

GENTi™ ADVANCED Automatic
Extraction Equipment

GTI032A

Users' Manual

GENEALL BIOTECHNOLOGY CO., LTD

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Before the initial use of this instrument, please carefully read this manual!



Important Notes

1. General Practice

Caution : Because of the important information in this column, please read it carefully. Failure to follow the advice in this column will possibly result in damage or malfunctioning of the machine.

2. Safety

During the operation, maintenance, or repair of the machine, the following safety measures should be taken. Otherwise, the guard provided by the machine is likely to be damaged, the rated safety level to be reduced, and the rated operation conditions to be affected.

GeneAll Biotechnology Co., Ltd. Shall not be in any way responsible for the consequences resulted from buyer's not observing the following requirements.

a) Grounding Considerations

A.C. power's grounding should be reliable for fear of an electric shock. The 3-pin plug with the machine's power line is a safety device that should be matched with a grounded socket. Never let the third ground pin floating. If the 3-pin plug cannot be inserted, it is recommended to ask an electrician to install an appropriate power socket.

b) Keep Away from Electric Circuits

The operator is not allowed to open the machine. Changing components or adjusting certain parameters inside the device must only be accomplished by the certificated professional maintenance personnel. Do not change elements while the power is still on.

c) A.C. Power Considerations

Before turn on the power, always check and insure that the mains voltage is within the required A.C. 100-240V and insure that the current rating load of the power socket meet the required specification.

d) A.C. Power Line Considerations

As an accessory of the machine, the A.C. power line should be a default one. If it is damaged, the A.C.

power line can not be repaired, but must be replaced with a new one. The power line should be free of heavy objects during the machine's operation. Keep the power line away from the place where people ambulate frequently.

e) Connect the A.C. Power Line

While connect or disconnect the power line, you should hold the 3-pin plug with your hand. Insert the plug thoroughly into the socket to ensure good contact between the plug and socket. Pull the plug, not the line, when you need to disconnect to the mains.

f) Design Environments

The machine should be placed in a low-humidity, dust-free, and good-ventilation room without caustic gas or powerful magnetic interference. In addition, water sources, such as pools and water pipes, should be separated a distance from the machine.

Never cover or obstruct the openings of the machine, which are designed for ventilation and to prevent the device's interior from being too hot. When a single device is running, the shortest distance between its openings and the nearest object is 25cm; otherwise, when two devices or above are running at the same time, the shortest distance is 40 cm. Do not place the device on a soft surface, because that will

result in adverse ventilation near the device's bottom openings.

Too high temperature will lead to degraded performance or failure of the machine. Therefore, the device should be protected against any kind of heat sources like sunlight, ovens, or central heating equipment.

If the machine is set aside for a long time, it is recommended to disconnect the power line to mains and cover the device with a piece of soft cloth or plastic to prevent dust from entering.

Caution : Once one of the following events occurs, you are suggested to disconnect the power line with mains, and contact the distributor or ask a certificated maintenance worker for help.

- Liquid into the device;
 - The device sprinkled or drenched;
 - The device malfunctioning, giving off abnormal sound or door;
 - The device falling onto the floor or its shell damaged;
 - Significant changes in the device's performance.
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3. WARRANTY AND SERVICE INFORMATION

a) Warranty

GeneAll Biotechnology Co., Ltd. is responsible for the replacement for failures caused by material and manufacturing defects within 1 month after goods delivery.

GeneAll Biotechnology Co., Ltd. is responsible for maintenance of failures caused by material and manufacturing defects within 12 months after goods delivery. GeneAll Biotechnology Co., Ltd. is responsible for selectively repairing and replacing instruments with confirmed defects within warranty period.

Maintained products shall be sent to maintenance department designated by GeneAll Biotechnology Co., Ltd. by the user. The freight incurred thereof shall be borne by the user. GeneAll Biotechnology Co., Ltd. will bear the freight incurred by returning instrument. (For domestic users only) For maintenance out of warranty period, GeneAll Biotechnology Co., Ltd. will charge for certain maintenance cost.

b) Warranty Terms

The above warranty is not applicable to defective devices with incorrect use, abnormal operating conditions, improper application, and unauthorized maintenance or alteration.

