

# NEUATION

TECHNOLOGIES



## iSTIR HP550 PRIME

PRODUCT 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 20 Ltr. 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 20 Ltr. 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.

## 3. FEATURES

- Powerful motor for constant speed delivery under varying load.
- Stirring capacity up to 20 Ltr.
- Nano crystal full ceramic top plate ensures chemical resistivity & constant heat transfer.
- Highly resistant and inert body, even to strong chemicals.
- Heater temperature setting from Ambient to 550°C.
- Variable speed setting from 200 to 2200 RPM in steps of 10 RPM & long timer range from 1-999 mins & infinite mode.
- Microprocessor controlled hot plate stirrer with variable speed and time setting, along with last run memory function.
- Programmable pulse mode with run pause run feature.
- 3 heating modes for rapid, gradual & accurate heating.
- Large and clear display for better readability across all parameters, set values readily visible.
- Safe temperature circuit cut up to 575°C for greater reliability.
- Small footprint for saving valuable bench space.
- Hot plate indication when temperature reaches above 50°C.
- Compatible with PT-1000 temperature probe to accurately measure temperature of medium.
- Keypad lock feature.

## 4. ACCESSORIES

- PT 1000 Temperature probe and Probe Attachment Stand.

4. ACCESSORIES

- Magnetic Stirring Bar.
- Power Cord.
- User Manual and Warranty Card.

5. TECHNICAL SPECIFICATIONS

|                                                   |                             |
|---------------------------------------------------|-----------------------------|
| Motor                                             | DC                          |
| Number of stirring position                       | 1                           |
| Max Stirring quantity on Equip (H <sub>2</sub> O) | 20 Ltr                      |
| Speed range                                       | 200 to 2200 RPM             |
| Speed control                                     | 10 RPM / Step               |
| Temp. range                                       | Room Temp. to 550°C         |
| Safe Temp                                         | 575°C                       |
| Temperature control                               | 1°C / Step                  |
| Time range                                        | 1 to 999 minutes & Infinite |
| Temp Accuracy (+/-K)                              | 1°C/°K                      |
| Recommended Stirring bar length                   | 25 mm                       |
| Set-up plate dimensions                           | 180 x 180 mm                |
| Dimensions (L x W x H)                            | 313 x 205 x 110 mm          |
| Protection class                                  | IP 21                       |
| Permissible ambient temp.                         | 5-40°C                      |
| Permissible relative humidity                     | Up to 80%                   |
| Weight                                            | 4.9 Kg                      |
| Input Voltage                                     | 220-240VAC, 50Hz            |
| Motor rating input & Output                       | 5-7 W                       |
| Total Power Consumption                           | 1000 W                      |

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



## 6. SAFETY INSTRUCTIONS

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.  **WARNING**  
Otherwise, there is a risk from:
  - Splashing and evaporation of liquids.
  - Ejection of parts.
  - 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.  **WARNING**
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.
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:  **CAUTION**
  - Flammable materials.
  - Flammable media with low steam pressure.
  - Overfilling of medium.
  - Incorrect vessel size.
  - Unstable vessel.
  - Glass breakage.
15. Note that, there is a possibility of contamination or unwanted chemical reaction.
16. The RTD (PT 1000) sensor must always be immersed in the medium by at least 20 mm.
17. The rating of power supply must match with the specified rating.
18. The top surface will be hot after any heating operation. Do not touch the top surface till the hot LED indication glows.  **DANGER**
19. Process pathogenic materials only in a closed vessel under a suitable extractor hood. Do not operate the appliance in explosive atmospheres, with the

## 6. SAFETY INSTRUCTIONS

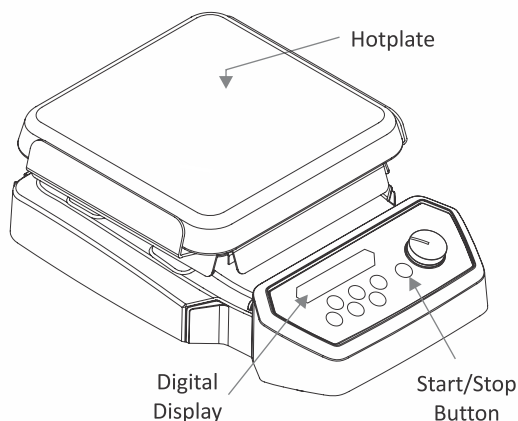
hazardous substance or under water.

