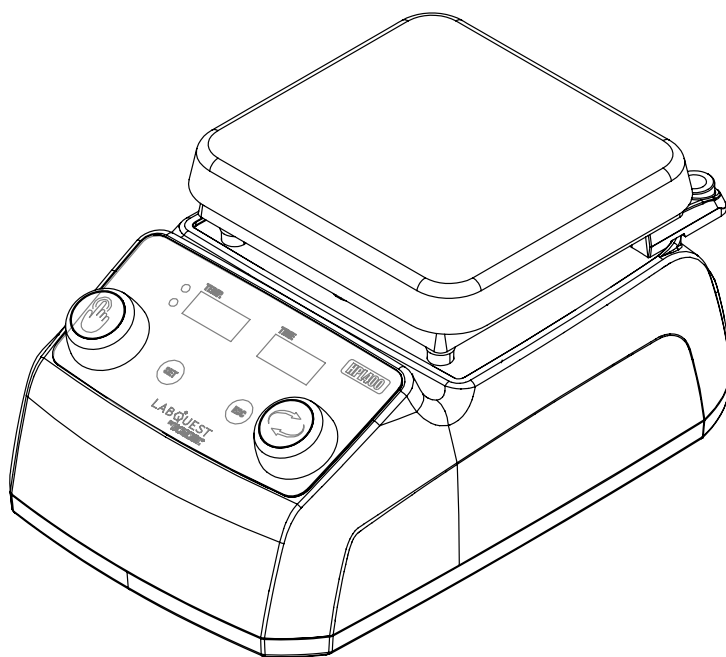


LABQUEST
BY **BOROSIL®**

HOT PLATE

OPERATING MANUAL HPL400P



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.

Hot plate magnetic stirrer has a plate temperature upto 320⁰C, 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

1. HPL400P Unit..... 1 Nos.
2. Power cable..... 1 Nos.
3. External probe 1 Nos.

PRODUCT SPECIFICATION

PARAMETERS	HPL400P
Max Capacity	2L
Heater Wattage	400W
Plate Temperature	Ambient - 320°C
Temperature Accuracy	±1°C upto 100°C and ±2°C above 100°C
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
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
Fuse Rating	2 Amps
Power Consumption	2A, 230V, 400W

**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 RESUME'** feature is Enabled, the unit may start heating or operating 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.

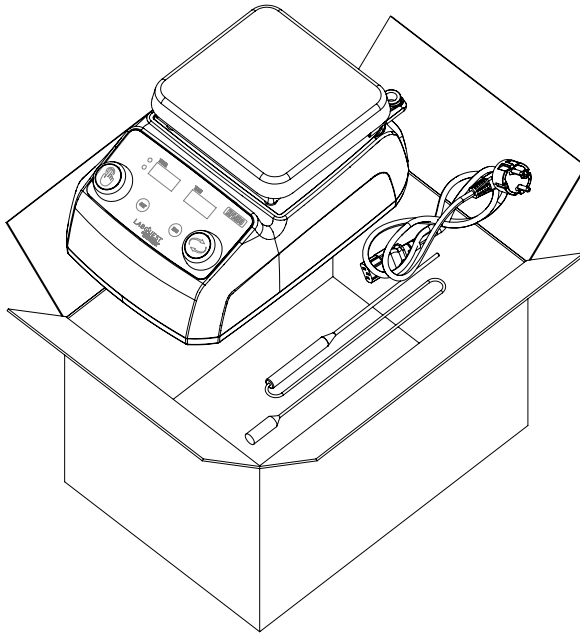
Do not touch the hot plate in case of HPL400P directly when the unit is in hot condition.

