AQUAGEM®

AUTOMATIC MULTIPORT VALVE

OPERATION MANUAL

CONTENTS

1. IMPORTANT SAFETY INSTRUCTION

This manual is intended primarily for all personnel involved in the assembly, installation, commissioning and maintenance operations of the equipment. The contents of the manual must be clearly readable and kept in a place where it can be consulted at all times. Ensure that the person responsible for the operation of the equipment has read and understood this manual.

1.1 Intended use

This product is an automatic multiport valve for swimming pool sand filter, its purpose is to achieve the automatic backwash function. In addition, this product supports the connection of external devices such as pool pumps, central control, power failure protection solenoid valves, etc. Compliance with the following information is essential for the intended use:

This product can only be operated within the scope of application specified in this manual, any other use or use beyond this scope is not the intended use and must first be authorized by the manufacturer/supplier.

1.2 Intended users

Ensure that this product is only operated by qualified professionals who are.

- A practicing qualified mechanical engineer.
- Qualified electrical engineers or electricians.
- Relevant persons who are not qualified but who have received the necessary training.
- Persons who have read this manual and understand the necessary work procedures.

1.3 Safety regulations

Users are required to comply with the following regulations:

- this manual.
- The safety warning signs on the product.
- The relevant national accident prevention regulations in force.
- Internal operating safety regulations for professionals.

1.4 Equipment safety

- Touching moving parts, such as rotating gears, can cause serious injury.
- Disassembling or altering the structure of the equipment without the manufacturer's permission is strictly prohibited.
- Use only the original manufacturer's parts. Use of other manufacturer's parts or unauthorized products may void the warranty or cause other problems.
- Ensure that all markings on the equipment are legible.
- Do not perform maintenance while the unit is in operation. Immediately after completing repairs, reconnect all protective equipment with new activation.
- When using this product, it is essential that the drain is protected from power failure by installing a solenoid valve to prevent the pool from emptying due to power failure.

1.5 Electrical safety

The user must follow the following regulations to prevent increased risk of electric shock due to a humid environment:

- Install the electrical protective earthing wire correctly to prevent electric shocks.
- Inspect the electrical system regularly to ensure that it is in proper working condition.
- Always disconnect the system from the power source before electrical system maintenance. During maintenance, add warning signs to ensure that the system is free of voltage.
- Electrical work should only be done by a professional.
- Do not immerse the product in water and make sure that no liquids or objects get inside the product's electrical controls.

1.6 Installation and maintenance

- Fix this product as much as possible when installing to prevent leakage from pipes due to vibration.
- Minimize the force on the connection between this product and the pipeline when installing to prevent leakage.
- In case of malfunction, turn off the pump immediately, and then close the valve before you can disconnect the power and repair the malfunctioning equipment.

2. TECHNICAL SPECIFICATION

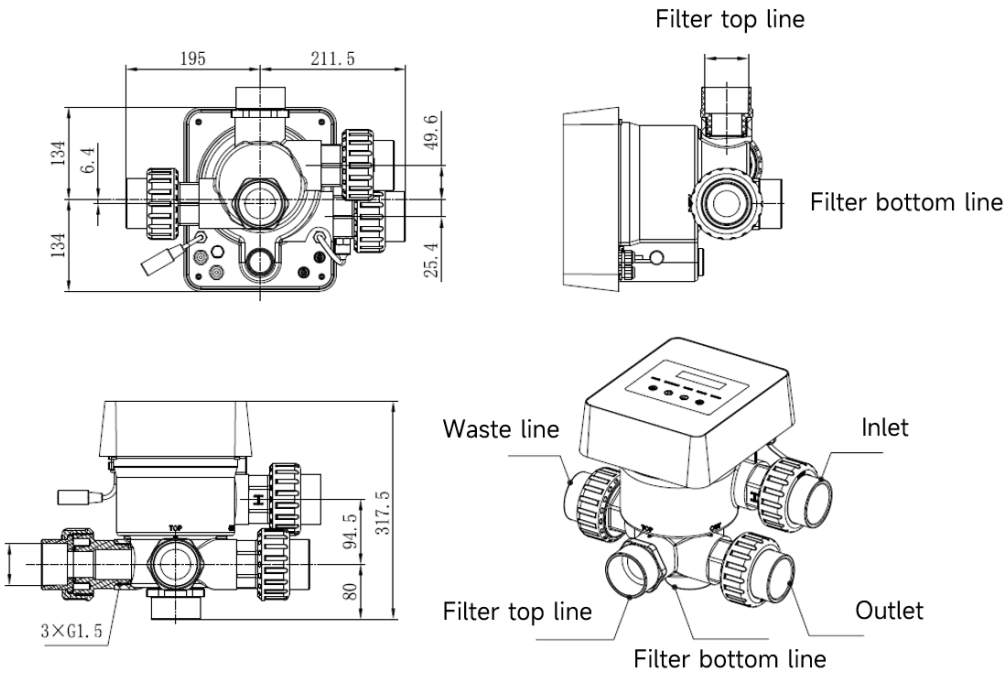
2.1 Specification

Filter type	Side-mounted
Filter size	450 - 700 mm
Backwash flow	24 m^3/h
IP rating	IP65