20. 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 other ways. For example: Through light irradiation, through surrounding temperature etc.
21. Abrasion of the dispersion equipment or the rotating accessories can get into the medium you are working on.
22. 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.
23. 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.
24. The socket must be earthed (protective ground contact).
25. 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.

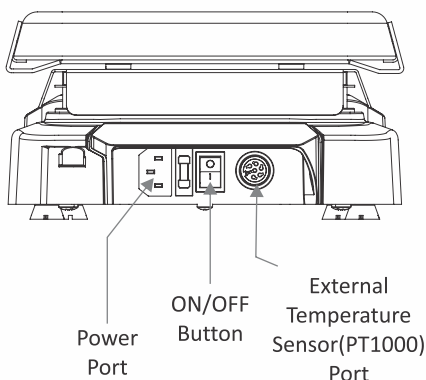


## 7. STANDARD PARTS

Front Side



Rear Side



## 8. INSTALLATION

The hot plate stirrer is provided in a box. Open the box, then remove the packaging 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.

### 8.1 LOCATION & MOUNTING

Place the stirrer on a flat and leveled 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.

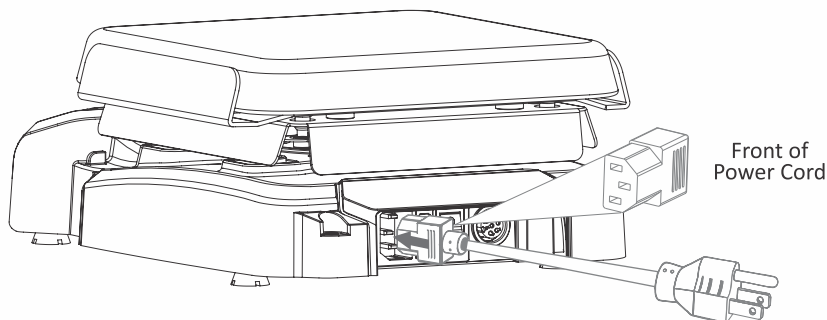
1. Ideal ambient temperature is  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , avoid placing the unit in direct sunlight.
2. Keep clearance of at least 20 cm from all side to increase the cooling efficiency.
3. Keep the unit away from heated solution to avoid sample temperature issues.
4. Do not place the equipment at a place where it becomes difficult to operate it.

### 8.2 ASSEMBLING SUPPORT ROD STAND

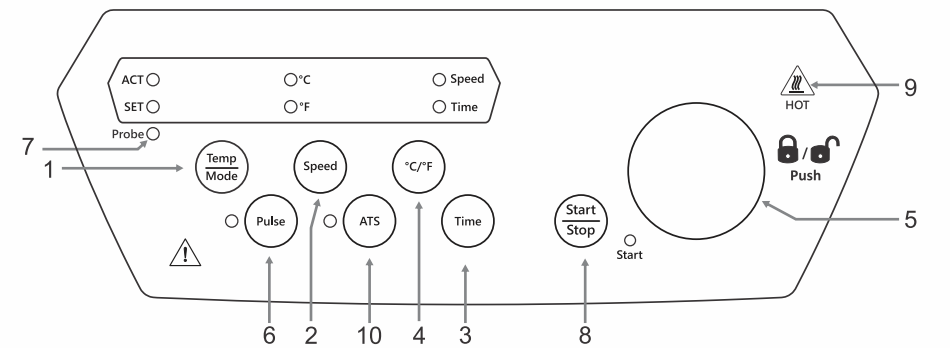
1. Screw in the support rod manually until it cannot be tightened any further.
2. Assemble the accessories mentioned in section 4 using a clamp.