GeneAll Biotechnology Co., Ltd. makes no express warranties other than those which are described herein. Any descriptions in sales promotion under specific conditions shall not create an express warranty that the goods shall conform to such description.

Caution : After unpacking, immediately check the goods against the packing list. In case of damaged or missed goods, please immediately contact the supplier.

After qualification of acceptance, properly fill in the product acceptance sheet and send (or fax) the copied sheet to the supplier for filing and maintenance.

After unpacking, the packing box and packing materials shall be well kept for future repair. For the damage of instrument occurring during transporting to the repair department due to improper package, GeneAll Biotechnology Co., Ltd. shall bear no liabilities.

All upgrades of the equipment and software shall be operated by the engineer of the manufacturer. GeneAll company shall not be liable for any equipment failure caused by unauthorized updates and modifications.

After-sale Service Hotline: +82 2 4 407 0096

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Chapter I Introduction

This chapter mainly introduces the features and applications of the instrument.

1. Instrument Features

This product adopts a magnetic bead extraction technology to extract and purify nucleic acid through precision transmission and controlling step motor by single chip microcomputer. It has features as follows: small volume, light weight, low noise, full-closed workaround; Embedded real-time operating system; Transparent working chamber facilitating the observation of working conditions; Large LCD panel, easy to operate. It has powerful functions such like door open protection, ultra-limit position protection and alarm. It is safer and more reliable for use. It can be used to extract DNA, RNA from whole blood, cells, and tissues and so on, so as to save time and labor.

2. Instrument Applications

This product can be used for separation and purification of nucleic acid in molecular biology laboratory and clinical laboratory.

3. Product intended use

GENTi™ Advanced Automatic Extraction Equipment is intended for use, in combination with GENTi™ Advanced kits to perform automated purification of nucleic acids. The nucleic acid purified using the GENTi™ Advanced Automatic Extraction Equipment is suitable for direct downstream analysis by standard amplification methods.

Chapter II Features

This chapter mainly introduces the usage, transportation and storage conditions of the instrument, as well as its basic parameters, performance and functions.

1. Normal Working Conditions

Ambient temperature: 10°C ~ 30°C

Relative humidity: 20%-70% without condensation

Power supply: AC100-240V 50-60Hz

Caution : Before power on, please confirm whether the working conditions meet the above requirements. Pay special attention to the power line is reliably grounded.

2. Transportation and Storage Conditions

Ambient temperature: -20°C + 55°C

Relative humidity: ≤80%

3. Basic Parameters

Parameters	Model	GTI032A
Sample size		32 pcs/time
Magnetic rod (fixed)		4 x 8 pcs
Sample range		20~1000 ul
Magnetic bead collection efficiency		>98%
Most suitable size of magnetic beads		0.2~1.0 um
Overall dimensions mm		430 * 395 * 435 (L * W * H)
Net weight		32.5 kg

4. Basic performance

Operating temperature: room temperature

Program storage: 250 files

5. Software functions

File edit, view, modify and delete functions

File run, pause, and stop functions

File import & export by U disk

Voice prompt function

Fault protection and alarm function

UV lamp on and timed off

Upgrade by U disk

Caution : The above software features are for reference only. GeneAll reserves the right to change the software without notice.

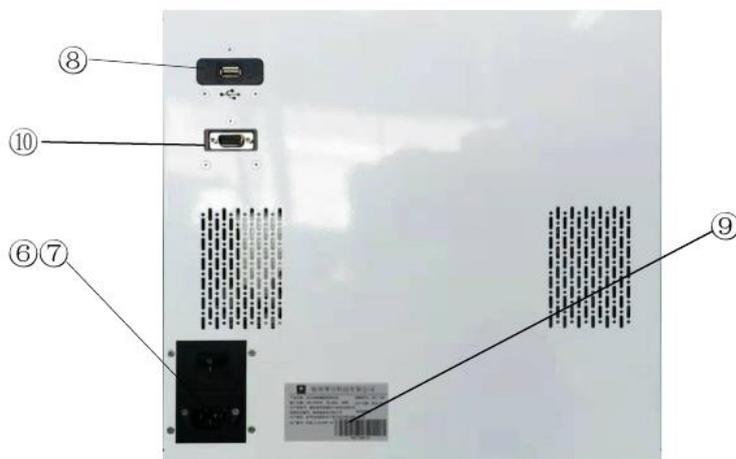
Chapter III Preparations

This chapter mainly describes the structure, the functions of screen and keys on the screen, as well as the preparations before the startup. Before the first operation of this instrument, please read this chapter carefully and make sure you are familiar with the contents of this chapter.

