UIP WIFI E

Smart Peristaltic Pump

User Manual

Version：A1 2023-09-22

Kamoer fluid tech(Shanghai)Co., Ltd

www.kamoer.com

CATALOG

Quality guarantee

1. Warranty conditions

The free service during the warranty period is only valid under normal use and maintenance according to the user manual. And any man-made faults or damages are not covered by the warranty. Please keep the purchase invoice and user manual properly, so that you can receive satisfactory after-sales service in a timely manner.

2. Warranty coverage

Within **one year** from the date of purchase, if any damage occurs due to manufacturing processes or components, our company will provide free warranty services.

The free maintenance service provided during the warranty period includes free repair, free supply and replacement of faulty parts. Products that cannot be repaired will be replaced with products of the same model. If the model has been discontinued, a similar model will be provided. Free services do not include transportation costs incurred for product repairs.

3. Non-warranty coverage

The following factors are not covered by the free warranty, and customers need to pay for maintenance.

1) Product appearance (please confirm at the time of purchase);
2) Improper use, maintenance or storage (please follow the user manual for correct use, maintenance and storage);
3) Access inappropriate power supply;
4) Various types (such as insects, etc.) enter the machine and cause the damage of components caused by short circuit board;
5) Losses caused by accidents;
6) Use of inappropriate parts (non-company parts are not applicable);
7) Negligent handling, modification, or repair by personnel not authorized by our company (please do not disassemble or repair without authorization);
8) Failure or damage caused by use outside of the applicable scope;
9) Damage caused by force majeure, etc;
10) Consumable and vulnerable parts (such as Silicone tube, Pump pipe, etc.);
11) The warranty period has expired.

Important Notes

This product is designed with full consideration for user safety. Please read the user manual carefully before use and use it correctly according to the requirements of this manual. Any incorrect operation may create danger.

1. Safety

This product is an active product, and users must follow the general safety rules to avoid harm.

- Do not turn on the machine if obvious mechanical damage is found.
- Do not use in a humid environment; otherwise, the product may be damaged by short circuit.
- Temperature changes or component wear may increase the titration error.

2. Defects and anomalies

When protective facilities may be damaged, stop using the product immediately and ensure that there is no unconscious operation.Protective facilities may be damaged if the product:

- Visible damage
- Unable to perform expected work
- Long storage time under unsuitable conditions

1 Product Introduction

1.1 About

UIP series peristaltic pump is controlled by stepper motor, which is commonly used in low flow and high precision situations. It is equipped with 4.3 inch color touch screen, powerful and easy to operate. The product appearance diagram is shown in Figure 1.1.

Figure 1.1 Appearance diagram

Figure 1.2 Interface view

Interface definition:

1. **Fan:** Cooling vent, used to eliminate heat during machine operation;
2. **Integrated switch:** Switch and power cord interface;

3、4. Expansion interface: Used to connect with expansion devices, such as foot switches;

Extension interface definition:

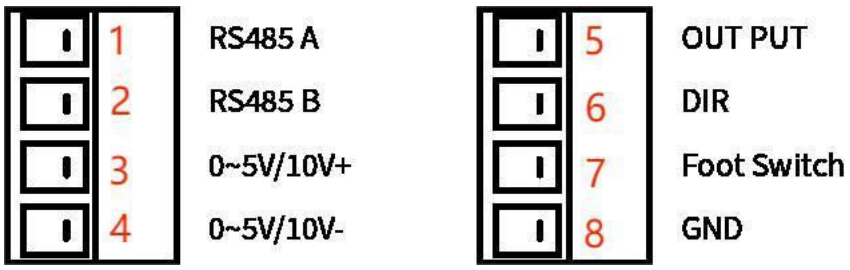


Figure 1.3 Extension interface

No.	Description	Parameters definition
1	RS485 A	RS485 data +
2	RS485 B	RS485 data -
3	0-5V/10V+	Voltage analog 0-5V/10V +
4	0-5V/10V-	Voltage analog 0-5V/10V -
5	OUT PUT	24V 5 mA digital output
6	DIR	Digital directional control, supporting dry contact (NPN) signal
7	Foot Switch	Foot switch, digital input, supporting dry contact (NPN) signal, active (PNP) signal
8	GND	Digital ground

1.2 Unpacking

- Before opening the packaging box, check whether the outer packaging has been damaged during transportation.
- After opening the packing case, refer to the packing list to confirm that all parts are intact and that there is no visible damage.
- If any defects are found during unpacking, contact the manufacturer immediately.

