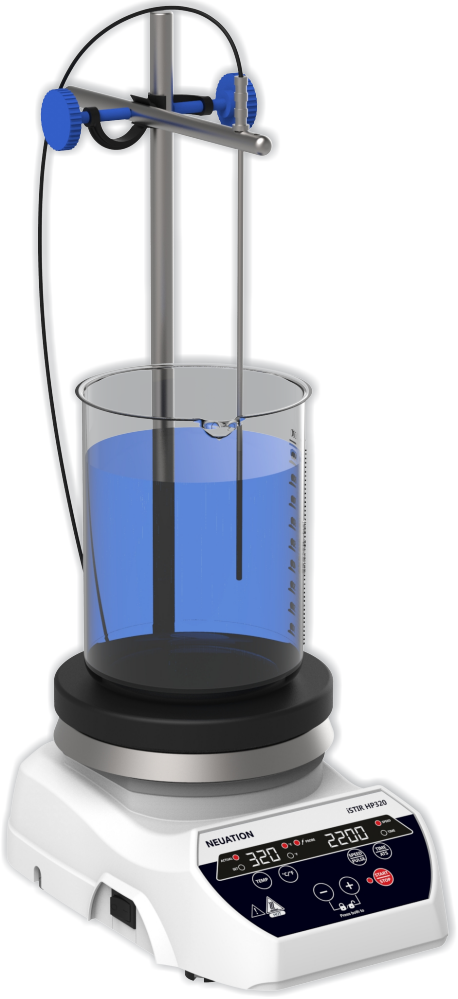
NEUATION



iSTIR HP320

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 10 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 10 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. SYMBOL

⚠ Warning	Waste electrical

4. FEATURES

- Powerful motor delivers constant speed under varying load conditions.
- SS top with Ceramic coating.
- Temperature setting from ambient to 320°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 with last run memory feature.
- Large & clear display shows critical parameters for easy reading.
- Comes with PT-1000 temperature probe to accurately measure temperature of medium.
- Small footprint saving valuable bench space.
- Keypad locking.

5. TECHNICAL SPECIFICATIONS

Motor	DC
Number of stirring position	1
Max Stirring Quantity on Equip (H_2O)	10 Liters
Speed range	200 to 2200 RPM
Speed control	10 RPM / Step

5. TECHNICAL SPECIFICATIONS

Heating Temp. range	Room Temp. to 320°C
Setting Temp.	5°C to 320°C
Safe Temp	345
Temperature control	1°C / Step
Time range	1 to 999 minutes & Infinite
Temp Accuracy (+/-K)	1
Recommended Stirring bar length	25 mm
Set-up plate material	SS top with Ceramic coating
Set-up plate dimensions	140 mm
Dimensions (L x W x H)	248 x 156 x 115 mm
Heat output	600 W
Protection class according to DIN EN	IP 21
Permissible ambient temp.	5 - 40°C
Permissible relative humidity	≤80%
Weight	2 Kg
Altitude	Use upto an altitude of 2000 m above MSL
Pollution Degree	2
Environment	For indoor use only
Power Supply	110VAC, 60Hz / 230VAC, 50Hz
Motor rating input & Output	5-7W
Total Power Consumption	620 W

6. ACCESSORIES

- PT 1000 Temperature probe and Probe Attachment Stand.
- Magnetic Stirring Bar.
- Power Cord.
- User Manual and Warranty Card.

7. SAFETY INSTRUCTIONS

Read all safety & usage information provided in this manual carefully before using the device.

1. Place the device on a flat, stable, clean, non-slippery and fire-proof surface.
2. Ensure that only trained staff uses the device. Keep the instructions manual in a place where it can be accessed easily.
3. Beware of the possible effects of magnetic field on pacemakers, data media, etc.
4. Do not touch the hotplate surface when temperature of hotplate is over 50°C, this could result in serious burns or injury. Pay attention to the residual heat after

switching off.