SAFETY PRECAUTIONS

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

- Do not operate the Hot plate without the load on top plate. This can reduce the life of the heater due to over heating.
- Always supervise the 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



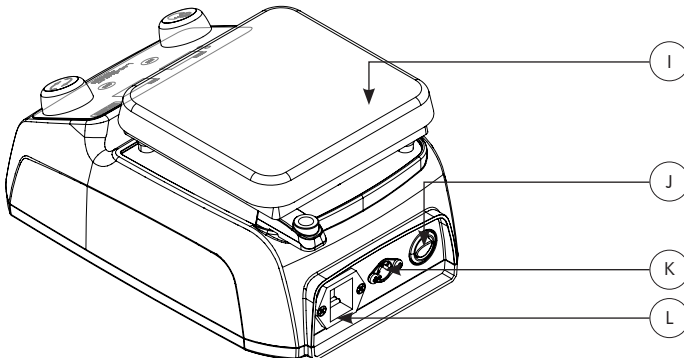
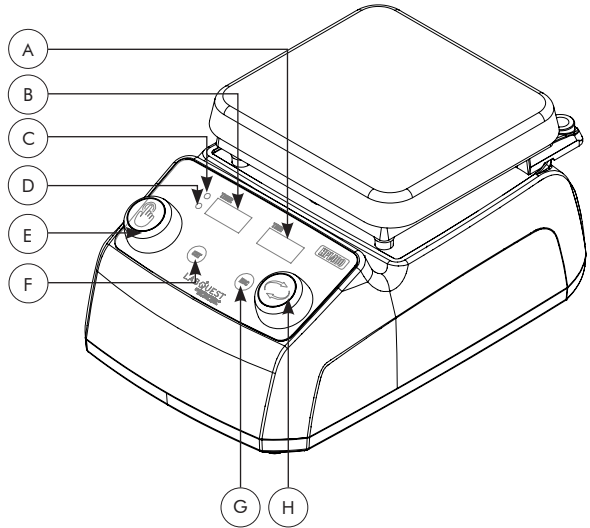
1. Place the carton box in the proper direction.
2. Check the exterior of the carton box for any damages.
3. Unbox the carton box from the top. If there is any physical damage found on the product report to the dealer / delivery agent.
4. Remove the accessories and the unit from the box safely.
5. Compare 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.)

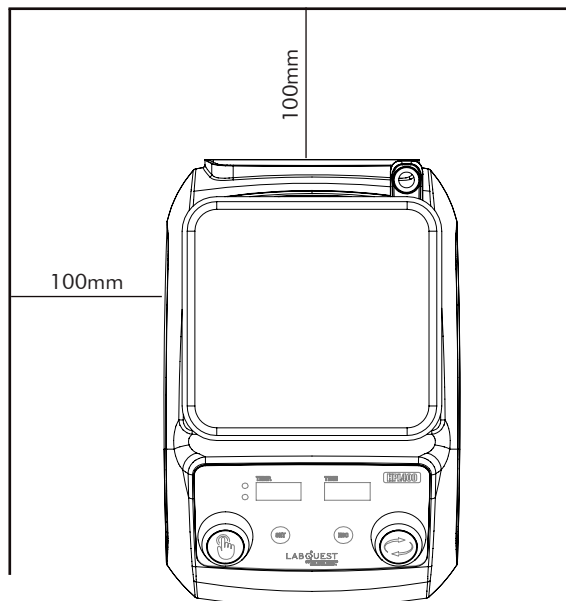
PRODUCT IDENTIFICATION

- A. 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.