2.2 Application Condition

Working Condition	Working pressure	≤ 0.25MPa
	Water temperature	5°C ~ 50°C
	Salt concentration	≤ 0.5%
Working Environment	Ambient temperature	5°C ~ 50°C
	Humidity	≤95% (25°C)
	Power supply	AC100 ~ 240V/50 ~ 60Hz
	Power adaptor output	DC24V, 1.5A

3. OVERALL DIMENSION



4. SETTING & OPERATION

4.1 Parameter display

Display	Description	Remark
13:56	Current time	00:00 by default
2	Days remaining to activate the automatic backwash	This value will only be shown when the user activates the automatic backwash by timer in the parameter setting
2:00	Backwash procedure countdown	This time includes the backwash + rinse procedure

4.2 Buttons guide

Button	Name	Function	Description
	Mode	One touch backwash	Press to active the backwash + rinse procedure
		Mode selection	Hold to enter the mode selection
		Cancel	Hold to cancel when the mode is switching
	Up	Select the mode	After entering the mode selection, press to select different modes
		Change value	Press to change the value in the parameter setting
	Down	Select the mode	After entering the mode selection, press to select different modes
		Change value	Press to change the value in the parameter setting
	Confirm	Confirm the mode	Press to confirm the mode
		Confirm parameter setting	Press to confirm the parameter setting
		Unlock the screen	Hold to unlock the screen

4.3 Power on & off

4.3.1 Power on

Connect the power cable to the electricity. After powering on, the display area will light up. After that, the valve will turn to the default position “Filter”, and the corresponding indicator will light up.

4.3.2 Power off

Disconnect the power cable from the electricity, the screen will go out.

4.4 Screen Lock up & unlock

4.4.1 Lockup

The screen will automatically lock up if there’s no operation for more than 1 minute. The screen brightness will decrease and  will flash as a breathing light. Short press  to wake up the screen and check the status.

4.4.2 Unlock

When the screen locks up, hold  for 3 seconds to unlock the screen.

4.5 Mode

The automatic multiport valve has five modes: Filter, Backwash, Recirculate, Waste and Closed

Mode selection

I. Hold  for 3 seconds, the indicator of the current mode will flash, and the indicator of other modes will light up.

II. Press  or  to select the mode.

III. Press  to confirm, the indicator of the current mode will light up, and the indicator of the selected mode will flash, and the automatic multiport valve will turn to the corresponding position.

Note: after selecting the mode, if the user hasn't pressed  within 10 seconds, the automatic multiport valve will back to the previous mode without any change.

Cancel the selected mode

When the mode is switching, hold  to cancel and the automatic multiport valve will back to the previous mode without any change.

4.5.1 Filter mode:

In Filter mode, the corresponding indicator will light up. The current time and days remaining to activate the automatic backwash will be shown on the display alternatively.

When switching from other modes to the Filter mode, the indicator of other modes will light up, and the indicator of the Filter mode will flash. When the valve switches to the Filter position, the indicator of other modes will go out.

Note: when the automatic backwash by timer is off (see parameter setting), it won't show the days remaining to activate the automatic backwash.

4.5.2 Backwash mode

When switching from other modes to backwash mode, the indicator of other modes will light up, and the indicator of the backwash mode will flash. Below is the backwash procedure:

I. Backwash duration will be displayed on the screen. When the valve has turned to the backwash position, the indicator of the backwash mode will light up, the other indicator will go out, and the backwash countdown will start.

II. When the backwash ends, the countdown will stop, and the backwash indicator will flash. The valve will turn to the Rinse position and the backwash indicator will light up after that.

