



Glassware Washer

LMGW-A101

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1. Safety Measures

- Safety can be ensured when your laboratory grounding system confirms the requirements of the local regulations (do not use an extension cord).
- Do not plug or unplug with wet hands.
- Don't let the water pipe touch chemical reagents or any other high-temperature objects.
- Use appropriate detergent, do not use any other kinds of detergent inside the glassware washer.
- Only suitable utensils can be put into the glassware washer for cleaning. (Kindly avoid putting heat-resistant materials into the glassware washer for cleaning, such as plastic vessels.).
- Kindly clean filter units once a week to maintain the best cleaning effect of the glassware washer.
- Do not open the door while the machine is running, hot steam may cause personal injury.
- To avoid danger, the replacement of the power cord must be replaced by a professional person.
- Turn off the power supply and water inlet valve when it is repaired or not used for a long time.
- The power supply must be turned off and the water inlet valve must be closed during maintenance or when not in use for a long time. After each cleaning, kindly cut off the water source and open the door slightly to avoid dampness and Odor.
- Before cleaning and maintaining the laboratory glassware washer, be sure to unplug the power cord from the outlet and do not risk it. The laboratory glassware washer must be level when moving equipment.

How to place utensils correctly

- Before you put the utensils in the machine, kindly ensure the filter is clean. Place the filter in the corresponding position in the cleaning tank.
- Severely contaminated and fouled utensils, it is recommended to pre-treat before cleaning.
- If there is solid, granular, or thick jelly on the utensils, kindly remove them before cleaning to avoid blocking the pipe and damaging the main circulation pump.
- Utensils must be placed in the matching cleaning basket, if they are not matched, related problems may occur (for example, if the sample injection vial is put into the large nozzle, it will be sprayed out, and the large bottle is put into the small nozzle, the cleaning residue will appear due to the small impact force).
- Push the basket into the cleaning chamber and check whether the spray arm rotates freely and whether the filter is installed.

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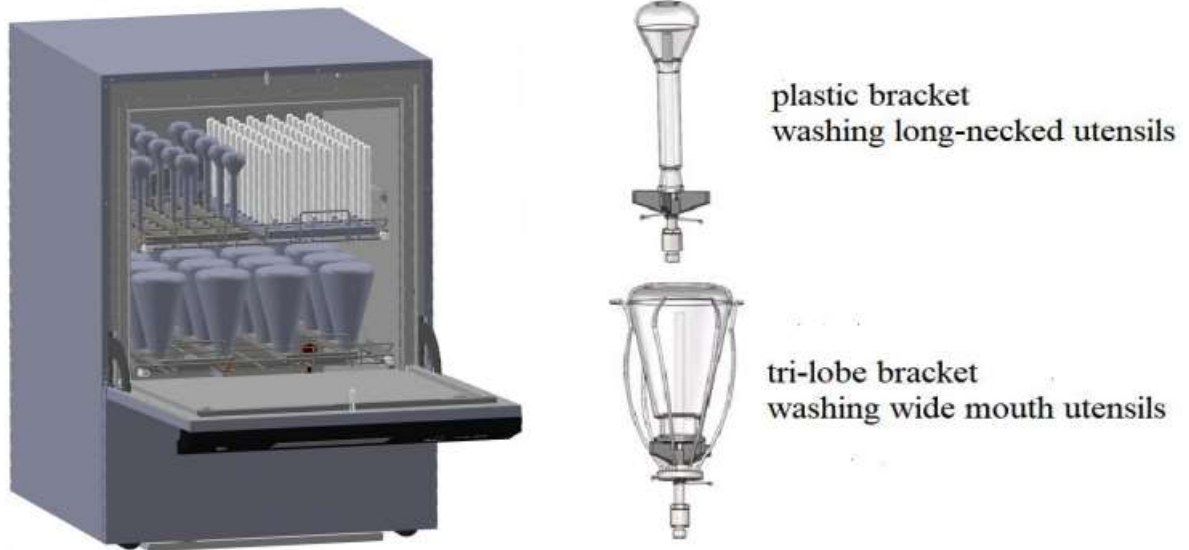


Figure-1

2. Introduction

Glassware Washer LMGW-A101 features 120 self-defined programs, provides flexibility in cleaning processes. It offers a pump flow rate of 0–500 L/min, providing powerful water circulation. Incorporated with a black box system, enhances operational transparency. Equipped with two-layer cleaning basket maximizes the capacity for holding glassware. Our Glassware Washer features intelligent switch door for convenience and safety.

3. Features

- Standard Programs
- Three-Level Permissions
- Pressure Monitoring
- Large Display
- Energy-Efficient Operation

4. Specifications

Model No	LMGW-A101
Pump Flow	0–500 L/MIN
Cleaning Chamber Volume	185 L
Standard Program	30
Self-Defined Program	120
Water Heating Temperature	0 to 93°C
Water Heating Temperature Control Knob	0 to 120°C
Number Of Heating Tubes	1
Number Of Peristaltic Pumps	2
Amount Of Cleaning Agent Pumped	2.5ml/s
Water Temperature Over the Alarm	≥ 86°C
Low-Level Cleaning Agent Alarm	Icon flashes
Cleaning Basket Layer	Two Layer
Black Box System	Yes
Intelligent Switch Door	Yes
Three Level Permissions	Yes
Pipeline Pressure Monitoring	Yes
Power	220V 5KW
Air Heating Power	3 KW
Water Heating Power	4 KW
Screen Size	8.8 inch
Internal Dimension	547× 575 ×607mm
External Dimension	670 × 691 × 940 mm

5. Applications

Glassware Washer LMGW-A101 is employed in laboratories, research facilities, pharmaceutical and industrial settings. It is essential for cleaning of glassware such as flasks, beakers, test tubes, and cylinders.