2 Running operation

Introduction to the three title bars of the main interface after startup:

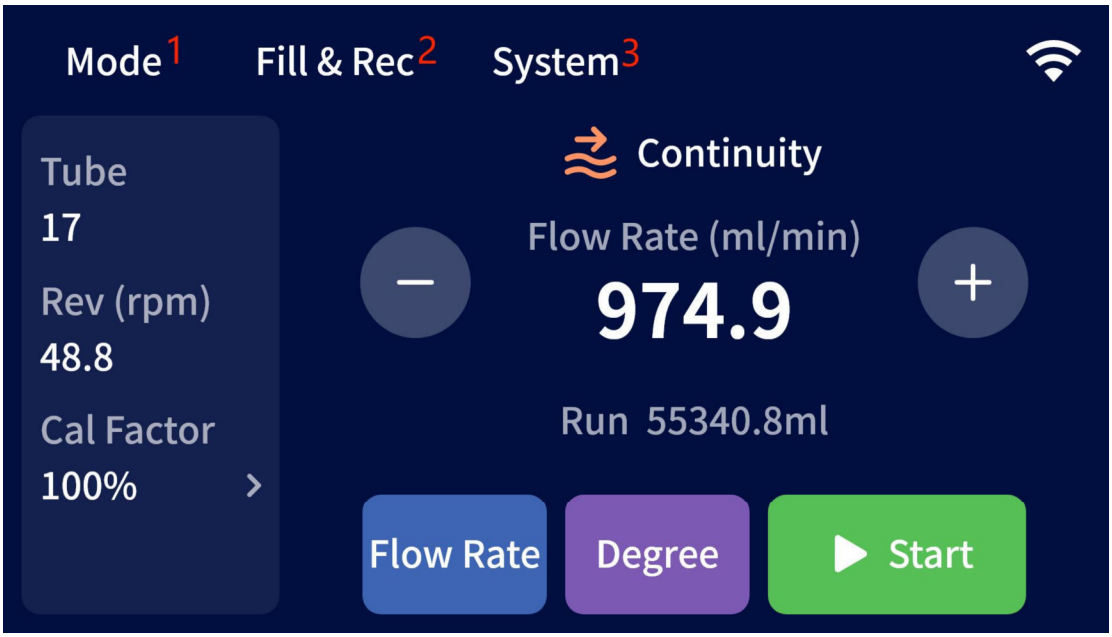


Figure 2-1 Main screen

1. **Mode：** Click to switch working modes, including Continuity mode, Ration mode, and Remote mode;
2. **Fill&Rec：** You can choose to fill or recycle for fast filling or recycling;
3. **System：** System Settings include settings for equipment information, running direction, pumps and tubes, pedal, liquid level detection, suck back, power-on state, motor drive, unit of display, screen touch correction, system self-check, network, password, language, factory settings reset, etc.;

2.1 Continuity mode

Continuity mode is applied in situations where there is no fixed amount of addition. And the operation and stop of the pump are triggered by the user through the touch screen or foot switch. Select "Mode" in the title bar to enter the mode selection interface, click "Continuity" to enter the Continuity mode work interface, click "Start", and the pump will continue to run continuously until the Stop button is clicked;