III. The countdown continues and will stop when the Rinse is finished. The indicator of the previous mode will flash, and the valve will turn back to the previous mode.

a. One-touch backwash

Under any mode (Filter, Recirculate, Waste, Closed), user can press  to activate the automatic backwash.

b. Switch to backwash mode

Under any mode (Filter, Recirculate, Waste, Closed), user can hold  to enter the mode selection, press  or  to select backwash mode, press  to proceed with the backwash duration setting

I. Press  or  to set the backwash duration (default 3min, 1 – 25 minutes adjustable)

II. Press  to save the setting and activate the backwash procedure.

Note: Backwash duration can ONLY be set through the above way. The set duration will be applied in one-touch backwash and automatic backwash by timer & pressure.

c. Automatic backwash by timer

Timer activation can be set in the parameter setting. Before using this function, please make sure the current time setting is correct.

e.g.: if the user wants to activate the automatic backwash every 10 days at 10:30am

I. go to parameter address 2, change the parameter to 10

II. go to parameter address 3, change the setting to 10:30

d. Automatic backwash by pressure

User can set the pressure value to activate the automatic backwash in the parameter setting. When the pressure sensor detects that the current pressure is higher than the set value for more than 1 minute, the valve will perform the backwash procedure.

4.5.3 Waste mode

When switching from other modes to Waste mode, the indicator of the other mode will light up, and the indicator of the Waste mode will flash. When the valve has reached the Waste position, the indicator of the Waste mode will light up, and the indicator of the other mode will go out. The screen will show the current time.

4.5.4 Recirculate mode

When switching from other modes to Recirculate mode, the indicator of the other mode will light up, and the indicator of the Recirculate mode will flash. When the valve has reached the Recirculate position, the indicator of the Recirculate mode will light up, and the indicator of the other mode will go out. The screen will show the current time.

4.5.5 Closed mode

When switching from other modes to Closed mode, the indicator of the other mode will light up, and the indicator of the Closed mode will flash. When the valve has reached the Closed position, the indicator of the Closed mode will light up, and the indicator of the other mode will go out. The screen will show the current time.

4.6 Parameter Setting and Query

4.6.1 Parameter setting

Under any mode (when the valve is without turning), hold  and  for 3 second to enter the parameter setting.

In the parameter setting interface, the left-hand side is the parameter values and the right-hand side is the parameter address.

I. After entering the parameter address, the parameter value (all of the digits) will flash, press  or  to switch to different parameter addresses.

II. Press  if the specific parameter value needs to be adjusted, and the editable digit in the parameter value will start to flash.

III. Press  to change among different digits, press up or down to adjust the value and press  to finish.

Parameter Address	Description	Default	Setting Range	Unit
0	Current time	/	00:00 – 23:59	Hour & minute
1	Backwash speed of the inverter pool pump	100	60 - 100	%
2	Automatic backwash by timer (Every X days)	0	0 - 30	day
3	Automatic backwash timer start time	12:30	00:00 – 23:59	Hour & minute

4	Automatic backwash by pressure	0.200 200 29.0 2.00 /	0 / 0.05-0.25 0 / 50-250 0 / 7.3-36.3 0 / 0.50-2.50 0: disabled	MPa KPa Psi Bar /
5	Rinse proportion in the backwash procedure	30	10 - 50	%
6	Pool pump type	0	0: Inverter Pool Pump 1: Single Speed Pump	/
7	Pressure unit	0	0: MPa 1: KPa 2: Psi 3: Bar	/
8	Pump speed when the valve position is switching	30	0: Pump stops 30: Pump speed at 30%	%
9	485-Modbus control	0	0: Disable 485-Modbus Control 1: Enable 485-Modbus Control	/
A	485-Modbus address	10	1-247	/

Note: parameter address 1 & 8 will only be valid when the pool pump type is Inverter Pool Pump.

4.6.2 Parameter Query

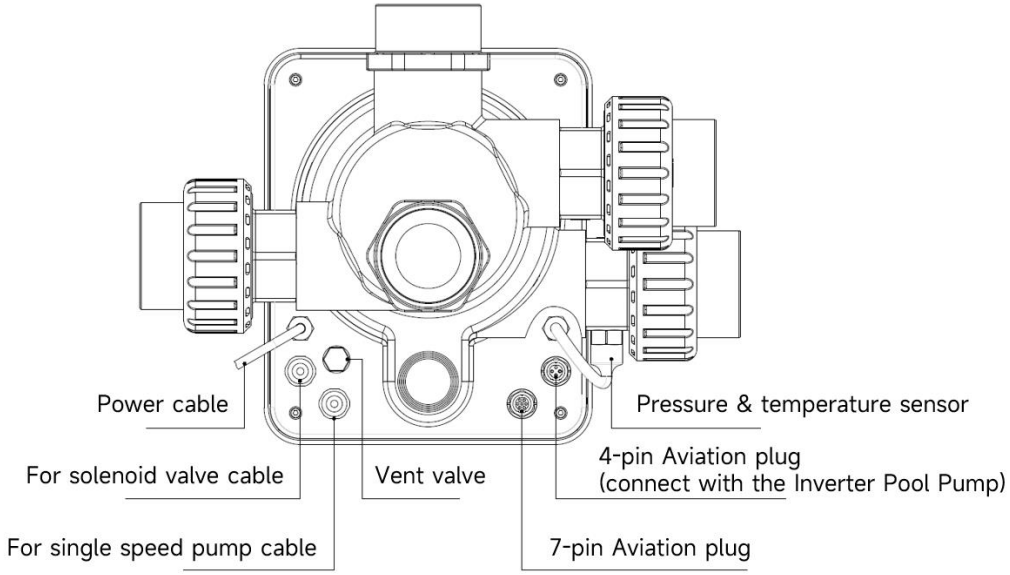
Under any mode (the valve is without turning), user can hold  and  to check the current parameter.