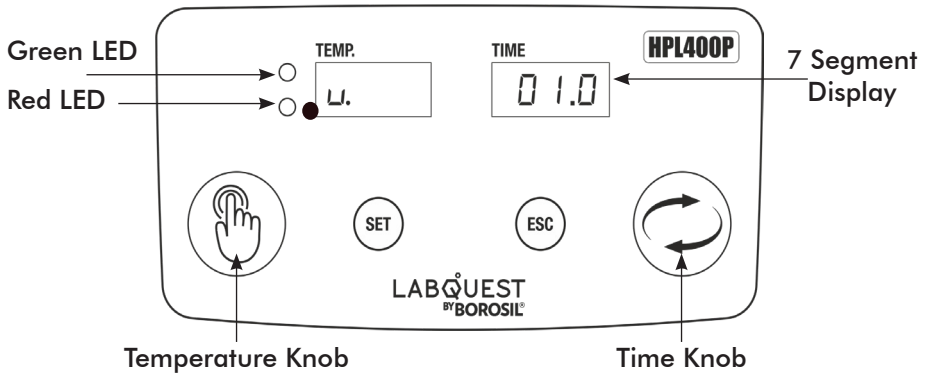


OPERATING INSTRUCTIONS

- 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 by glowing the temperature indicator.
- Single press the selector knob or rotate the selector knob to set the parameters.
- One can rotate the selector knob in clockwise to increase temperature, time and can rotate in anticlockwise to reduce the temperature or time.
- 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°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 200°C.
- First set the desired temperature. Once this is confirmed single press the selector knob to get into the timer in HPL400P.
- Once the speed or the time is set then again single press the selector knob to start the process.
- If one rotates the selector knob in HPL400P during the process is ON then the set temperature increases or decreases based on the rotation of the knob. To set the new temperature one has to single press the selector knob.
- If one wants to know the set temperature during the process then single press the selector knob.
- If one wants to interrupt the process in between then long press the selector knob until a beep sound occurs stating that the process is terminated.

- In the HPL400P once the time is complete the unit will give a buzzer sound indicating the process is completed
- Once the parameter in the unit is set and the process is started then the unit will show the temperature and time or speed along with the respective indicator light in the default mode.

DESCRIPTION FOR 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

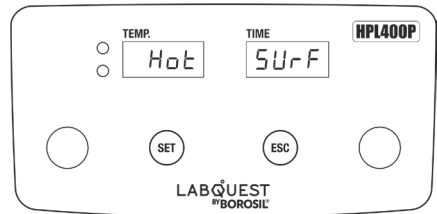
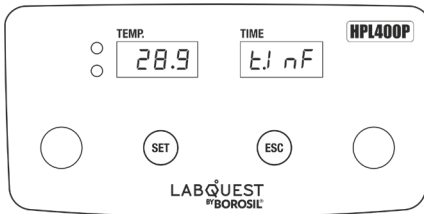
- This indicates the set temperature and previously set temperature.

4. Red LED

- This indicates the process is on.

HOME SCREEN

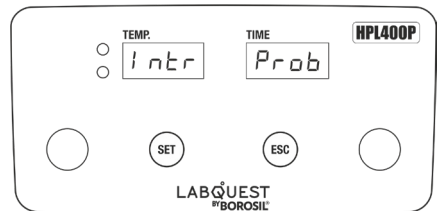
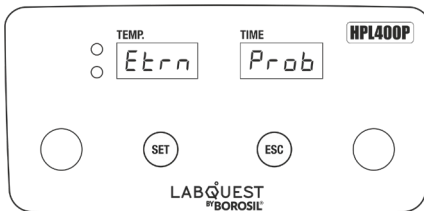
- After displaying the probe status, the unit will show the current temperature on the 1st display and the 't.InF' on the 2nd display.
- If the temperature of the top plate is greater than 50°C, then 'Hot Surf' message will appear frequently to prevent direct touch on the hot plate.
- Both LEDs will remain OFF.



TEMPERATURE PROBE STATUS

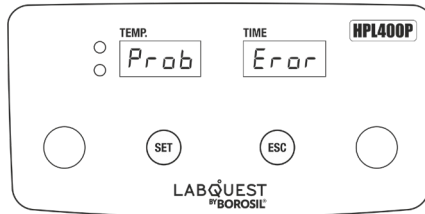
After the version display, the unit will check the probe status:

- 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 “Error” with the display blinking and a buzzer sound.
- Both LEDs will remain OFF.