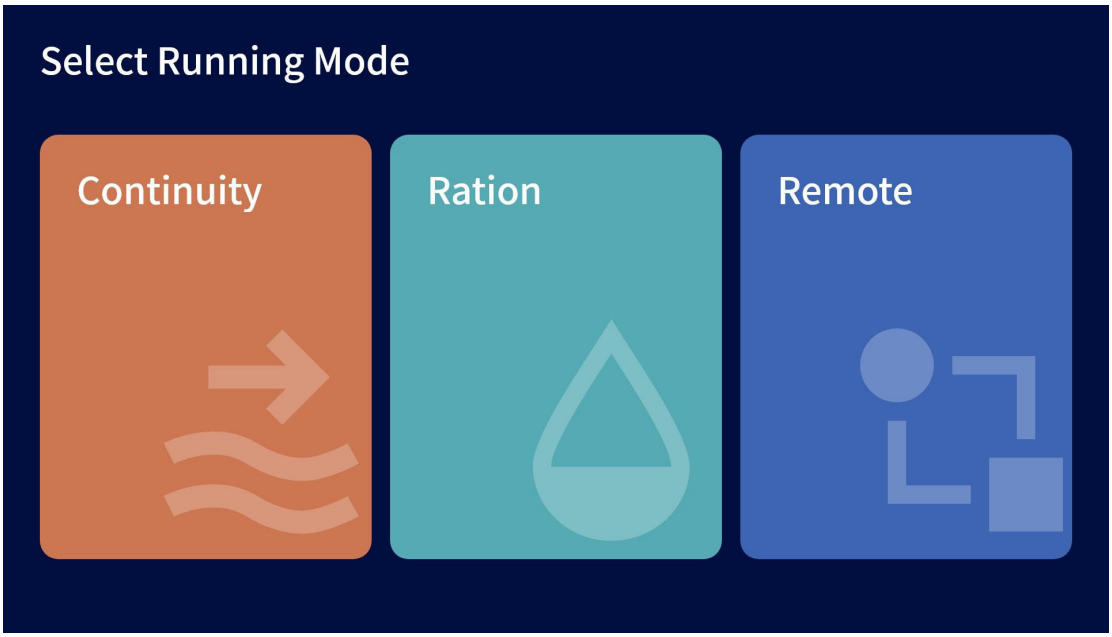


Figure 2-1-1 Mode selection interface

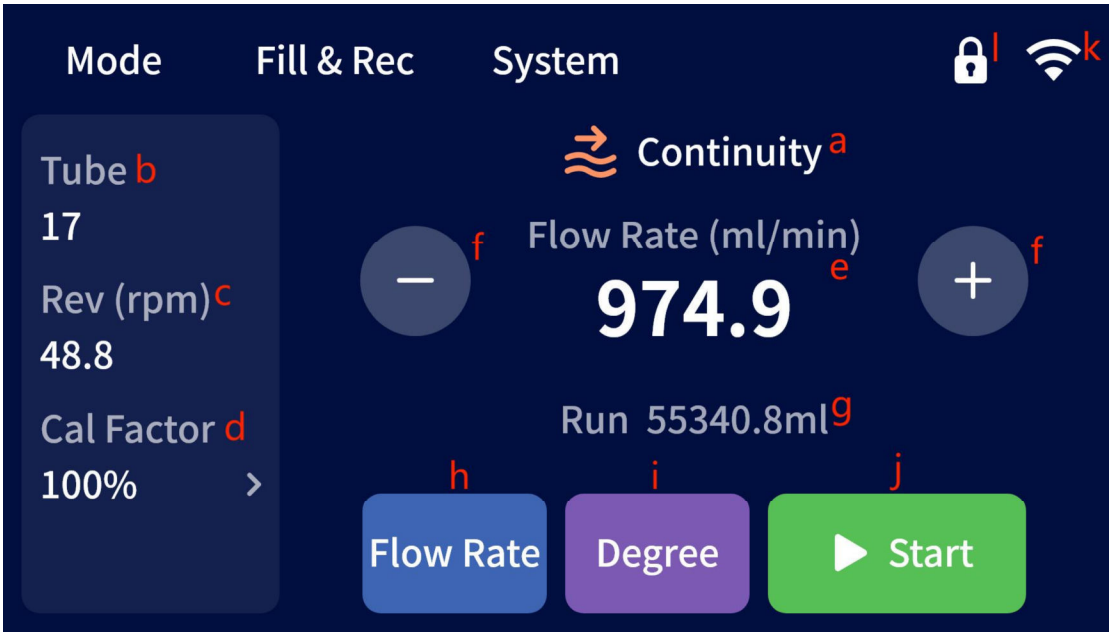


Figure 2-1-2 Continuity mode Interface

a、Continuity: Continuity mode title;

b、Tube: Continuity mode tube type setting. Tube type record contains the corresponding flow velocity information, when using different tube type, flow rate will be different under the same revs;