6. Instrument Introduction

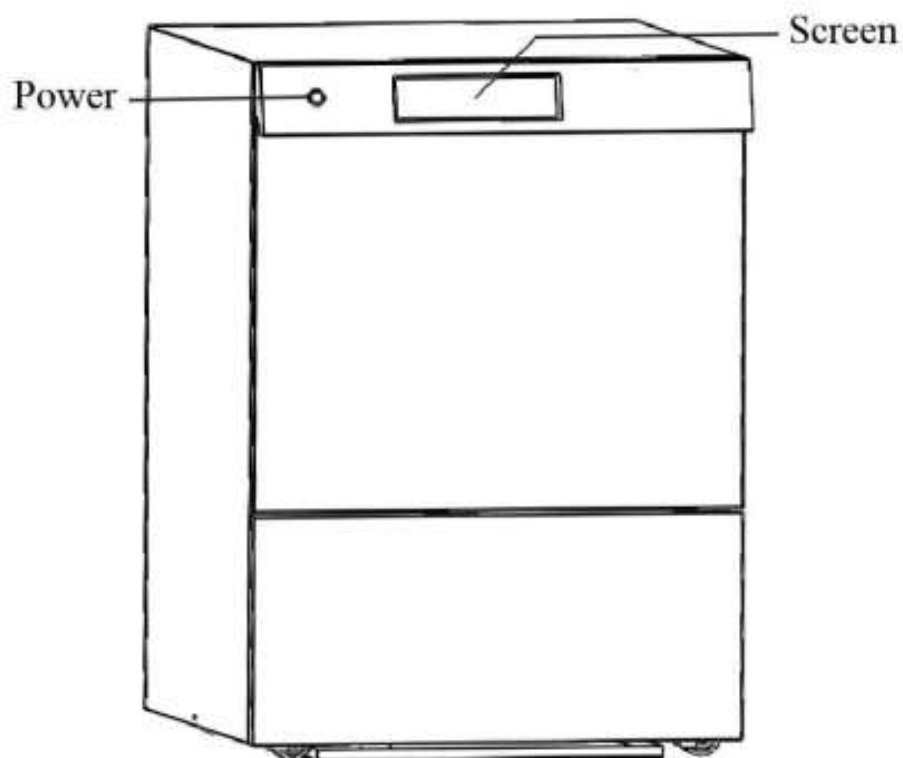


Figure-2

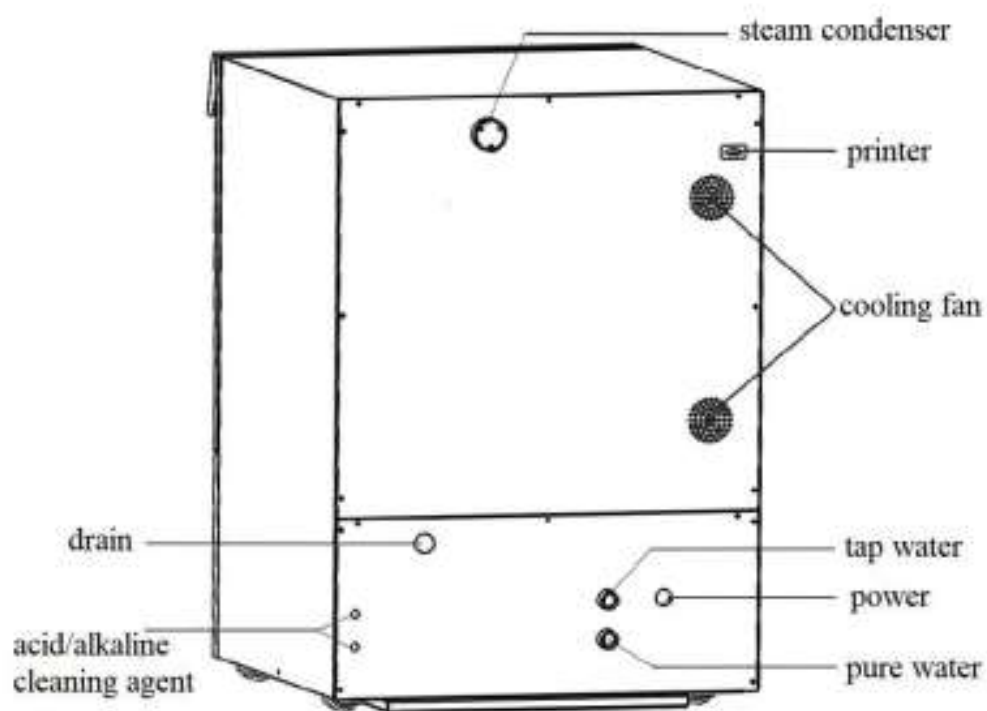


Figure-3

7. Software Operations

7.1 Start

Press the "power switch" round button at the top left of the screen to turn on the power and enter the power-on interface **Figure 4**.