### 8.3 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.



9. USER INTERFACE & DISPLAY



Display

| RPM                                                     | Mins | °C °F                                                 | ACTUAL                                                | SET | PROBE                                      |
|---------------------------------------------------------|------|-------------------------------------------------------|-------------------------------------------------------|-----|--------------------------------------------|
| 2200                                                    | 999  |                                                       | 200                                                   | 320 |                                            |
| Display shows current <b>speed</b> & <b>time</b> values |      | LEDs indicates in which unit temperature is displayed | Display shows Set and Actual <b>Temperature value</b> |     | LEDs indicates temp. displayed is of PROBE |

| Item | Name            | Function                                                                            |
|------|-----------------|-------------------------------------------------------------------------------------|
| 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. Selection | Press “°C/°F” to change the unit in which Temp. is displayed.                       |
| 5    | Increment       | Press “+” to increase values.                                                       |
| 6    | Decrement       | Press “-” to decrease values.                                                       |
| 7    | Probe           | To display Temperature of probe at Actual Temp Display.                             |
| 8    | Start/Stop      | Press “Start/Stop” to Start or Stop any operation.                                  |
| 9    | HOT LED         | Glows when top plate of the stirrer is HOT equal or above 50°C.                     |
| 10   | ATS             | Auto Start mode - Machine resumes from the left parameter                           |

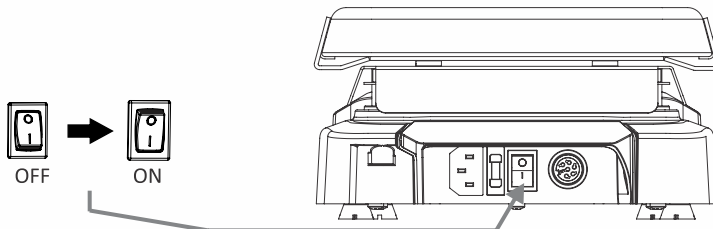
10. OPERATION

10.1 SWITCHING ON THE DEVICE

Plug the power cord into its socket on the rear panel, now connect the power cord to .

## 10. OPERATION

AC power output. Now switch ON the mains and switch ON the stirrer from the front side, as shown in the figure. The power LED on its front panel will glow.



**IMPORTANT NOTE:** Values of any parameter will get set saved only after the respective display blinks for multiple times.

### 10.2 SAFE TEMPERATURE

- When stirrer starts above screen will display which will show SAFE temp first. you can set temperature by rotation knob. Only Knob & C/F key will work, other keys will be deactivate at this time.
- You can set Safe Temp in both Unit (Celsius or Fahrenheit). After Adjusting temp, value will be save after blinks and then it will show you home screen.
- Safe temp range 50-575 °C.

### 10.3 CONTROL PANEL OPERATION

- SET and ACTUAL led will FLASH as per status of command.
- By rotating knob you can increase and decrease the value of each command.
- LED lights will on as per status of command.
- Start /stop button for operation start and stop.
- Speed, Time and Temp buttons to select it respective values.

### 10.4 START/STOP BUTTON

- Single Press this button to “start” Operation (as per set speed, time, and temp). This will also “blink” the Start/Stop “LED”.
- Press this button again to “STOP” Operation. This will “OFF” the “LED” as well.
- If temp is Abt and RPM 0 then start button doesn't work. Need something to be set for start.

### 10.5 TEMP BUTTON

- To set the temp, press TEMP button and change Value by rotary knob from ambient to 550°C. After set desire value, value will blink and then steady, it means the value

## 10. OPERATION

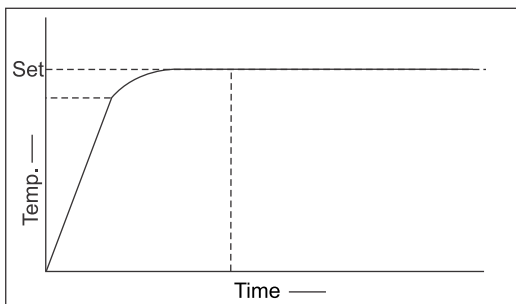
is save. (noted : set LED is flash on). After value saved actual Led will automatically flash on.

- Temp. value can be change during continuous operation.
- If operator want to see Set value then he can be see by pressing temp button.

### 10.6 HEATING MODE

- You can set the Heating mode, when you will on home screen.
- By long press Temp. button, Actual Value blink and shown H01, by rotary Knob H01, H02, H03, H04 and H05 display respectively one by one.
- No other functions/keys will work while setting this parameters.
- Once you reach at your Heating Mode, so after 5 blinks the mode will be selected & gets set.