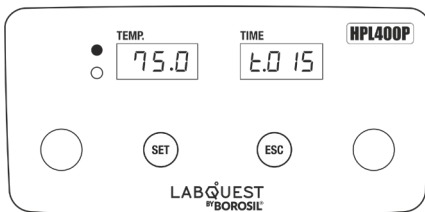


SET PARAMETER

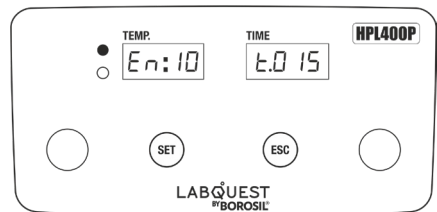
- Single press the 1st knob to enter the parameter-set mode.
- If the setting “Heat” is set to **Probe**, then the user can set the temperature; otherwise, **Enrg**.

Set Temperature/ Set Energy Value:

1. Rotate the 1st knob clockwise or counterclockwise to vary the set temperature/set energy value.
 2. During this time, the 1st display will blink and show the set temperature/ set energy value.
- Single press the 1st knob to confirm and fix the set temperature/set energy value and also to start the process.
 - Rotate the 2nd knob clockwise or counterclockwise to set or vary the time. During this time, the 2nd display will show the set time.
 - The green LED will remain ON while adjusting the temperature or energy regulator value, and time.
 - 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’

Set Time:

- If setting “Time” is set to **Pros**, then the user can set the time from (0 to t.inf) infinite while setting the time parameter.
- If setting “Time” is set to **Soac**, then the user can set the time from (0 to 999) only while setting the time parameter.
 1. Rotate the 1st knob clockwise or counterclockwise to vary the set time.
 2. During this time, the 2nd display will blink and show the time.
 3. Single press the 1st knob to confirm and also to start the process.

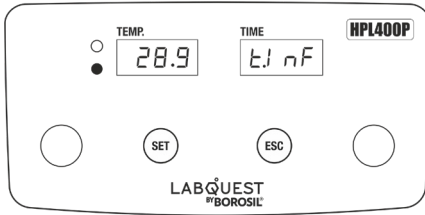
IN PROCESS

Heat in ‘Prob’ Mode:

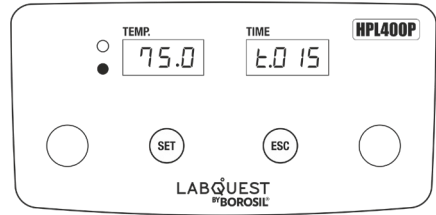
- If time is ‘Pros’:
 1. The unit displays the actual temperature (Internal/External) on the 1st display.
 2. The 2nd display shows the elapsed time/ remaining time.
- If time is ‘Soak’:
 - » The 2nd display shows the remaining time (0 to 999).

Heat in ‘EnrG’ Mode:

- If time is ‘Pros’:
 1. The unit displays the actual temperature (internal/external) on the 1st display.
 2. The 2nd display shows the elapsed time/remaining time.

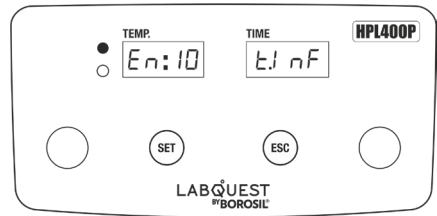
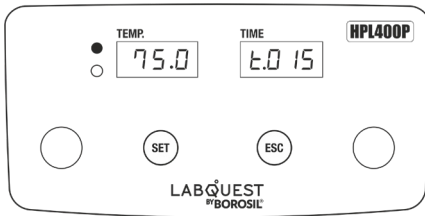


If time setting is 'process'

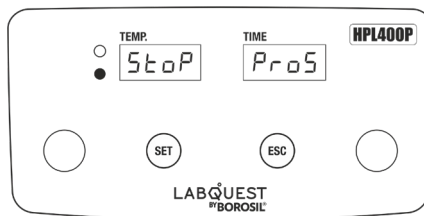


If time is 'ProS/Soak', 2nd display will display remaining time

- 'Pros' of Time Mode:
 1. Time set—'infinite': A **count-up timer** will start automatically.
 2. If a defined time is set, a **countdown timer** will start as soon as the process starts.
 3. If no action is taken, the time defaults to 'InF'.
- 'Soak' of Time Mode:
 - » If a defined time is set, the **countdown timer** will begin once the **actual temperature** reaches the **setpoint**.
- 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:
 - » Set the temperature/energy value on the 1st display.