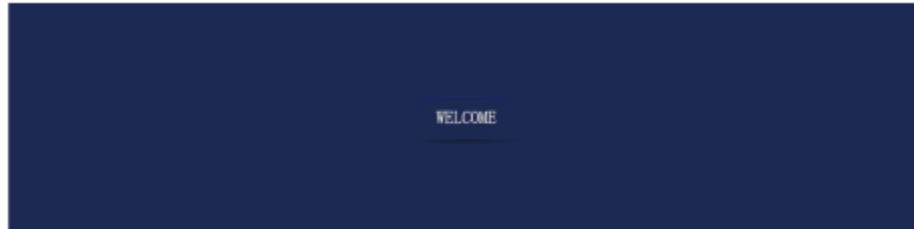


Figure-4

7.2 Log In

Enter the login interface in **Figure 5**.



Figure-5

On the login interface, click [Register], the password verification box pops up, enter the registration code, and you can enter **Figure 6** to register. Register new user information, enter the password twice, select permissions, and click [**Register**] on the right to complete the registration (up to 10 users can be registered)

Click [**Record**], enter the registration code, and you can view the existing users.

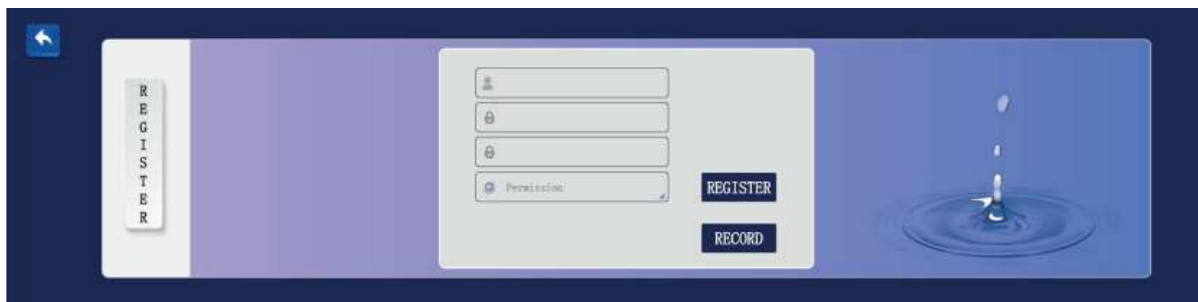


Figure-6

Permission introduction

The system has 3 levels of authority function, its name and function are: Level 1 authority: Operator authority: only use the program that has been set to cleaning utensils.

Level 2 authority: Debugger authority: Use the program that has been set to cleaning utensils, modify the operation parameters, change the name of the cleaning program, etc.

Level 3 Authority: Administrator authority: Use the program that has been set to cleaning utensils, modify the operation parameters, change the name of the cleaning program, view the cleaning record, black box, and port status, modify time, single-step Operation, etc.

Complete the registration and enter the main interface **Figure 4**.

The main interface can be swiped left and right to view **Figure 5**.



Figure-7



Figure-8

7.3 Open/Close door

On the main interface, click the door lock icon and the door will slowly open or close.

Show status when the door is closed “”

Show status when the door is opened “”

Note: The instrument is an electric switch door. When closing the door, you only need to gently close the door, do not force it to close the door. At this time, the door lock is in a semi-loose state, and the program will automatically close the warehouse door.

7.4 Shortcut method

Automatically store 4 used programs, and start running directly by clicking

Note: The shortcut icon can be directly clicked to clean

7.5 Backlight settings

Adjust the screen brightness Click the backlight adjustment, slide your finger left to right to adjust the screen brightness **Figure 9**, the brightness value adjustable range: 20-100%.



Figure-9

7.6 Standard procedures

- 1) Tap the screen [standard procedures], 30 different procedures are displayed, and the corresponding program can be selected according to the type of pollutants. The standard procedures are only selected for use, and the procedure parameters cannot be changed. Click the arrow to slide left and right to view **Figure 10**.



Figure-10

- 2) View the specific cleaning conditions of the standard method: Enter the cleaning procedure, and click [View Parameters] **Figure 11**, the parameter conditions can be seen in **Figure-12**(A, B, C)

Note: In the viewing interface, you can view the main parameters such as pump speed and water intake, and you can also view the detailed parameters, time, temperature, lotion volume, etc. of each cleaning step.

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Figure-11

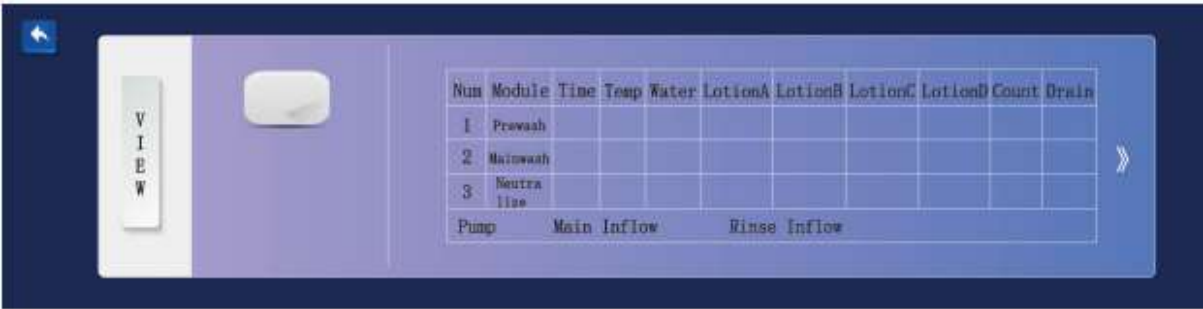


Figure-12(A)