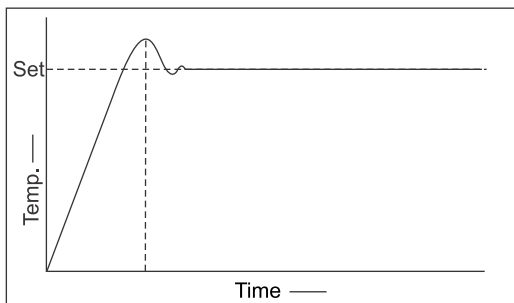
#### 1) H01 : Slow heating with High Accuracy



This mode is very useful for the solutions which are very sensitive to a change of temperature. After setting all 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  $\pm 1^{\circ}\text{C}$ .

#### 2) H02 : Fast heating with High Accuracy

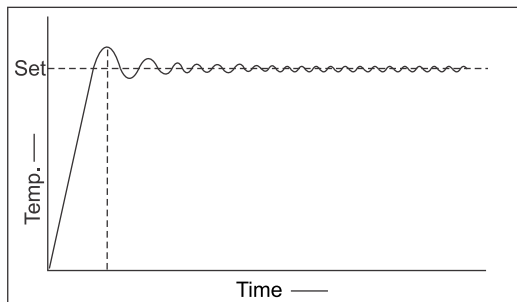


This mode is useful when the user wants to heat the solution quickly. In this mode after setting all parameters when the user presses “Start”, temp. of unit rises quickly to the set value point & then it stabilizes to set value. Initially, temperature may vary up to  $\pm 15^{\circ}\text{C}$ . After stabilizing, temperature of the plate will remain constant with high accuracy of  $\pm 1^{\circ}\text{C}$ .

$1^{\circ}\text{C}$ .

## 10. OPERATION

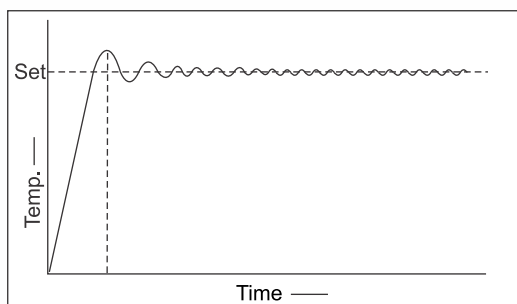
### 3) H03 : Rapid Heating with Overshoot



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 set value device will slowly stabilize the temperature to

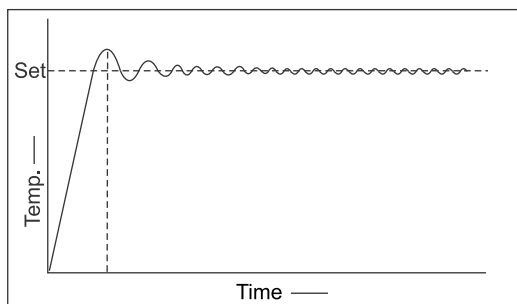
the set value. In this mode, heating will be much more rapid then previous two modes and possible overheating could be up to  $\pm 15^{\circ}\text{C}$ .

### 4) H04: Rapid Heating for High volume Liquid (2L-5L)



This mode is similar to H03 mode, but it is basically for high volume i.e. 2-5L. After setting up the parameters if the user starts the operation, the temperature will rise with high rate and will gradually stabilize to the set value. In this mode the accuracy is not that accurate as attained in the previous modes.

### 5) H05: Rapid Heating for High volume Liquid (6L-10L)



This mode is basically for higher volume i.e. 6-10L. The accuracy for this mode is very low, so it is not suggested for lower volumes. After setting up the required parameters, if the user starts the operation the temperature rises rapidly & stabilizes to the set value.

## 10.7 TIME FUNCTION

- By rotary Knob the time led will be flash on. It will show the Time command activation and we can change time parameters in this situation.

## 10. OPERATION

- " ][" (infinite) value will display on window at first time initiate machine.
- To set Time value ,rotary Knob for increment and decrement of Value from 1 to 999 Minutes. After set desire value in window, the Value will blink then stop ,it means the value is save. If operator want to see Set value then he can be see by pressing time button.
- Time unit will be in minute.
- In running condition if time recharge, timer will reset & count from the beginning
- After 999 , there is infinite mode which is shown as " ][".
- If time value is 1min and rotate knob right to left then time will go reverse. Like " ][" , 999, 998. means it will roll over.