In the parameter query interface, the left-hand side is the parameter values and the right-hand side is the parameter address.

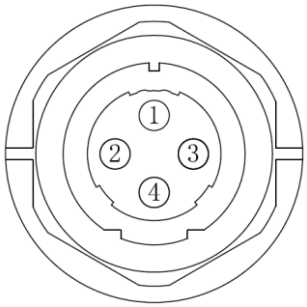
Parameter Address	Parameter	Unit
0	Current pressure value	MPa / Kpa / Psi / Bar
1	Current temperature	°C

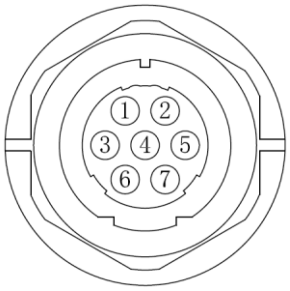
5. APPLICATION

5.1 Ports & connections



5.2 Communication port

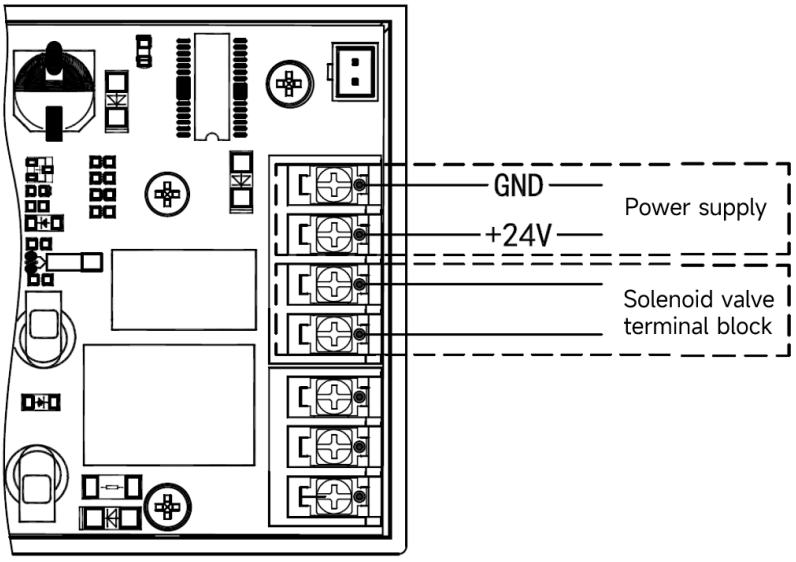
4-pin Aviation plug (connect with the Inverter Pool Pump)			
	Name	Color	Description
	PIN 1	RED	RS485 A
	PIN 2	WHITE	RS485 B
	PIN 3	BLACK	RS485 Ground

7-pin aviation plug			
	Name	Color	Description
	PIN 1	RED	/
	PIN 2	BLACK	/
	PIN 3	WHITE	/
	PIN 4	GREY	/
	PIN 5	YELLOW	RS485 Ground
	PIN 6	GREEN	RS485 A
	PIN 7	BROWN	RS485 B