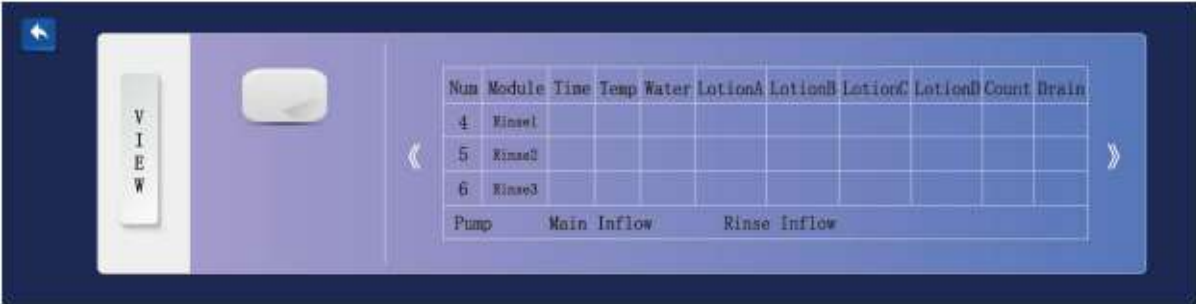


Figure-12 (B)

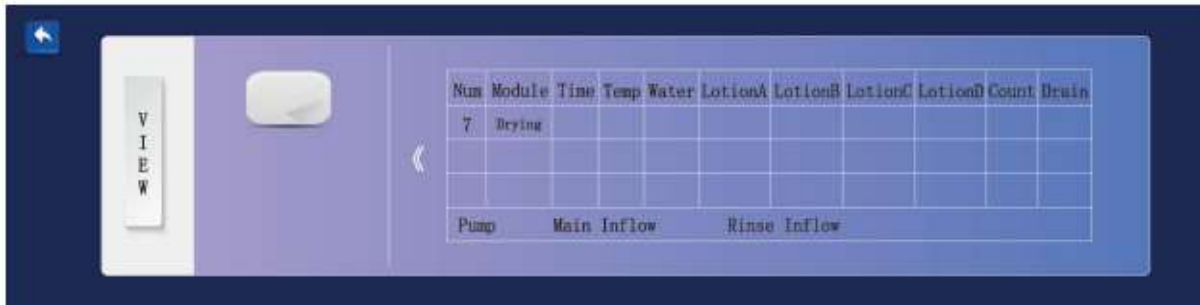


Figure-12 (C)

7.7 Self-Defined Procedures

- 1) Click the [Self-defined procedures] button on the main interface, 120 cleaning procedures with no parameters set in **Figure 13**.
Click the arrow to slide left and right to view the program and directly click the program icon to enter the program startup interface **Figure 10**.
Click [Start] to run the program.



Figure-13

- 2) **Edit self-defined.**

Click the program icon to select the program to be edited, such as the [Custom 01] icon **Figure 14**, and click [Edit Parameters] to enter the program editing interface **Figure 15**.



Figure-14



Figure-15

Edit method interface **Figure 15** right, Two module options: all modules; single module.

All Modules: Click to add a complete cleaning program.

Single Module: Click to add a small wash step.

Delete module: Click [Delete module] to remove the selected cleaning module.

Note: A standard washing program is composed of 6 modules. Each program can be composed of single or multiple modules through the mobilization of a single module. For the standard 6 modules, see the program parameter reference below. Click on the blank space of the horizontal line of each module in **Figure 15**, and the edit box will pop up in **Figure 16**, modify the cleaning time, temperature, lotion type, etc.

3) Edit self-defined procedures.

Click [parameters], [pre-washing], [main washing], [neutralization washing]... and other modules to fill in the parameters. Click on the module name to select. Click any key underlined to bring up a number pad tile. After selecting the appropriate number, press the **OK** key to complete the change of the parameter. After the modification is completed, press the save button to save the program. After the program is saved, press the return button "picture" to return to the program startup interface.

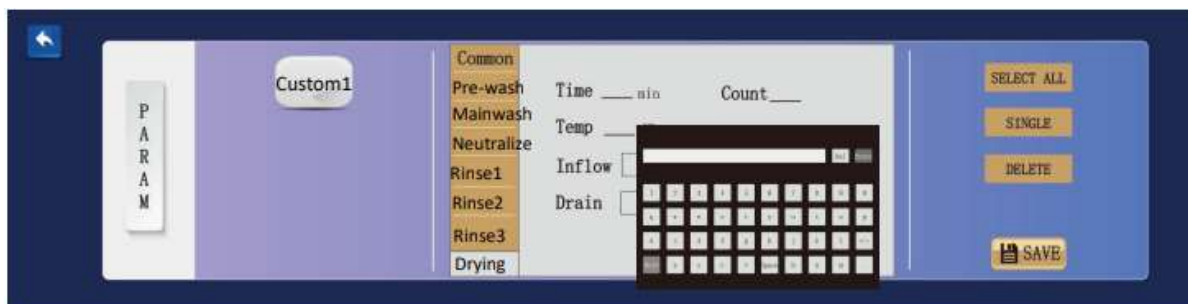


Figure-16

4) Modify Program Name

Click the program name on the parameter editing page to edit, for example, click [Custom 1], and the full keyboard module will appear, input any English, number, then click the OK button to save the modified name and rename the program. **Figure 17.**



Figure-17

5) Manufacturer-defined Self-defined procedure parameters.