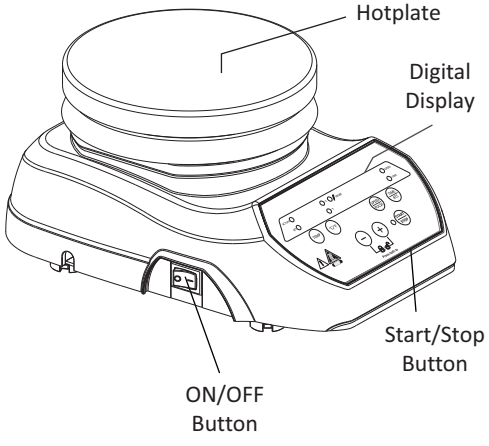
5. Properly lift the device with both hands while moving or installing. Also, the device should only be moved from its position once it attains the room temperature.
6. Make sure that power supply cord or temperature sensor cable must not come in contact with the heated mounting plate.
7. Do not place any steel or magnetic material on the top surface except the recommended magnetic stirring bar with beaker or flask in between. Doing this can affect the magnetism of device.
8. Wear your personal protective equipment in accordance with the hazardous category of the media to be processed. Otherwise, there is a risk from:
   - Splashing and evaporation of liquids.
   - Ejection of parts.
   - The release of toxic or combustible gases.
9. The top surface must be clean and kept intact. Wear protective gloves while cleaning the device. Use a soft mild cloth to clean.
10. Do not use damaged beaker, flask, stirring bar or any other component for operation. It may affect the efficiency of the device.
11. Reduce the speed if:
    - If the medium splashes out of the vessel due to high speed.
    - If the appliance is not running smoothly.
    - If the container moves on the base plate.
12. Do not move the device when it's connected to power supply or during its operation.
13. Ensure that the product is used only for specified operation. It should not be used for shaking hazardous or reactive solutions.
14. Give specific attention to the risks associated with:
    - Flammable materials.
    - Flammable media with low steam pressure.
    - Overfilling of medium.
    - 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.

7. SAFETY INSTRUCTIONS

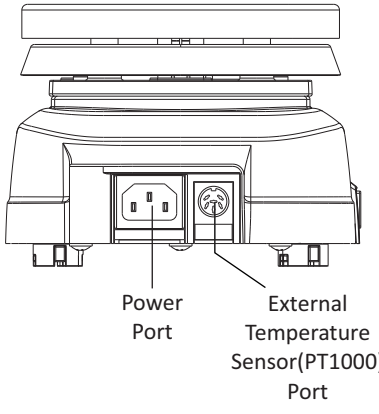
19. Process pathogenic materials only in a closed vessel under a suitable extractor hood. Do not operate the appliance in explosive atmospheres, with the hazardous substance or under water.
20. Only that liquid should be used for mixing which does not react dangerously to the extra energy produced through 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.

8. STANDARD PARTS

Front Side



Rear Side



9. 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 warranty purposes.

9.1 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.

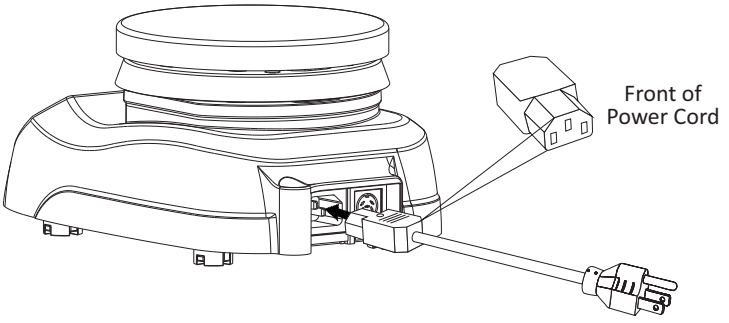
1. Ideal ambient temperature is 25°C ± 1°C; avoid placing the unit in direct sunlight.
2. Keep clearance of at least 20 cm from all side to increase the cooling efficiency.
3. Keep the unit away from heated solution to avoid sample temperature issues.
4. Do not place the equipment at a place where it becomes difficult to operate it.

9.2 ASSEMBLING SUPPORT ROD STAND

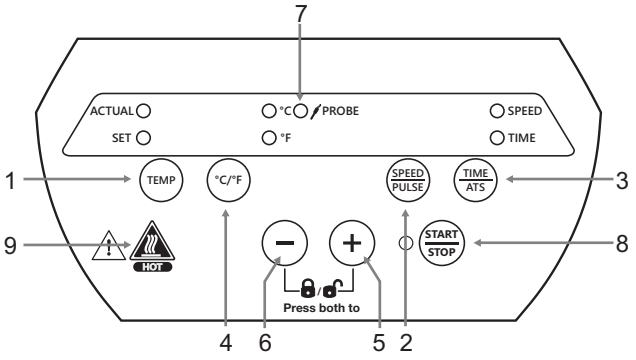
1. Screw in the support rod manually until it cannot be tightened any further.
2. Assemble the accessories mentioned in section 6 using a clamp.

9.3 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.