5.2.1 Solenoid valve terminal block

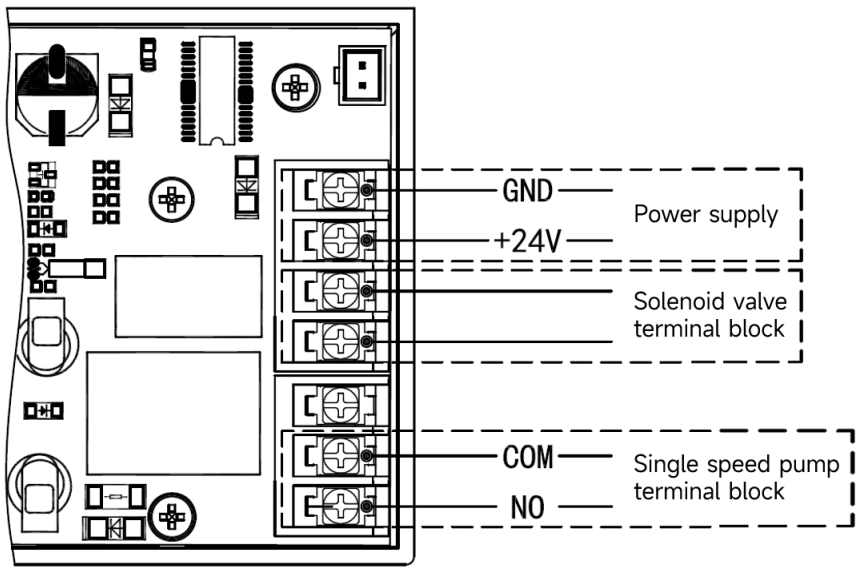
The solenoid valve terminal block is a dry contact. The rated input voltage is 24 - 220V, max input current is 2A, controlling the positive terminal of an external normally closed DC solenoid valve.

By connecting with a solenoid valve at the Waste line, it can prevent the pool from emptying if there's a power failure during the backwash or waste procedure.



5.2.2 Single speed pump terminal block

The single speed pump terminal block is a dry contact. The rated input voltage AC 220V, max input current is 8A, controlling the single speed pump's ON/OFF. (If the current is larger than 8A, an extra relay is needed)



5.3 Pool pump control

5.31 Inverter pool pump (contact your local dealer for the pool pump type)

Use the Inverter pool pump control cable to connect between the 4-pin aviation plug on the automatic multiport valve and the external control port on the Inverter pool pump controller.

Operation:

Switch on the Inverter pool pump, wait till the self-priming is finished

Switch on the automatic multiport valve, the valve will turn to the Filter position at each startup.

Press  to activate the backwash procedure.

Note:

When the valve is turning to other positions (except Closed position), the Inverter pool pump will run at the lowest speed by default (30%), user can adjust the speed in the parameter setting.

When the valve is turning to the Closed position, the Inverter pool pump will stop.

5.3.2 Single-speed pump

Connect the single-speed pump to the single-speed pump terminal block

Operation:

Switch on the Inverter pool pump, wait till the self-priming is finished

Switch on the automatic multiport valve, the valve will turn to the Filter position at each startup.

Press  to activate the backwash procedure.

Note:

The default pool pump type is the Inverter pool pump. If connecting with the single-speed pump, user needs to adjust the value in the parameter address 6 to “1” (single-speed pump) and restart the automatic multiport valve.

When the valve is turning to other positions, the single-speed pump will stop.

When the automatic multiport valve is switched off, the single-speed pump will stop.

5.4 Modbus control

The automatic multiport valve supports being controlled by the external device via 485-Modbus.

The panel control will be invalid if using the 485-Modbus control.

Detail can be referred to in the Modbus User Manual.

Below are the two ways to activate the 485-Modbus control:

I. Adjust the value in “Parameter Address 9” to “1”, and enable the 485-Modbus control.

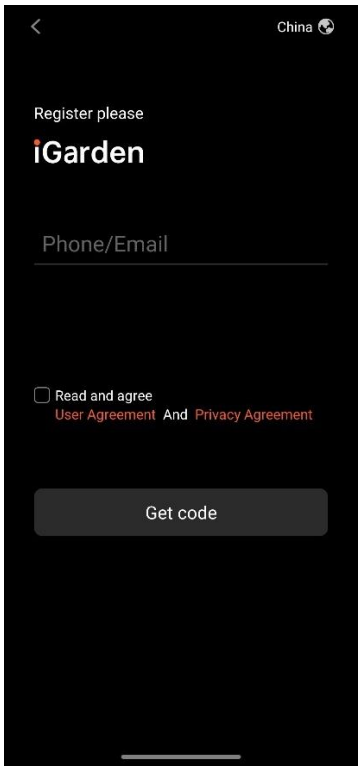
II. Adjust the value of the address “2000H” to “1”, and enable the 485-Modbus control.