Cleaning Step	Water type	Time	Temperature	Cleaning agent	Cleaning agent adding time
pre-washing	Tap water	2 min	20°C	-	-
Main washing	Tap water	10-20 min	60-70°C	Alkaline	20-35s
Neutralize washing	Tap water	5min	40-60°C	Acid	20-35s
Rinse 1	Tap water	2min	20°C	-	-
Rinse 2	Pure water	2min	20°C	-	-
Rinse 3	Pure Water	2min	40-60°C	-	-
Drying	--	20-60 min	RT-120°C	-	-

6) Cleaning Procedure Setting Parameters

(1)Parameter

- Set the main pump speed 0-100% - the pump speed is generally 100% Set the main inlet water - Single-layer basket 11-12L, double-layer basket 12-14L.
- Set rinsing water intake—generally consistent with the main water intake
Note: This product's cleaning time is the effective washing time after the water temperature reaches the set temperature, not including the heating time. The dosage setting of the cleaning agent for this product is 1 second = 2.5ml.

(2)Pre-Washing

- Set the pre-washing time (1-60 minutes) - Generally 2-3 minutes.
- Set the pre-washing temperature (1-93 °C) - Generally 20-25 °C.
- Choose the source of water for prewashing (purified water or tap water) - The source of water is generally tap water.
- Setting and selection of pre-washing agent (A: alkaline B: acid) - No optional addition of cleaning agent.
- Set the pre-washing dosage (0-100 seconds)- The dosage of detergent can be set to 0 seconds.
- **Note:** pre-washing function: instead of manual washing acid residues, sediment, and other large particle residues (no need to add cleaning agent).
- Cleaning part of heavy pollution, difficult to remove residues (the temperature should be increased properly, and detergent should be added).

(3)Main Washing

- Set the main washing time (1-60 minutes) - Generally 15 minutes.
- Set the main washing temperature (1-93 °C) - Generally 70 °C
- Choose the main washing water source (purified water or tap water) - The water source is generally tap water.
- Setting and selecting the cleaning agent (A: alkaline B: acid) - Cleaning agent selection and addition of alkaline cleaning agent.

- Set the cleaning agent dosage (0-100s) for main washing - The dosage can be set for about 15s.

Note: The main washing can be adjusted according to different residues and some parameters.

(4) Neutralization Washing

- Set neutralization washing time (1-60 minutes) - Generally 5 minutes.
- Set neutralization washing temperature (1-93°C) - The temperature is generally 40°C.
- Choose the water source (purified water or tap water) for neutralization washing - The water source is generally tap water.
- Setting selection neutralization washing agent (A: alkaline B: acid) --- select acid cleaning agent.
- Set the cleaning dosage for neutralization washing (0-100s) --- the amount of cleaning agent added ≤ the main washing cleaning agent amount.

(5) Rinse 1

- Set the first rinsing temperature (1-93°C) - Generally 20-25°C.
- Set rinsing time (1-60 minutes) - Generally 2-3 minutes.
- Choose the rinsing water source (purified water or tap water) - The water source is generally tap water Set the number of rinsing times (1-20 times can be set) - Generally, setting twice.

(6) Rinse 2

- Set the first rinsing temperature (1-93°C) - Generally 20-25°C
- Set rinsing time (1-60 minutes) - Generally 2-3 minutes
- Choose the rinsing water source (purified water or tap water) - The water source is generally purified water.
- Set the number of rinsing times (1-20 times can be set) - Generally, setting once.

(7) Rinse 3

- Set the first rinsing temperature (1-93°C) - Temperature setting: If you need to dry the utensils, the temperature can be set to 60-70 °C; if you do not need to dry the utensils, the temperature can be set to 40-45°C.
- Set the rinsing time (1-60 minutes) - Generally 1 minute.
- Choose the rinsing water source (purified water or tap water)- The water source is generally purified water.
- Set the number of rinsing times (1-20 times can be set) - Generally, setting once.

(8) Drying

- Set the drying time (1-120 minutes) - The time setting shall be adjusted according to the spray bar density of the cleaning basket.
- The time is generally 30-60 minutes.
- Set the drying temperature (room temperature - 120°C) -generally 110°C.

7.8 Username Permissions

Switch users, click the "Username Permission" icon again on the main interface, you can return to the login interface, and select another username to log in.

7.9 System Settings

Click the [System Settings] icon in the main interface as shown in **Figure 8** to enter the system setting interface. The program has been set at the factory as shown in **Figure 18**, no need to change.



Figure-18

7.10 Time settings

Click the [time setting] icon in the main interface as shown in **Figure 8** to enter the time setting interface as shown in **Figure 19**, click on the blank space in front of the unit, and swipe up and down to modify the corresponding time.