1. Structure Diagram



Back view of full automatic nucleic acid extraction and purification system



①Case Body ②Display ③Operating room ④ Where 96 deep well plate is placed

⑤Closing cover ⑥Power switch ⑦ Standard power outlet ⑧USB interface

⑨Sticker ⑩RS232

Caution : The fuse seat is fitted with a fuse for which the requirement is: F 250 V 6 A Ø5x20. Fuses must be replaced using products that meet the requirements. Contact the supplier or manufacturer for fuses.

2. Check before Startup

The following contents should be confirmed before power on:

2.1 Whether the power supply meets the required voltage of the instrument;(see chapter 2 of this document for power requirements)

2.2 Confirm that the power cord plug has been reliably inserted into the power socket;

2.3 Reliable grounding of power cord;

2.4 Whether the 96 deep well plates is in place.

2.5 Placement of 96 deep well plate

2.5.1 There are four heating blocks placed on each plate with a limit block on each side to assist in positioning, and a spring plate on each side to help fix the 96 deep well plate.

2.5.2 Note: Make sure the 96 deep well plate is placed evenly before starting up.

2.6 Startup

Switch on the automatic nucleic acid purification system, and the instrument will conduct self-test. Self-test takes about 10 seconds. Please wait patiently. If no problem is found in the self-test, the main menu will appear on the screen, and then the user can edit, review, modify and delete files.

Chapter IV Operation Guide

This chapter explains in detail how to edit/review/modify/delete files, and how to run/stop files. It also introduces the meaning of protection interface in the process of file running.

Warning ! If there is any abnormal sound or display after the instrument is switched on, or there is a fault alarm during the instrument self-testing, please switch off the power immediately and contact GeneAll.



Ready? Let's get started!

1. Upper computer operating interface

a. Operation main interface

After the system is started, enter the main interface of nucleic acid purification operation, which mainly has the following functions: Run, New File, Ultraviolet Lamp and System Setting. The interface center displays the operation state of the instrument. If the instrument is in operation state, click the icon of the center to further check the detailed operation information. The followings are the idle and runtime main interfaces, respectively.



The bottom four function buttons from left to right are: Run, New File, UV Lamp, and System Setting.

The middle operation status button and status information are displayed only when the equipment is in running status. Press the Running button to enter the running state interface to view the detailed information of the running state.

b. Run

Click run icon on the main interface to enter the file browsing interface. You will see buttons for browsing menu selection on the left to select files, history or U disk files, information browsing in the middle, function buttons in the bottom, and main interface icons in the upper left corner to return to the main interface. Select different browsing menu items, the bottom function button and browsing information will be different.

The following figure shows the file browsing interface.



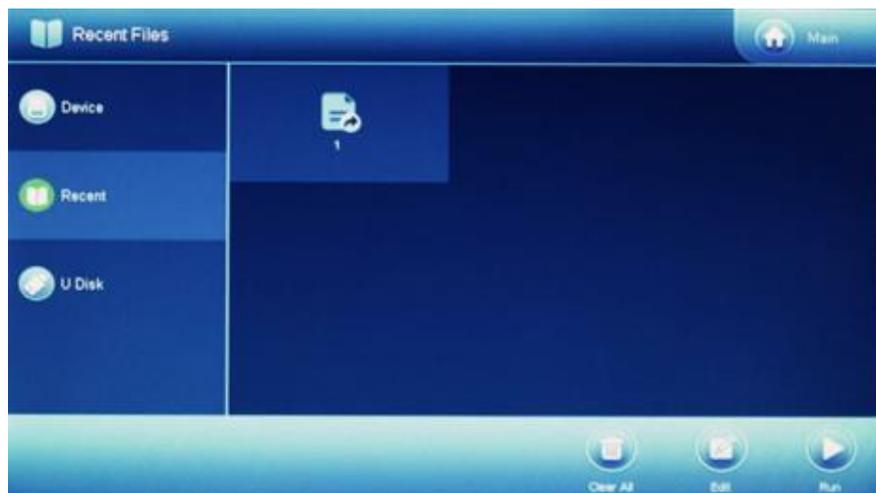
A list of stored files is in the middle, showing up to 9 files per page and totally 250 files. The current selected file is displayed in white. Click the current selected file to enter the file editing interface. The page information and page forward/back button is in the right; the function button is in the bottom, including Export, Delete, New, Edit, and Run.