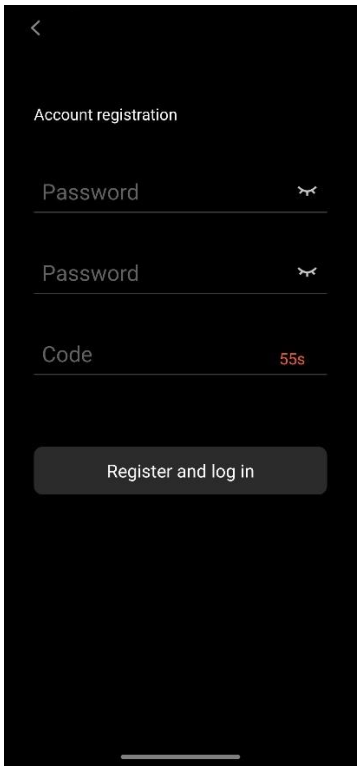
6. WIFI Operation

6.1 Download the “iGarden” App

6.2 Account registration

Use phone number or email address to register

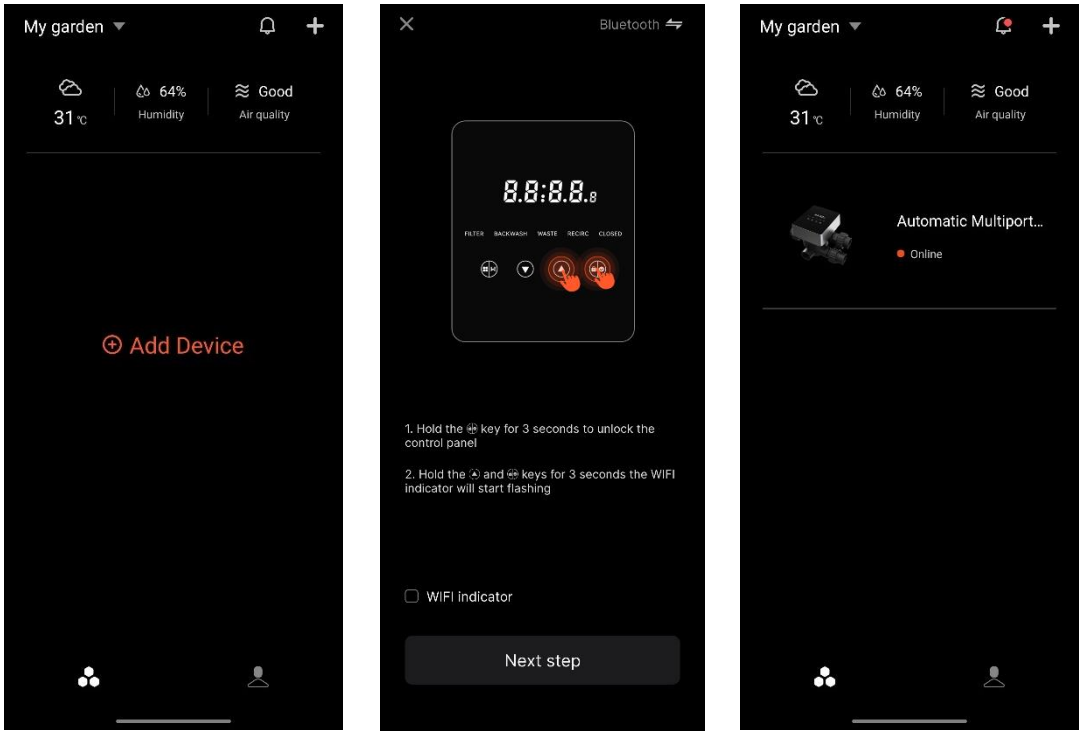




6.3 App pairing

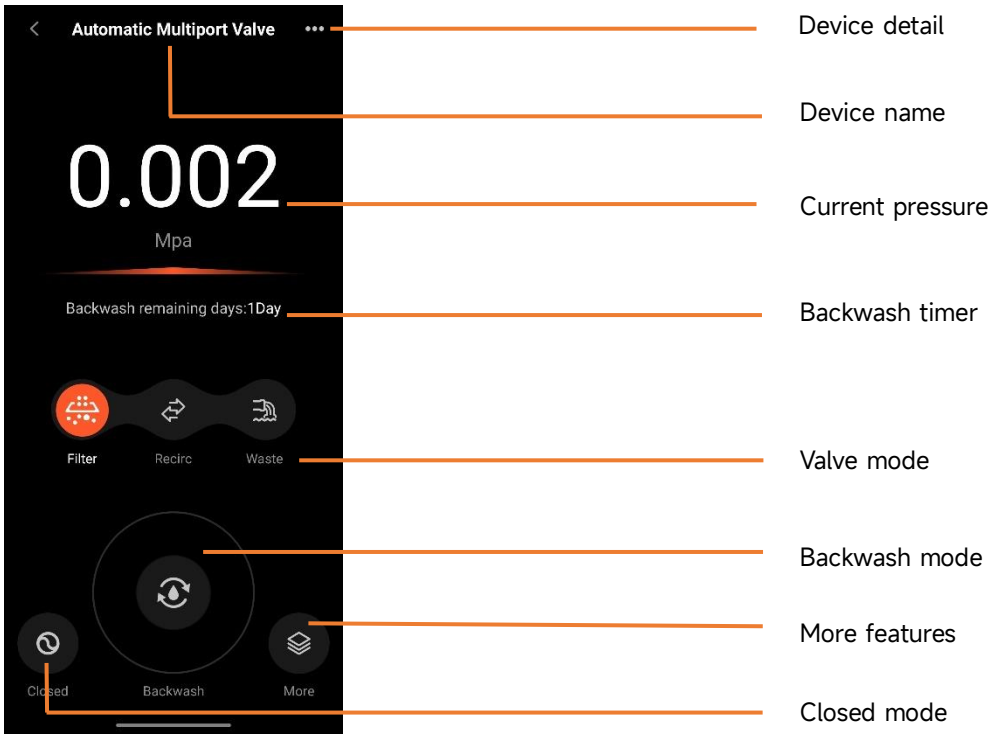
a. With Bluetooth / WIFI

Click "Add Device", and then follow the instructions below to complete the pairing. After the pairing is completed, the home page will display the newly added device.



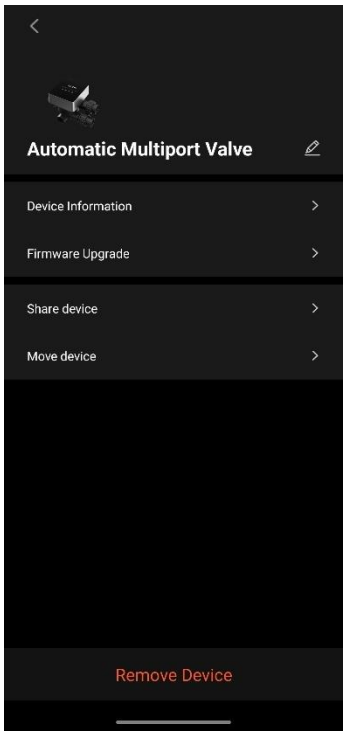