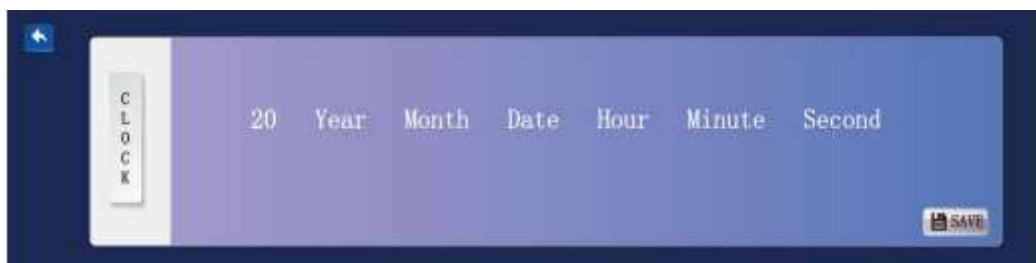


Figure-19

7.11 Input State

Click the main interface **Figure 8** [Input Status] to display the terminal signal: (generally used for maintenance) Click the [Input Status] icon in (**Figure 8**) to view the signal terminal status (**Figure 20**), and signal terminal feedback The working status of each sensor.

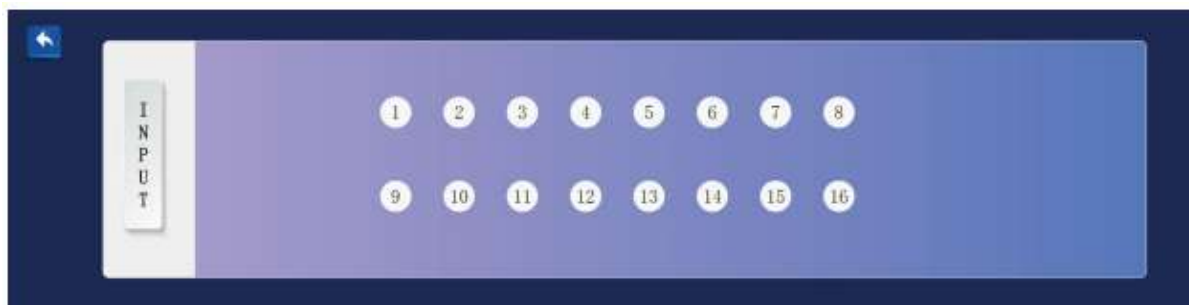


Figure-20

Information represented by 1-16-bit terminals

- 1: Inner warehouse float
- 2: water tank float
- 3: Alkaline cleaning agent position
- 4: Acid cleaning agent position
- 5: C cleaning agent position
- 6: D Cleaning agent position
- 7: Leak sensor
- 8: Spray arm
- 9: Tight
- 10: Half loose
- 11: All loose
- 12: Upper cleaning basket
- 13: Middle cleaning basket
- 14: Lower cleaning basket

The circular icon at the corresponding position changes in light and shade, indicating that the input port is normal, otherwise, an abnormality occurs.

7.12 Single Step

Click on the main interface **Figure 8** [Single-step operation] and enter the single-step action operation interface **Figure 21**, single-step operation can observe whether the equipment can execute correctly in different action steps.

Operation:

- First, set the application time in the upper right corner, and click the corresponding minutes and seconds blank box after the time to enter the time.
- Select the single-step operation to be performed to execute the operation (generally used for maintenance).



Figure-21

Note: The single-step operation is also manual. During the operation, the User can open the cleaning compartment door for observation. It should be noted that the single-step operation time should not be set too long, and the operator should not leave.

7.13 Record

Click the [Record] button in the main interface **Figure 8**, it will enter the cleaning record viewing interface **Figure 22**, click [Cleaning Record], and enter the detailed content viewing interface **Figure 23**, after connecting to the printer, press the [Print] button to print the cleaning record.



Figure-22

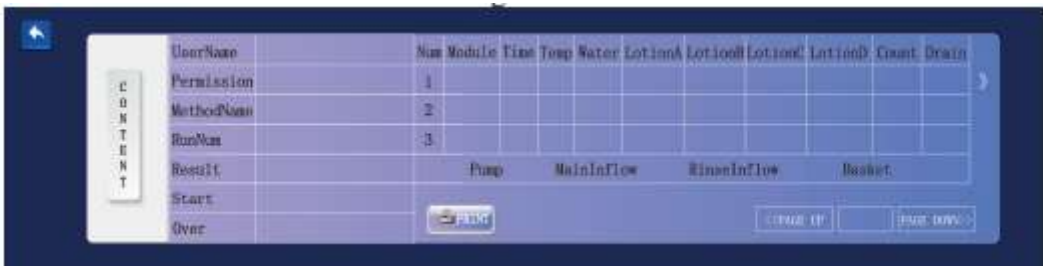


Figure-23

7.14 Run

Preparation: Turn on the water source, put the cleaning basket into the cleaning chamber, and close the door (when closing the door, push the door gently first, when the lock ring on the door is hooked on the door lock hook, click the door

close button "  ", The door lock will be automatically tightened), the cleaning basket must be pushed in place, and connected with the water inlet of the cleaning chamber to ensure the smooth flow of water. **Run a program:** Select a program that has been set or a standard procedure. Click to enter the start interface (**Figure 24**), click [Start], and the program starts to run (**Figure 25**).