c、Rev(rpm): The current set rev in Continuity mode, which cannot be directly set. The rev is calculated based on the current set flow rate;

d、Cal Factor: Settable. If there is any slight discomfort in the flow rate during use after calibration, the flow rate can be adjusted by adjusting the flow

rate coefficient. For example, if there is more liquid output than expected, then lower the flow coefficient. If the liquid output is less than expected, then adjust the flow coefficient higher. After recalibration, the calibration coefficient will be restored to 100.0%;

e、Flow Rate: Displays the current set flow rate. It can be modified through the screen button **h** or the acceleration/deceleration button **f**. The flow rate can be adjusted during pump operation;

f、Acceleration/deceleration button: Click to increase or decrease the flow rate. And the amount of increase or decrease each time is the change amount set in **i**. The button can be operated when the motor is running and stopping;

g、Running volume (ml): The volume transported in Continuity mode. When the pump is running, the running volume continues to increase. When Continuity mode restarts, the running volume increases from 0. **Attention: Only when the pump tube is filled with liquid (no air), the volume display of the pump has been accurate;**

h、Flow Rate button: Click to enter the flow rate setting interface, you can enter the flow rate value through the on-screen keyboard;

i、Degree: Degree of Speed Change. Used to modify the amount of change generated by clicking the Acceleration/deceleration button, including 0.1, 1, 5, 10 several granularity;

j、Start/Stop button: Continuity mode Start/Stop button;

k、Wi-Fi status display: Display the Wi Fi status here. For specific Wi Fi status, refer to **3.3 Distribution Network Chapter**;

l、Lock status display: If the password lock function is enabled, the lock screen status is displayed here, otherwise there is no display here;

2.2 Ration mode

The Ration mode is suitable for filling occasions. The pump runs for a fixed amount and then automatically stops. Users can manually trigger the start or set the number of cycles to allow the pump to run in cycles. Select "Mode" in the title bar to enter the mode selection interface, and click "Ration" to enter the Ration mode work interface; In the Ration mode, there are two cycle modes: Semi-Auto cycle mode and Auto cycle mode.

1、Semi-Auto cycle mode: After setting the volume, click the Start button to start running, the volume (flow) displayed on the screen starts to count backwards.

When the count value changes from the set value to 0, the pump stops working. Click Start again, and the pump will run in the above way again;

2、Auto cycle mode: Set the cycle times, volume, pause time, and then click to start running, then the volume (flow) displayed on the screen starts to count. When the count value changes from the set value to 0, the pump stops working. At this time, the countdown to the pause time starts in the middle of the screen, and when the countdown is 0, the pump automatically starts to work again. Every time the pump runs, the number of **h** plus 1. After the pump has completed the set number of runs, the pump stops running. Wait until the user clicks Start again to start the next cycle;

Note: Before the pump starts running, the pump pipe must first be filled with liquid and drained of air to ensure the accuracy of the pump;