6.4 Operation

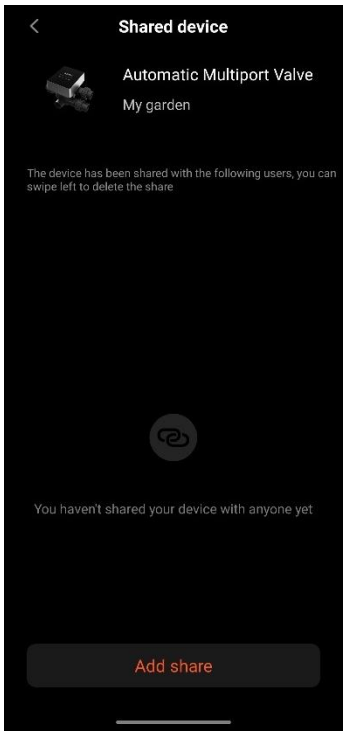
App control interface



6.5 Sharing devices

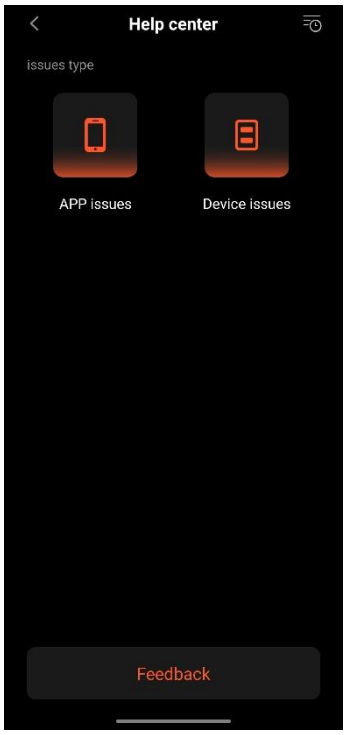
In the device detail page, user can share the device with other members who have registered the iGarden app.

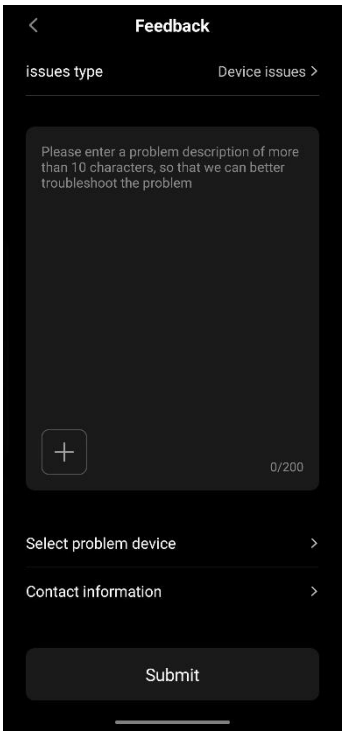




6.6 Help center & feedback

If you have any problem while using the app, you can check in the Help Center to find out if there is a corresponding answer. You are also welcome to send feedback to us.