10. USER INTERFACE & DISPLAY



Display

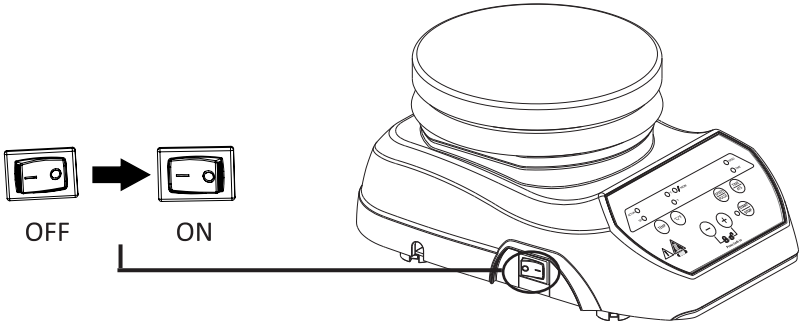
RPM 2200 Mins 999	°C °F	ACTUAL 200 SET 320	PROBE
Display shows current **speed** & **time** values	LEDs indicates in which unit temp. is displayed	Display shows Set and Actual **Temp. value**	LEDs indicates temp. displayed is of PROBE

Item	Name	Function
1	Temp	Press “Temp” to select Temperature value. Then press “+/-” to set Temp value in °C.
2	Speed/Pulse	Press “Speed/Pulse” for speed, select Speed value. Then press “+/-” to set Speed value in RPM. Long press “Speed/Pulse” for Pulse mode.
3	Time/ATS	Press “Time/ATS” to select time value. Then press “+/-” to set Time value in minutes. Long press “Time/ATS” for ATS mode.
4	Temp. Selection	Press “°C/°F” to change the unit in which Temp. is displayed.
5	Increment	Press “+” to increase values. Press Button for lock unlock keypad function
6	Decrement	Press “-” to decrease values. Press Button for lock unlock keypad function
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	Lock Key	Press “+” & “-” to gather for 5 sec. to lock keypad.

11. OPERATION

11.1 SWITCHING ON THE DEVICE

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

11.2 SETTING SAFE TEMPERATURE

This is a safety feature where if the temperature of heater exceeds the value saved in safe mode then operation (heating & stirring) will stop.

The safe temperature limit must always be set to at least 25 °C lower than the fire point of the media used.

Immediately after Switching ON the unit, Safe Temperature Setting mode will be initialized. The “ACTUAL” display of device will display “safe” and “SPEED/TIMER” display will show the respective value of safe temperature to be set.

By pressing +/- buttons, one can set the value of safe temperature. The maximum value of safe temperature can be set up to 345°C. After selecting the desired safe temperature value, the value gets saved automatically after blinking for 5 times in the display panel.

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

11. OPERATION

11.3 SETTING TIME

The time in the display will show in minutes. The stirrer timer set for operation is in between 1min to 999 mins and infinite. Infinite time is seen as "][". To set time, press "TIME" button and then set the value by pressing "+/-" button. When time button is pressed, the "Mins" display will blink indicating the time value is selected. Once time value is selected, single press "+/-" will increase or decrease time value by 1min.

Long press increment or decrement button to quickly increase or decrease time value. Time value gets saved after multple blinks. The timer is a countdown timer showing remaining time left. Once time is over, the stirrer stops.

11.4 SETTING SPEED

Speed is displayed as RPM. The minimum and maximum speed of stirrer is 200 RPM and 2200 RPM respectively. When the equipment is used for the 1st time, the speed will be set to zero and shown as " 0 ". Once speed value is selected, single press "+/-" will increase or decrease speed value by 10 RPM. Long press "+/-" to quickly increase or decrease speed value. Speed value get saved after 5 blinks.

To operate the device as a heater set the time and temperature as informed in the previous section and set the speed of the stirrer to zero by pressing "+/-".

11.5 SETTING TEMPERATURE

Initially, on every startup, the temperature function will be in OFF state. To set Temperature, Single press "Temp" button to select Temperature value and then press "+/-" to set temperature value. SET temperature gets saved after display blinks for multiple times.

Temperature value can be set from 5°C to 320°C. Once Temperature value is selected, pressing "+/-" to will increase or decrease temperature value by 1°C. Long press "+/-" to quickly increase or decrease of the temperature value. Temperature value gets saved after multiple blinks.

One can select units of temperature (°C) OR (°F) by pressing the "°C/°F", whichever temperature is selected its respective LED will glow. As per the selected unit, the Actual Value and Set value of temperature will change accordingly.

To operate the device only in stirring mode select the speed and time as mentioned in previous sections, for temperature single press the temperature button to select temperature then press "+/-" until the SET temp display show " AbE " (Ambient Temperature) then press the start button to start the stirrer.

11.6 SETTING ATS MODE

ATS Mode is for auto start of the machine i.e, If ATS is active upon power failure

during the during the stirring, once the power resumes the machine starts function with similar set parameter except for the left timer.

To Activate ATS mode, Press TIME/ATS Key longer until the display shows “ATS ON”. ATS Mode will work in both Condition Infinite and Set Timer.