Figure-24

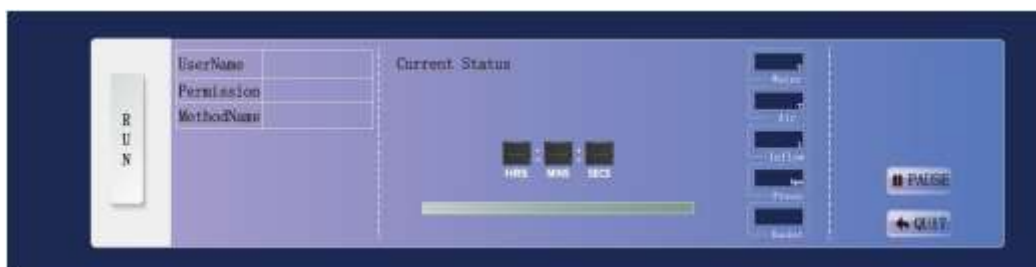


Figure-25

Pause the program: in the running interface **Figure 25**, click [Pause], and the instrument will stop running **Figure 26** Continue: Click the [Continue] icon, and the program will continue to run, click the [Exit] icon, and the program will exit directly (after clicking the Exit, and then select the program, the program will start running from the beginning).

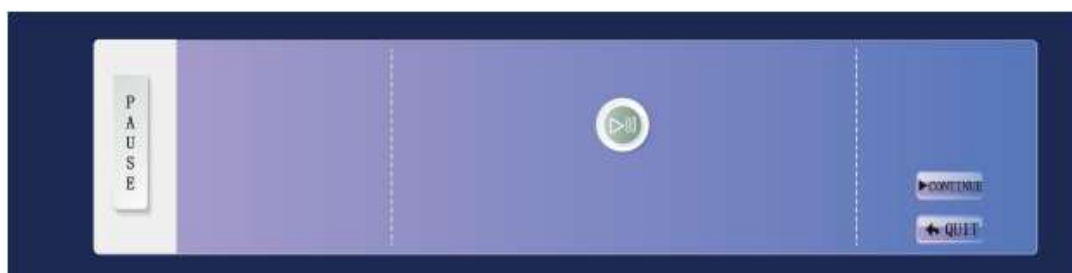


Figure-26

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End of operation: End of program operation: The screen displays the operation is complete, and there is a beep sound prompt, click [Exit], return to the main interface, click “” to open the door, and take out the cleaned utensils **Figure 27.**

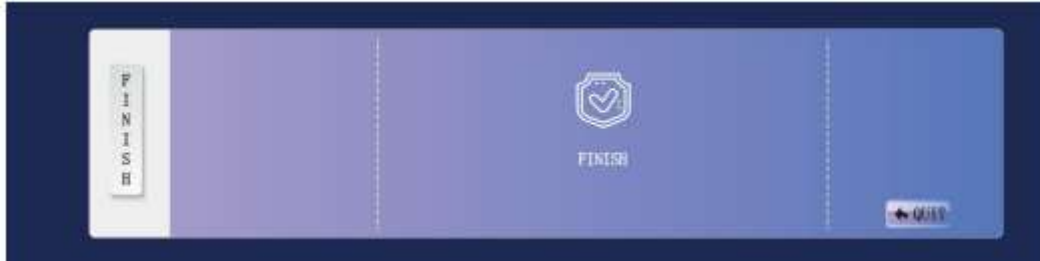


Figure-27

8. Maintenance

8.1 Cleaning Method

- When cleaning the exterior and rubber parts of the laboratory glassware washer, kindly use the special cleaning agent provided.
- For long-term use, there may be some residue on the sealing strip, kindly keep the sealing strip clean during use.
- Clean the filter regularly. It is recommended that the solids on the filter be poured out and rinsed after each cleaning.
- According to the frequency of use of the glassware washer, it is recommended to run the glassware washer with no load every 1-3 months.
- After cleaning, press the power button to turn off the machine and turn off the faucet.

8.2 Antifreeze method

If the glassware washer is placed in an environment without heating in winter, it is recommended that users take the following protective measures.

- 1) Turn off the power
- 2) Turn off the Water Supply and drain the lines
- 3) Lift the filter assembly off the bottom of the unit and use a sponge to soak up the water in the garbage Collection Cup.

8.3 Maintenance

8.3.1 Peristaltic Pump Tubing Replacement

- 1) As shown in **Figure 28**, turn the locking paddle to the right; turn the pump cover counterclockwise to remove the pump cover, wheelset, and hose.
- 2) As shown in **Figure 29**, press the assembled peristaltic pump tube (cut length is about 125mm), and press the connector at one end into the groove of the pump cover first; The hose goes around the wheel while rotating the wheel, The other connector is assembled in the same way; Position the hose so that it is centered on the rollers to fit the wheel set into place.
- 3) Align the flat square of the wheelset with the flat square of the main shaft of the motor and rotate the pump cover to the third position as shown in the figure at the same time; press the pump cover down and rotate the pump cover clockwise in place at the same time; lock the paddle to the far left.



