CAPP

CRPI-412X

USER MANUAL

CONTENTS

1. BRIEF OVERVIEW

This four micro plate Thermo Shaker comes with long life maintenance free BLDC motor controlled by microprocessor, LED digital display and "PULSE" mode feature with an orbital diameter of 3 mm for proper mixing of samples and uniform temperature across the plate.

2. INTENDED USE

Thermo shaker is used for mixing biological samples and chemicals in micro-plates. It is applicable in areas of Biochemistry, Biotechnology, Immunology, Animal Biotechnology, Molecular Immunology, Enzymology, Protein Engineering, Molecular Biology, Microbiology etc laboratories.

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.*

3. FEATURES

- Uniform heating and shaking across the plates
- Microprocessor controlled device and digital display
- Adjustable speed from 200 to 1200 RPM at every 10 RPM
- Adjustable time from 1min - 99h 59min & infinite mode
- 3 mm orbital motion for thorough mixing in micro-plates
- Easy loading and unloading of micro-plates
- Brushless DC motor for quite operation and maintenance free life
- Spill safe operation even at higher speeds
- Pulse mode feature for clockwise and counter clockwise motion
- Temperature control from ambient to 70°C

4. TECHNICAL SPECIFICATIONS

Motor Type	BLDC
Type of Movement	Orbital
Orbital Diameter	3mm
Plate Capacity	4 Microplate
Speed	200 to 1200 RPM at every 10 RPM
Timer	1 to 99 h 59 min. & infinite
Temperature Range	Ambient +3 to 70°C
Temperature Stability	±0.5°C
Temperature Accuracy	±0.5°C
Pulse Mode	Yes (clockwise & counter clockwise)
Display (Speed & Timer)	LED Digital

4. TECHNICAL SPECIFICATIONS

| Dimensions (W x D x H) mm	267 x 361 x 155
Permissible Ambient Temp.	4 to 40°C
Permissible Relative Humidity	80%
Weight	8.45 Kg
Operating Voltage	230V, 50Hz
Power Consumption	264 W

5. ACCESSORIES

- Replaceable O-ring
- Product manual & warranty card
- Power Cable

6. INSTALLATION

Gently take the unit out of the box and place it on a flat, stable and non slippery surface. Keep 2-inches clearance from all 4 sides of the shaker so that it can be operated easily and safely. Do not lift the instrument by holding the platform. Check whether the rubber suction cup is attached to the table properly. Plug in the power adapter pin before connecting to the power source. The instruction manual and accessories should be kept near the device in a safe storage location for at least 2 years for warranty purposes.

7. INSTALLING MICRO-PLATES

The plates can be fixed on any side of the central pre-set O-ring. Gently push the O-ring towards the center of the plate sets locked on the wall of the platform. Ensure that the plate sits flat on the platform.

Display and keypad

ON/OFF Button

Power Cord
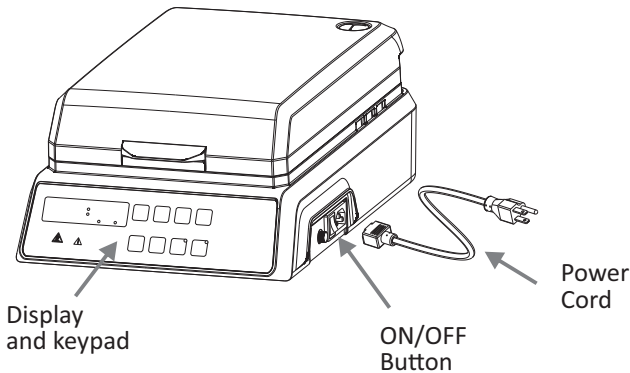
8. USER INTERFACE AND DISPLAY
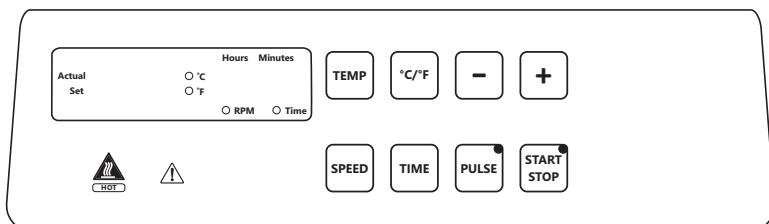
CONTROL PANEL OPERATION

- SET and ACTUAL led will FLASH as per status of command.
- "+/-" button will increase and decrease the value of each parameter.
- Each LED light will flash as per status of parameter.
- "Start /Stop" button for operation start and stop.
- Speed, Time and Temp buttons to select it respective values.
- "Pulse" button to start pulse mode.

START / STOP BUTTON

To start the operation, press the "start" button after setting all the parameters (speed, timer & temperature) which will be indicated by LED. And to stop the operation at any time press "stop" button.

SPEED SETTING

To set speed in RPM, press "speed" button, which will blink on screen. It has last run memory ie last set parameter will be on display upon turning ON [For the first time "⬚⬚⬚⬚" will appear - default factory setting], to set RPM value, press "+ or -" key for increment or decrement of the values between 200 to 1200 RPM. The incremental and decremental values will be in 10 RPM upon single press, for rapid increment & decrement of RPM keep "+/-" button long pressed. The set value will be saved automatically when blinking of the value stops.