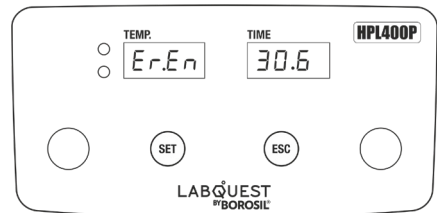
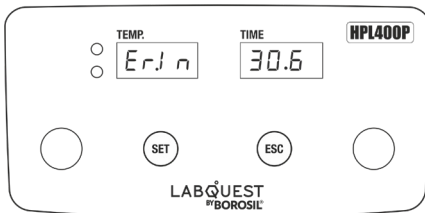


- The RED LED will remain ON throughout the process.
- When the process starts or stops, the buzzer will beep for 2 to 3 seconds as an alert.
- Stopping the Process:
 1. The first display will display “stop,” and the second display will display “pros” for five seconds if the ESC key is pressed once.
 2. The process will end if you press the ESC key once more during this time. If not, the process will resume.
 3. If the user long presses the first knob, then the process will stop.



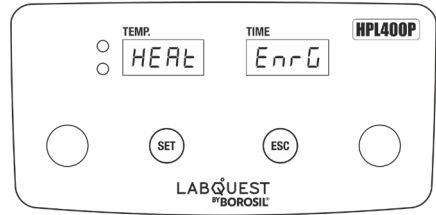
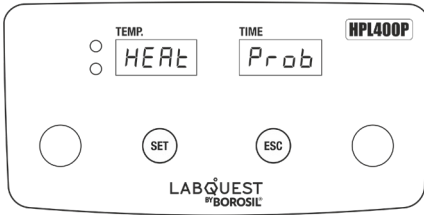
SINGLE POINT CALB

- 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.
- If the external probe is not connected, the unit will show “Er.In” on the first display; if it is connected, it will show “Er.En” on the first display. On the second display, the current temperature will be shown.
- 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.



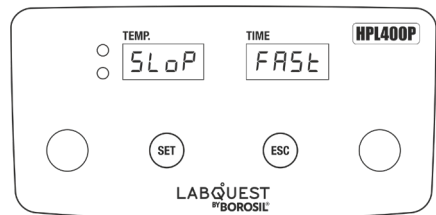
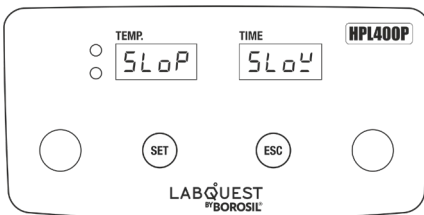
HEAT MODE

- 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

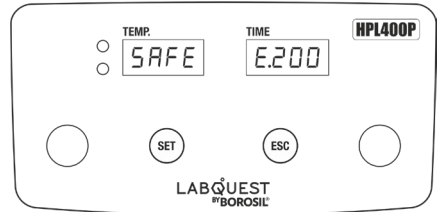
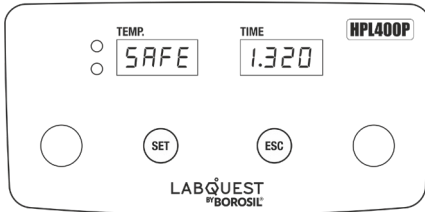
- Rotate the 1st knob to select the SLOP mode.
- The unit will show 'SLOP' on the 1st display and 'Slow/FAST' on the 2nd display.
- Press the 1st knob once to enter SLOP mode.
- Rotate the 1st knob to choose between 'Slow' or 'FAST'.
- Press the 1st knob again to save the selection and exit.
- Long press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