### 10.8 HOT LED

- Hot indication will start on or above 50 °C of plate temperature.
- Hot LED will OFF if plate (actual temp) comes down to 50 °C.
- It will work only for plate mode.
- HOT PLATE LED will ON even on/off switch off when temperature comes down below 50 °C.
- Stirring will continue start while Hot Plate LED not off.

### 10.9 OPERATING MODE

All parameter settings are saved automatically when the device suddenly switched off. The "Start/Stop" key starts the device again with the set parameters.

### 10.10 °C/°F KEYS

- You can set the Temp in Celsius or Fahrenheit , when you will on home screen.
- By press "°C/°F" button, the °C or °F will be displayed alternatively. Whichever will select, the Actual Value and set Value of Temp. will change automatically.
- While changing Temp. Unit, the respective value will be rounded off for other unit display.
- When any unit is selected it will glow respective LED.

### 10.11 ATS MODE

- By pressing ATS KEY, ATS LED on & ATS mode Will be activated.
- ATS ON shown On display, but you ensure time is not set not in Infinite mode.
- For exit from ATS mode again press ATS key and you can press stop button for exit ATS Mode. After complete time countdown you should automatically exit from ATS mode.
- Every 10 seconds ATS On shown on display while continue operation .
- After Power cutoff Time will save only in minute Not in seconds.

## 10. OPERATION

Example: 10 minute set and after 7:30 minute power cutoff it saves 7 minute not 7:30 minute after power on.

### 10.12 PULSE MODE

- You can set the PULSE mode, when you will on home screen.
- Default pulse mode is always in OFF condition.
- By press PULSE button, the White LED will ON, so the pulse mode activate, by pressing Pulse button again, you can deactivate mode during Pulse mode ON.
- You can set Pulse time by Long Press Pulse Button, S 60 will display on speed display.
- Pulse Time can be set in range of 30 Sec to 99 Sec.
- Default timer for PULSE mode will be always 60 Sec.
- In a pulse mode no any direction will change.
- Timer function can also work parallel.
- Pulse mode can ON/OFF while stirrer is running.
- Pulse mode should run at any SET RPM which is in range of (200-2200).
- Time counting of pulse time will counting from beginning.

### 10.13 PROBE SELECTION

- Probe LED will flash only when PT1000 connected.
- Without probe device will automatically in plate mode.
- If probe is connected (should not in running) and respective LED glow.
- User can not change Plate/probe mode using key.
- By removing probe, again device will on plate mode (should remove after complete power off).

### 10.14 DEBUGGING MODE

- Press speed and °C/°F button together while start up.
- Press start for temperature controlling mode you can put temperature value in this mode.
- Press start again for Motor controlling mode you can put value in this mode.
- Press start again Led and key checking.
- By rotary Knob for increment and decrements parameter.

## 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 : Error 2.

**Root Cause: Motor Error**

## 10. OPERATION

- Solution :
- 1) Motor Fail
  - 2) Feedback sensor Fail
  - 3) Motor overload

### 2. Problem : Error 4

**Root Cause: Over Temperature Error**

- Solution :
- 1) Actual temperature is more than safe temperature.
  - 2) Will occur when Thermocouple connection issue
  - 3) Temperature controlling fail
  - 4) Inappropriate safe temperature selection

*NOTE: After Error 4 Safety relay will on for Heater cutoff*

### 3. Problem : Error 5

**Root Cause: Temperature Probe Error**

- Solution :
- 1) Will occur when Probe connection issue
  - 2) loose connection with device

### 4. Problem : Error 6 - Heater Error

**Root Cause: Heater Error**

- Solution :
- 1) Will occur when Heater Fail
  - 2) No increment in temperature even after 6 min after device ON

### 5. Problem : Error 7

**Root Cause: Ambient Error**

- Solution :
- 1) Will occur when Ambient sensor fail

*NOTE: After any Error detection, need to reset unit.*

## 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 the date of purchase. Your product will be duly repaired upon prompt notification in compliance with the following conditions :

13. WARRANTY STATEMENT

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.

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.

|                                                                                      |                |
|--------------------------------------------------------------------------------------|----------------|
| 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.

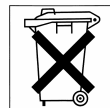
## 14. PRODUCT DISPOSAL

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 the 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.



## Neuation Technologies Pvt. Ltd.

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