, then,the switch needs to replace.
2.	If the fuse is blown.	• Switch OFF the unit and remove power cable from AC mains. • Pull out the fuse holder located at the bottom of the power socket. • Remove the glass tube fuse. • Check if the fuse is blown. • If the fuse is blown, replace it with a glass tube fuse that is given in the product specification table.

WARRANTY REGISTRATION

Please handover this Registration form to the distributor from where you have purchased this product. The warranty is valid only when this warranty registration card is received by us within 30 days from the date of purchase.

Product: HLS200P

Product Sr. No.: _____

Date of Invoice : _____

Invoice No.: _____

Customer name & address

Name : _____

_____

Address: _____

_____

_____

_____

Telephone: _____

E-mail: _____

Customer sign & seal

Dealer name & address

Name : _____

_____

Address: _____

_____

_____

_____

Telephone: _____

E-mail: _____

Dealer sign & seal

BOROSIL®
Scientific
STATEMENT OF WARRANTY

Borosil confirms that this product has been manufactured in accordance with our technical specifications and quality requirements.

- Borosil warrants the product from manufacturing and workmanship defects for a period of 12 months from the date of invoice.
- Warranty void if apparatus is not operated as prescribed in this operating manual.
- To be covered under warranty.
  - Units have to be connected to standard 230V, 50Hz, 5A wall sockets with proper earthing for HLS200P.
  - The units should never be run with wet or dripping glassware.
  - Warranty does not cover replacement of heating element more than once.
  - Warranty does not cover rust and physical damage to metal parts due to corrosive environment in the lab.

Terms:

- In the event of malfunction due to defect, the buyer will have to follow the Borosil's service process.
- Certain units can not be serviced/rectified at the buyer's place and the units may have to be brought to Borosil's service center as advised by Borosil's representatives.
- In no event shall Borosil be liable for consequential or incidental damages.

INVOICE DATE	BUYER	AFFIX SERIAL NUMBER
INVOICE#		

Dealer name & address	Dealer sign & seal

BOROSIL SCIENTIFIC LIMITED
Corporate Office : 1101, Crescenzo G-Block, Opp. MCA Club, Bandra Kurla Complex, Bandra (E), Mumbai-400051, India.

LABQUEST BY BOROSIL®

: MANUFACTURED BY :

Borosil Scientific Limited

Plot No.7, Sr. No. 234, 235 & 245,
Indialand Global Industrial Park,
Hinjewadi Phase 1, Pune - 411057
Write to us on above address.

: MARKETED BY :

Borosil Scientific Limited

1101, G-Block, Parinee Crescenzo,
BKC, Bandra East, Mumbai - 51
Maharashtra, India

: CUSTOMER CARE CONTACT :

Phone : 1800 22 4551 | Email : lab.support@borosil.com

Website : www.borosilscientific.com