At any point during the operation if speed needs to be changed then follow the above instruction to set new desired values without turning off the instrument.

For heating only (no shaking operation) set the speed values to "⬚⬚⬚⬚" following above instruction & set the heating parameter.

TEMPERATURE SETTING

To set temperature press "TEMP" Key, the Actual and Set Led will flash alternatively, then select desired function, to set the temperature press the "+/-" key from ambient to 70 °C, and set the required value, the set value will be saved automatically when the blinking stops. For rapid increment and decrements long ress the "+/-" key. The

8. USER INTERFACE AND DISPLAY

value can be set at an increment or decrement of 0.1 °C/°F. Ambient temperature can be seen on the Home screen, it is automatically detected from the internal unit sensor and will be displayed by default.

By pressing Temp, the set value blinks and when "+/-" key pressed "ambient value" displayed this can be used for shaking when no heating is required. Temperature can not be set below ambient temperature

At any point during the operation the temperature values can be changed without turning off the instrument by following the above instruction.

Actual temperature will be seen throughout the heating operation.

NOTE*: Temperature cannot be set below Ambient temperature. Which is identified by internal temperature sensor.*

TIMER SETTING

To set time, press "Time" button, which will blink on screen. The time can be always set during the blinking of the screen. It has last run memory ie last set parameter will be on display upon turning ON [For the first time "⌷⌷" will appear - default factory setting], to set time value, press "+/-" key for increment or decrement of the values between - 1min to 99hr 59min & ⌷⌷. For setting in hour or minute press "time" button until the desired segment in screen blinks (Left values in time screen are for hours & right values for minutes). The incremental and decremental values will be in 1min for minute & 1 hour for hour selection upon single press of "+/-" button. The set value will be saved automatically when blinking of the value stops.

At any point during the operation if wants to set different timer then follow the above instruction to set new desired values without turning off the instrument.

PULSE MODE

To activate pulse mode, press "Pulse" button. The activation of pulse mode will be indicated by LED light. The pulse mode time can be set from 30-99 seconds (30 sec is by default factory setting). To program the pulse timer, press "Pulse" button for longer To change the time from 30 sec - 99 sec by pressing "+/-" for increment & decrement respectively. The set value will be saved automatically when blinking of the value stops. The motion in pulse mode would be CW/CCW. The pulse timer will set back itself to 30 sec by default upon restart of the timer.

TEMPERATURE CALIBRATION MODE

Calibration of temperature is to reset the temperature accuracy. To enter into calibration mode press "Temp" button longer until "Temp" mode is activated. Enter the new temperature value from the reference unit. The new entered value will be

8. USER INTERFACE AND DISPLAY

 saved automatically replacing older value. This is a single point calibration.

SPEED CALIBRATION MODE

By long pressing Speed button we can enter RPM calibration mode, any single value of RPM can be calibrated. To enter into calibration mode long press "Speed Time and Pulse" simultaneously at set rpm 1190 in running mode. (We can change in ± 50 rpm). This is a single point calibration.

9. TROUBLESHOOTING

Error Code	Cause	Effect	Solution
E 01	If safty circuit is fail, temp. will go beyond safe temp. 95°C	Heating off	Switch off device • Warranty only to be carried out by authorized service personnel
E 02	Temperature sensor of shaking plate is fail	Over Heating	
E 03	Temperature sensor of top lid is fail	Over Heating	
E 04	Heater connection is not proper/Heater fail (SHAKING PLATE)	–	
E 05	Heater connection is not proper/Heater fail (TOP HEATING PLATE)	–	

10. TIPS FOR EFFICIENT OPERATION

Orbital shaking is a simple way for the mixing of assay components, but simply putting the samples in a micro-plate does not guarantee reaching complete blending after the mixing process.

The adjustment of the optimal mixing speed for micro-plates is dependent on the size of the well and the filling volume. The below table is a short summary for recommended mixing speeds for different micro-plates.

Mixing Speeds (RPM) for Different Micro-plates Depending on Filling Volume/Well (%)			
Filling Volume in %	96 Standard Well	96 Deep Well	384 Standard Well
50 %	1000 - 1200 RPM	800 - 1200 RPM	1200 RPM
75 %	800 - 1000 RPM	600 - 1000 RPM	900 - 1100 RPM

10. TIPS FOR EFFICIENT OPERATION

Larger volumes should be mixed with a higher orbit and low speed. Smaller volumes requires a lower orbit, but a much higher speed.
NOTE: *Overfilling of wells can lead to spillage.*

11. SAFETY PRECAUTION

- Do not lift the shaker by holding the micro-plate or shaking platform.
- Unplug the power cord before cleaning.
- The whole unit should be cleaned regularly with a moist cloth only.
- Always operate the unit on a leveled and stable surface to avoid any kind of accident.
- Always keep the shaker clean. If any liquid spill occurs, it should be removed promptly. Do not immerse the unit in liquid for cleaning.
- The shaker should be used for specific applications only.
- Do not use shaker in the hazardous environment or with hazardous material for which the unit is not designed.
- Do not operate the unit if it shows signs of electrical or mechanical damage. If any such damage is found, contact the supplier.
- Care should be taken on the basis of sample used for mixing.

12.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:

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.

12.WARRANTY STATEMENT

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.

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:	

13.PRODUCT DISPOSAL

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

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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