Figure-28



Figure-29



Figure-30

8.3.2 Spray Arm Cleaning

If the spray arm is blocked, you can unscrew the black nut fix the spray arm, and put the removed spray arm under the faucet for flushing.

9. Troubleshooting

- 1) **Abnormal power failure:** **Figure 31** will be displayed when a power failure occurs during operation. Solution: When the power supply is normal, the interface shown in **Figure 31** will be displayed after the power is turned on. Click [Continue], and the program will continue to run from the step of power failure. Click [Exit] to return to the main interface.



Figure-31

- 2) **Inlet tap water abnormality:** Inlet tap water alarm, as shown in **Figure 32**
Solution: Check the inlet water pressure, whether the water valve is open, turn off the water source, unscrew the tap water connector, and check whether there is any foreign body blockage.



Figure-32

- 3) **Door exception:** Door abnormal alarm as shown in **Figure 33**
Solution: Check whether the door is closed properly, click the [Exit] icon in the lower right corner to exit the program, check the door status and re-select the program.

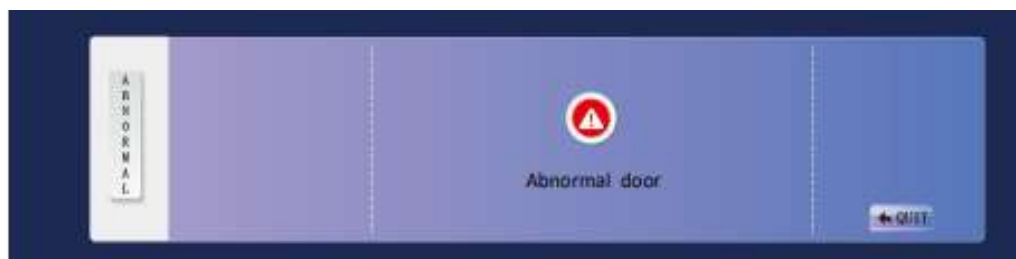


Figure-33

4) **Leak:** Water leakage alarm **Figure 34**

Solution: Check whether the sealing strip in front of the door is loose and has fallen off, remove the baffle below the door, take out the liquid leakage sensor, wipe it dry, and put it back.



Figure-34

5) **Discharge:** The discharge alarm is shown in **Figure 35**

Solution: Click Exit, open the door to check the water volume of the water storage tank, check whether the drainpipe is connected well, and re-select the program to run.

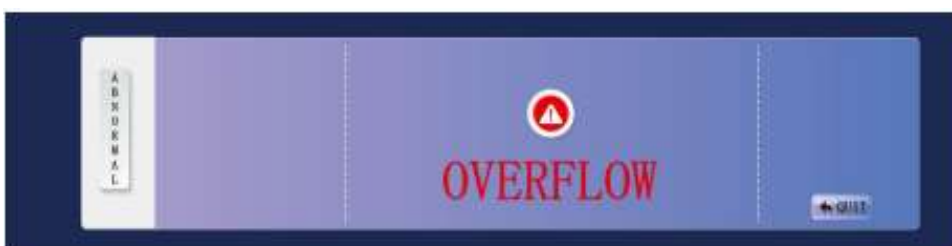


Figure-35

Self-Solving of Common Problems

Problems	Reason	Solution
Not running	Circuit breaker Open.	Reset the circuit breaker and disconnect other devices that share the same circuit as the glassware washer.
	Power off	Ensure the glassware washer is powered on, and the door is closed.
	The water pressure is too low.	Check that the water inlet device is well connected and turned on.
The drain pump does not stop.	Overflow	The glassware washer is equipped with overflow protection. When an overflow occurs, the circulation pump is turned

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		off and the drain pump is turned on.
Noise	Normal noise.	The water flow hits the inner Cavity.
	The utensils in the cleaning basket are not placed correctly or small objects have fallen from the cleaning basket.	Ensure everything inside the glassware washer is positioned correctly, as broken glassware can cause glass residue in the water lines.
	The hum of the circulating pump.	1) The glassware washer is not often used, ensure it is filled with water and drained every week, which is conducive to the wetting of the sealing strip. 2) Circulation pump idling.
Glassware is not Clean	Incorrect cleaning program selected.	Choose a stronger cleaning program for cleaning.
	Incorrect loading of wash racks.	Do not let the large utensils interfere with the rotation of the spray arm and place the large utensils into the small nozzles, you should choose the appropriate nozzles.
	Not enough cleaning agent.	Users should pump in the cleaning agent according to their appropriate amount.
Spots and films on Glassware	Water is too Hard.	Choose a cleaning program with a longer time and a suitable temperature.
	The inlet water temperature is low.	Turn on the glassware washer and let it run for 18-22 minutes and then enter the main washing stage.
	Too little acid neutralizer	Turn on the glassware washer and pour in 10ml of acidic cleaning agent.
White film on the inner surface.	Has hard water minerals	The glassware washer runs with no load and automatically cleans.

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Steam	Normal	A small amount of steam escapes through the door cracks during drying.
Water leakage	Glassware washer tilted	Ensure the bottle washer is level and prevents tipping.
	Pipeline leaks	-

10. Accessories

Standard Accessories

Accessories	Quantity
Water Inlet Pipeline	1
Drain Pipeline	1
Filter	1



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