- Export: Copy the selected file to the default u-disk directory (under the $\backslash \text{pcrex} \backslash$ GeneAll of u-

disk directory).

- Delete: Delete the selected file from the instrument.
- New: After creating the default file, go to the file editing interface to edit the new file.
- Edit: Go to the File Editing Interface to edit the current selected file.
- Run: Run the selected file.

The following image shows the history browsing interface.



A list of 9 files that were last edited and run is in the middle. The current selected file is displayed in white.

Click the current selected file to enter the file editing interface. The function button is in the bottom, including Clear Record, Edit, and Run.

Clear: Clear history Edit: Go to the file edit interface to edit the selected file Run: Run the selected file

The following figure shows the U disk file browsing interface, which can only be displayed when the U disk is inserted. If the U disk is not inserted, it prompts failure to detect the U disk.



In the center is the ".ebr "file list that conforms to the file name standard in the default directory

of U disk (under the Wpcrex\GeneAll of u-disk directory) (a legal filename consists of an English letter, a number, and an underscore, and a filename that does not include a suffix is no longer than 12 characters long). The current selected file is displayed in white. The page information and page forward/back button are in the right; the function button is in the bottom, including the import.

- Import: Copy the selected file to the instrument

c. Running files

- Click on Run button on the file browsing interface;
- Click on Run button in the history browsing interface;
- Click on Run button in the file save interface.



The lysis and elution temperatures are displayed on top of the running interface. The lower left side of the interface shows the steps undergoing, including waiting time, mixing time, binding time, and remaining time.

The bottom right side of the interface shows the number of columns being heated. At the bottom is the function button, including: Stop, Pause, Pause/Reset.

- Stop: Stop the experiment.
- Pause: Suspend the experiment.
- Pause/Reset: Suspend the experiment and Raise the magnetic rods.

d. UV light setting

In the operation main interface, click ultraviolet lamp setting to enter the ultraviolet lamp setting interface.

After setting ultraviolet lamp turn-on time, click ok to turn to the ultraviolet lamp turn-on time set

state interface or click cancel button to return to the main interface.



e. System setting

Click on the system settings to enter the system settings interface in the operation main interface.



The 8 buttons in the middle correspond to 8 Settings entries. Click the button in the upper right corner to return to the main interface.

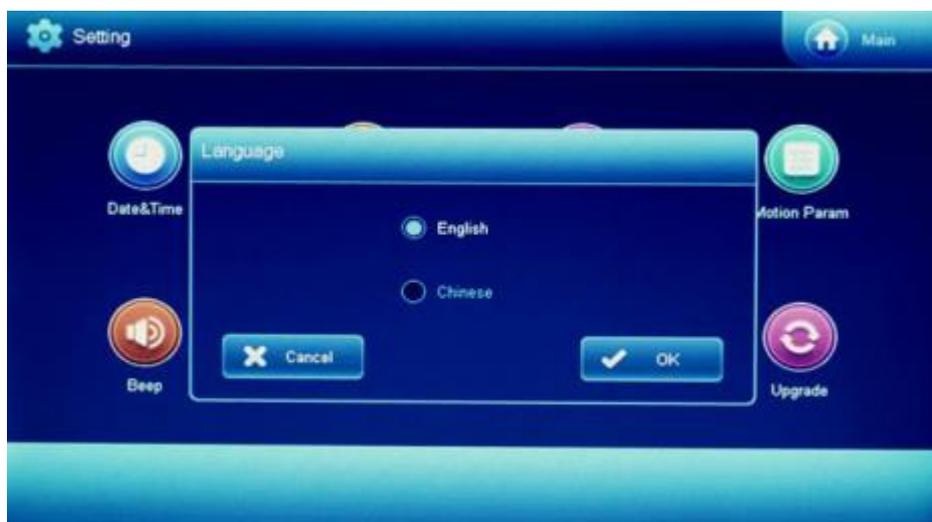
f. Date & Time

Click the Date & Time button in the system setting interface, enter the Date & Time setting interface, and click ok or cancel button after setting time or date to return to the system setting interface.



g. Language selection

In the system settings interface click language into the language settings interface, select Chinese or English, click OK or cancel button to return to the system settings interface.



h. Backlight adjustment

Click backlight adjustment on the system setting interface to enter the backlight adjustment interface.