SAFE TEMPERATURE

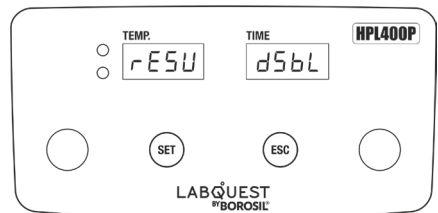
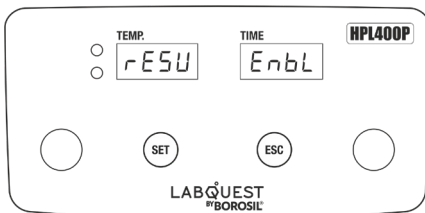
- Rotate the 1st knob to select the safe temperature mode.
- The unit will show 'SAFE' on the 1st display and '1.320/E.200' on the 2nd display.
- Press the 1st knob once to enter SAFE mode.
- Rotate the 1st knob to vary the safe temperature value(External/Internal).

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



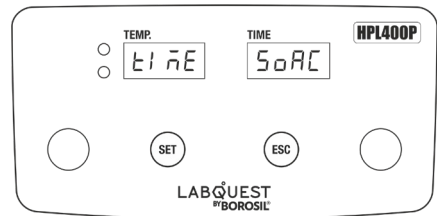
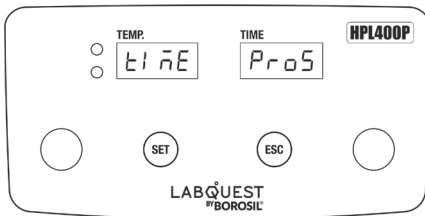
AUTO RESTART

- 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.



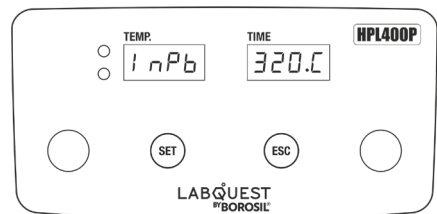
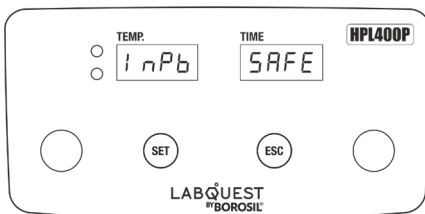
TIME MODE

- Rotate the 1st knob to select the Time mode.
- The unit will show 'timE' on the 1st display and 'ProS/SoAC' on the 2nd display.
- Press the 1st knob once to enter time mode.
- Rotate the 1st knob to choose between '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:

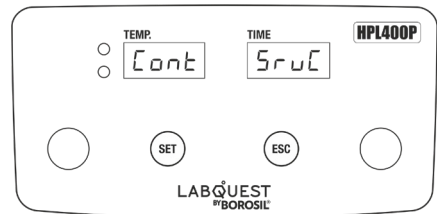
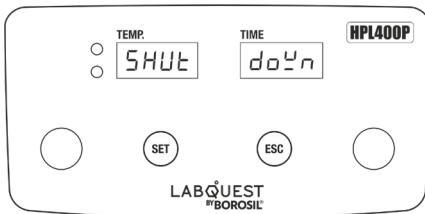
If the internal probe temperature exceeds 380°C during the process or out of the process due to triac failure, the unit will:

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

- Detecting a Gradual Temperature Rise:

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

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



TROUBLESHOOTING

S.NO.	PROBLEM	SOLUTION
1.	The unit is not turning ON.	<ul style="list-style-type: none"> • 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 be replaced.
2.	If the fuse is blown.	<ul style="list-style-type: none"> • 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: HPL400P

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

HOT PLATE

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 HPL400P.
 - 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.



: 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