7. WARNING & FAILURE

7.1 Warning

Warning Code	Description	Reason
A201	Abnormal power supply voltage	A. Power problem B. PCB board damage（after power replacement）
A202		
A204	Pressure sensor is not connected, automatic backwash by pressure function failure	A. Pressure sensor is not connected B. Pressure sensor cable is not connected
A206	EEPROM Error	A. Circuit interference* B. EEPROM chip damage
A207		
A208	Uncertainty of time, RTC chip re-initialization	A. The power failure exceeds the allowable RTC power failure time B. RTC chip failure
A209	RTC Error	A. Circuit interference* B. RTC chip damage
A210		
A211		
A212	Timer is not set，timer trigger function is invalid	A. The current time is not set B. RTC chip damaged
A221	Temperature sensor is not connected	A. Temperature sensor is not connected B. Temperature sensor cable is not connected

Note:

For circuit interference, it will back the normal status after the interference is gone.

7.2 Failure

7.2.1 Failure of the valve part

Description	Reason	Solution
1. Filter doesn't backwash automatically	A. The pressure sensor is damaged B. Incorrect timer setting C. Driver board damaged	A. Replace the pressure sensor B. Reset the timer for automatic backwash C. Replace the driver board
2. The water cannot be filtered in the filter	A. Central tube leakage B. The valve body leakage	A. Ensure the central pipe and O-ring is not broken B. Check or change the valve body
3. Water pressure loss	A. Iron accumulation in the line leading to the filter B. Iron accumulation in the filter	A. Clean the pipe line B. Clean the valve, add cleaning agent in the filter material, increase the automatic backwash frequency.
4. The filter media came out from the waste line	A. Air in the system B. The backwash flow is too high	A. Ensure proper exhaust control in the system B. Reduce the backwash flow
5. The Valve keeps turning	A. Position signal line disconnected B. Controller failure C. Gear stuck	A. Reconnect the signal line B. Change the controller C. Remove the foreign body
6. Water keeps coming out from the waste line	A. leakage inside the valve B. Power failure while backwash	A. Check or change the valve body B. Close the waste line and open it after the power is restored

7.2.2 Controller failure

Error Code	Description	Reason	Solution
E031 E032	Position detection error	A. Connection failure between positioning board and driver board. B. Positioning board damage C. Driver board damage	A. Replace the connection cable of positioning board and driver board. B. Replace the positioning board C. Replace the driver board
E034 E035 E036 E037	Mode switching timeout because of the valve is not rotated	A. Connection failure between motor and driver board B. Mechanical transmission damage C. Driver board damage D. Motor damage	A. Replace the connection cable of motor and driver board B. Check mechanical transmission C. Replace the driver board D. Replace the motor
E038	Pump controller communication failure	A. The Inverter pool pump communication failure B. Pump controller damaged C. Driver board damaged	A. Replace the connection cable between the pump and driver board. B. Replace pump controller C. Replace the driver board
E039	Pump controller failure	Pump controller damaged	Replace the pump controller
E040 E041 E042 E043	Power supply failure	A. Power adapter failure B. Driver board damaged C. Mechanical transmission part damaged	A. Check or replace the power adapter B. Replace the driver board C. Check the Mechanical transmission part
E050 E051	Backwash triggered by pressure times exceeding the limit*	A. The set pressure value is too low B. Pressure Transmitters damage	A. Increase the set pressure value in the parameter setting B. Replace Pressure Transmitters
E200	Display board communication error*	Connection failure between the display and driver board	Replace the connection cable between the display and the driver board

Note

If the automatic backwash by pressure is continuously activated more than 3 times, the error code E051 will be shown on the display. If the automatic backwash by pressure is continuously activated more than 3 times in 2 hours, the error code E050 will be shown on the display.

8. WARRANTY & EXCLUSIONS

Should a defect become evident during the term of warranty, at its option, the manufacturer will repair or replace such item or part at its own cost and expense. Customers need to follow the warranty claim procedure in order to obtain the benefit on this warranty.

The guarantee will be void in cases of improper installation, improper operation, inappropriate use, tampering or using non-original spare parts.

9. DISPOSAL

When disposing of the product, please sort the waste products as electrical or electronic product waste or hand it over to the local waste collection system.

The separate collection and recycling of waste equipment at the time of disposal will help ensure that it is recycled in a manner that protects human health and the environment. Contact your local authority for information on where you can drop off your automatic multiport valve for recycling.