Turn up/down screen brightness by clicking and dragging the scroll bar, or by clicking certain spot in the horizontal column to modify the position of the indicator sign, and then click ok or cancel to return to the system setting interface.

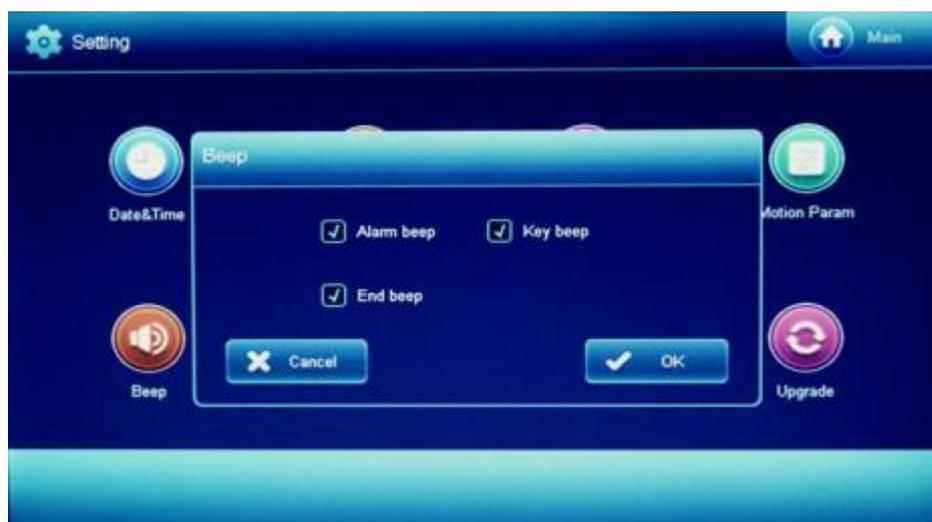


i. Motion parameters

The parameters in this interface are only used by experienced engineers. Please do not modify the parameters without authorization.

j. Prompt tone setting

Click the prompt tone to enter the prompt tone setting interface on the main interface. After setting the alarm prompt, the keyboard prompt and the closing prompt, click OK or Cancel button to return to the system setting interface.



k. Screen calibration

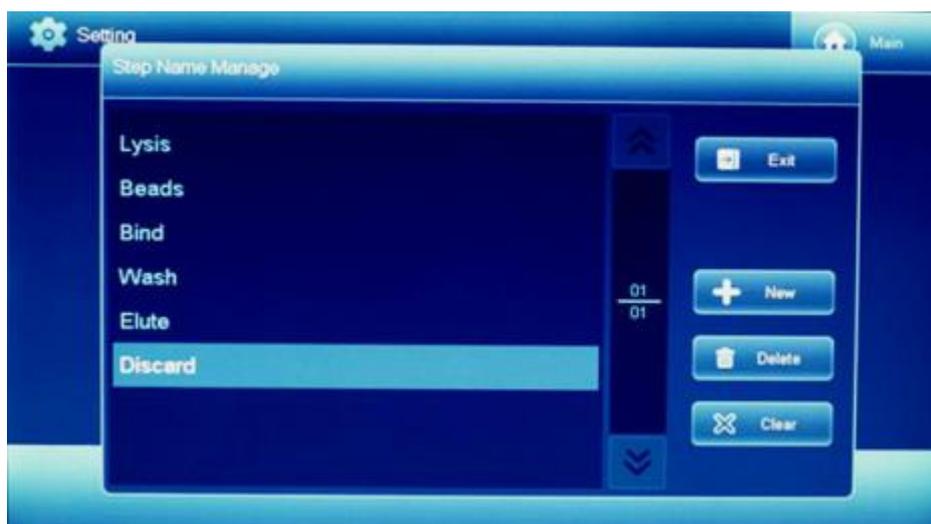
In the operation main interface, click the screen calibration to enter the screen calibration interface, and click the center of the cross icon in the upper left corner and lower right corner, then return to the system setting interface.