To exit from ATS mode during operation, long press TIME/ATS key until the display shows “ATS OFF”. And if the run is completed for the set timer the ATS automatically gets deactivated thus it must be activated with every new run.

Example: Set 10 minute in ATS mode and after 7 min 30 sec power cutoffs, Once the power resumes the machine will run for remaining 3mins (Machine saves countdown timer in mins).

11.7 SETTING LOCK /UNLOCK KEYPAD FUNCTION

The key pad can be locked to avoid any accidental/tempering with setting of the parameters. Lock can be activated during operation only. After pressing start button press “(+)” & “(-)” button together, One can Lock the keypad which displays as “LOC” in display panel. Only START/STOP button will remain functional.

To unlock press “(+)” & “(-)” button together again, the display will show “Unlo”.

After pressing STOP button in “LOC” condition during operation, START/STOP button will also be locked. In that condition, One have to “Unlock” buttons to Start Operation again.

In ATS Mode, the Lock mode will be unlocked by only two ways. Either by pressing “(+) / (-)” buttons together or if the unit is restarted after the ATS operation is over. While the ATS operation is running the Lock mode will be remain ON even there is a power cutoff & the unit restarts. Orelse Buttons stay “Unlocked” in all condition.

11.8 PULSE MODE

Pulse mode functions as Run-Pause-Run. Default pulse mode is always in OFF condition.

To activate pulse mode, long press SPEED/PULSE button, the display will show “Pulse On”, By Long press “SPEED/PULSE” button again, will deactivate Pulse mode ON & the display Shows “Pulse Off” even during operation. Fix timer for PULSE mode will be always 30 Sec. By default, Motor runs clockwise. Pulse mode can ON/OFF while stirrer is running. Pulse mode will work at any SET RPM which is in range of (200-2200). Time counting of pulse time will counting from beginning.

11.9 °C/°F KEYS

To set the temperature parameters in Celsius or Fahrenheit, press °C/°F button, the

11. OPERATION

°C or °F will be displayed alternatively. Whichever will select, the actual value and set Value of Temp will change simultaneously. While changing Temp unit, the respective value will be rounded off for other unit display. When the unit is selected will be showed by respective LED.

11.10 WORKING WITH EXTERNAL TEMPERATURE SENSOR

Plug the connector of the temperature sensor - PT 1000 Probe into the temperature sensor socket on the rear side of the instrument. The PROBE LED will glow indicating that probe is selected and an ACTUAL display will automatically show the temperature of probe. Never remove or insert PT 1000 probe while the equipment is in working. User can not change Plate/probe mode using Key. By removing probe, again device will switch to plate mode (Should remove after complete power off).

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

11.11 PROBE SELECTION

Once the PT1000 temperature sensor is plugged to the unit. The probe mode selection options will be asked as "Probe 0", "Probe 1" & "Probe 2" can be chosen between three by " + " & " - " key.

Selection of "Probe 0" is for the volume capacity between 50ml to 200ml.

Selection of "Probe 1" Is for the volume capacity of 1 Ltr or Less than 1 Ltr.

Selection of "Probe 2" Is for the volume capacity higher than 1 Ltr liquid. By removing probe, again device will on plate mode (Should remove after complete Power off).

NOTE: *1) Sometime due to High performance mode of probe 2, if the user directly switches to another mode of operation it may show Error 4, to avoid this cool down till error disappear from display.*
2) Due to high temperature around 450°C, do not use any high flammable liquid in probe 2 mode.

12. 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 4.
Root Cause: Over Temperature Error.
Solution : 1) Actual temperature is more then safe temperature.
2) Will occur when Thermocouple connection issue.

12. TROUBLESHOOTING

3) Temperature controlling fail.
4) Inappropriate safe temperature selection.
5) It will come only after 3 min constant over temperature.

NOTE: *After Error 4 Safety relay will on for heater CuttOff.*

2. Problem : Error 5.

Root Cause: Temperature Probe Error.

Solution: 1) Will occur when Probe connection issue.
2) Loose connection with device.

3. Problem : Error 6.

Root Cause: Heater Error.

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

4. Problem : Error 8.

Root Cause: Probe (PT1000) not in Medium.

Solution: 1) Will occur when probe is outside from medium placed on hot plate.
2) To override it, long press button "TEMP", when error comes.

13. 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.

14. WARRANTY STATEMENT

This product is warranted to be free from defects in material and workmanship. 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

14. WARRANTY STATEMENT

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 details regarding the warranty period, please refer to the warranty card provided with the product.

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

15. 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.

15. PRODUCT DISPOSAL

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.

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Website: www.accumaxlab.com

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