l. Step name management

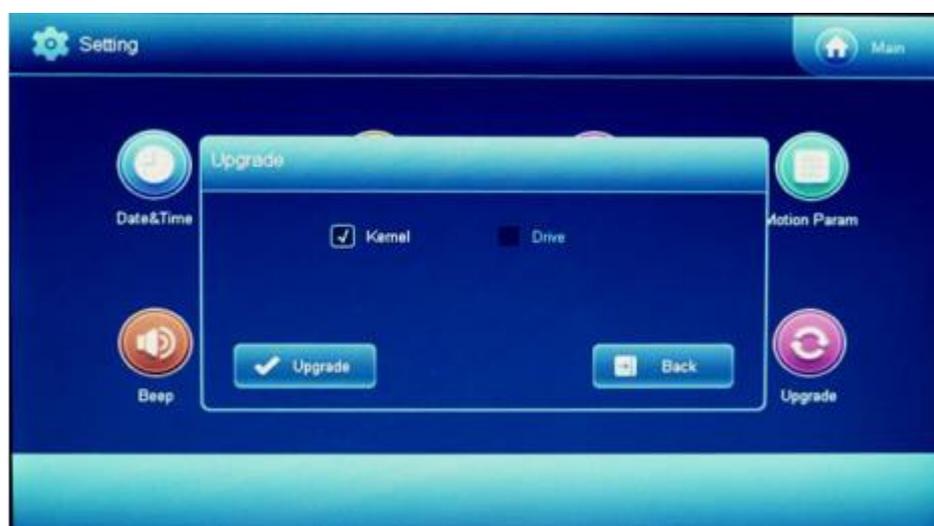
Click name management to enter the step name management interface in the system setting interface, and the interface displays all the steps currently, and you can create New, Delete and Clear. Click exit button to return to the system setting interface.

New: Add a new step name tag for English and Numbers only and slip line for up to 12 characters, preferably no more than 8 characters
Delete: Delete the selected custom name label. The default name is not removable
Clear: Remove all custom name tags, leaving only the default name tags.



m. System update

After inserting the upgrade USB drive into the main interface, click the system update to enter the system update interface (if the upgrade USB drive is not inserted or there is no upgrade file in the USB drive, it will be indicated that the upgrade file is not detected.) After selecting the program that needs to be upgraded (according to the upgrade file in the USB flash disk, automatically list the items available for upgrade), click the Upgrade button to start the firmware upgrade process, and click the Cancel button to return to the main interface.



After the upgrade is completed, according to the screen prompt, shutdown the device, pull out the upgrade USB drive, and restart the device.

Caution:

Please restart the device according to the screen prompt message, and it is forbidden to shut down the device during the upgrade process.

Chapter V Fault Analysis and Troubleshooting

This chapter mainly introduces the possible fault phenomena, causes analysis and troubleshooting of this instrument.

Fault Analysis and Troubleshooting

Serial No.	Fault phenomenon	Cause	Solution
1	Display screen is not on when the power switch is turned on.	Power on.	Check the power and switch on.
		Fuse was blown down.	Replace the fuse (F 250 V 3 A Φ 5x20).
		The switch is damaged.	Replace switch.
		Others.	Contact the supplier or manufacturer.
2	When power switch turned on, buzzing alarm sounds and system error is displayed. Please contact the manufacturer.	Error occurs during self-inspection process.	Contact the supplier or manufacturer.
8	Abnormal screen display	Screen wires disconnected.	Contact the supplier or manufacturer.
		Screen control chip is damaged.	
9	Screen buttons don't work.	Touch screen is damaged	Contact the supplier or manufacturer.

Caution : users are not allowed to open the housing of the instrument for inspection by himself during the warranty period. If any failures that require opening of the housing for inspection, the supplier or manufacturer should be contacted timely.

Symbols

Symbol	Used for
	Serial number
	Catalogue number
	Consult Instructions For Use
	Manufacturer
	In-vitro diagnostic medical device
	Date of Manufacture
	CE-Mark
	Representative in EC



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