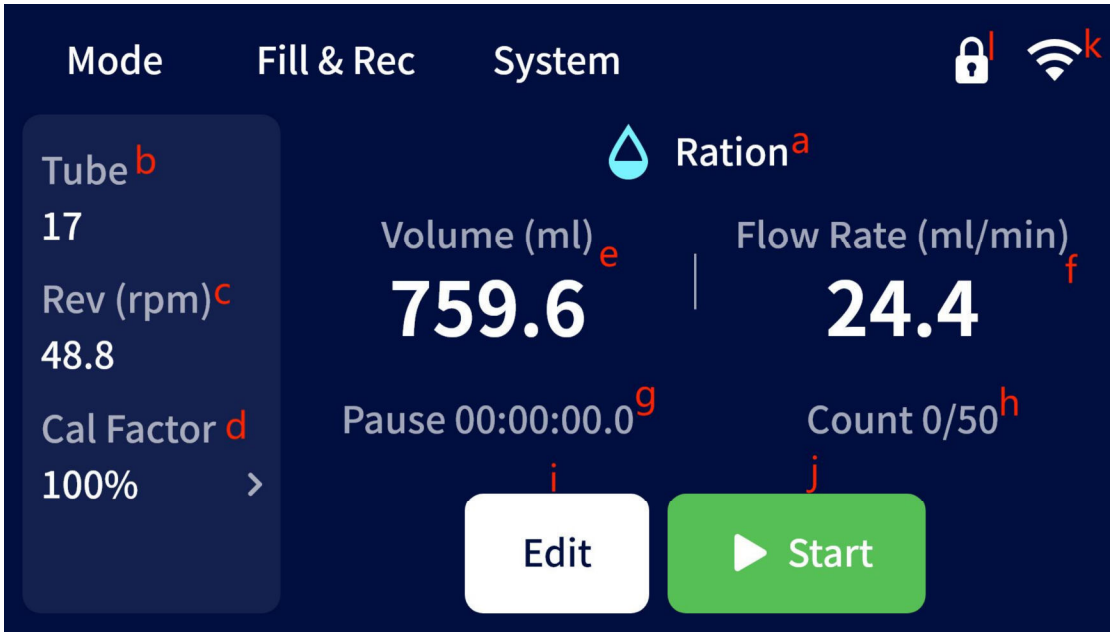


Figure 2-2-1 Ration mode

a、Ration: Ration mode title;

b、Tube: Ration mode of tube type setting. Tube type record contains the corresponding flow velocity information, when using different tube type, flow rate will be different under the same revs;

c、Rev(rpm): The current set rev in Ration mode, which cannot be directly set. The rev is calculated based on the current set flow rate;

d、Cal Factor: Settable. If there is any slight discomfort in the flow rate during use after calibration, the flow rate can be adjusted by adjusting the flow rate coefficient. For example, if there is more liquid output than expected, then lower the flow coefficient. If the liquid output is less than expected, then adjust the flow

coefficient higher. After recalibration, the calibration coefficient will be restored to 100.0%;

e、Volume (ml): Display the volume of the work, with the initial value being the set volume. After the Ration mode starts working, this value decreases as the pump works, indicating the progress of the work. **Note that the volume is only accurate when the pump pipe is filled with liquid (without air);**

f、Flow Rate: Ration mode flow rate setting;

g、Pause: The interval time between each filling in the Auto cycle mode of Ration mode;

h、Count: Including two types: Semi-Auto and Auto. When working in Semi-Auto cycle mode, this number represents the number of working times. When working in Auto cycle mode, this number represents the number of working times/target working times;

i、Edit: Click to enter the Ration mode setting interface. For details, refer to **2.2.1 Edit Ration Mode**;

j、Start/Stop button: Ration mode Start/Stop button. In Semi-Auto cycle mode, when the set working volume is completed, the Ration mode automatically stops. In Auto cycle mode, when the number of cycles is completed, the Ration mode automatically stops;

k、Wi-Fi status display: Display the Wi Fi status here. For details, refer to **3.3 Distribution Network**;

l、Lock status display: If the password lock function is enabled, the lock screen status is displayed here, otherwise there is no display here;

2.2.1 Edit Ration Mode

Users can set the operating parameters of the Ration mode. Click the "Edit" button in the Ration mode to enter the Edit Ration Mode interface;

Figure 2-2-1-1 Edit Ration

a、Volume setting: Click to enter the volume setting interface, where you can enter the working volume through the on-screen keyboard. Or click "Unknown?" to copy the volume. For details, refer to **2.2.2 Copy Volume**;

b、Flow rate setting: Click to set the flow rate for the Ration mode;

c、Pause time setting: Click to set the Ration mode pause time, in seconds;

d、Count setting: Click to set the number of runs of the Auto cycle mode in the Ration mode;

e、Cycle Mode setting: Click to select Auto mode or Semi-Auto mode;

f、Clear times of run: Click to clear all the runs in Auto cycle mode and Semi-Auto cycle mode;

2.2.2 Copy Volume in Ration mode

Copy Volume is used when the working volume of the Ration mode is not known. The principle is to fill the container to be filled, and the device will record how much time (volume) it takes. This time is then used to control the pump operation for filling. Click "Edit" in Ration mode to enter the setting interface, click Volume, and then click "Unknown?" to enter the Copy Volume interface;

Note: Before starting the copy, please perform a fill operation to empty the air in the pump pipe.

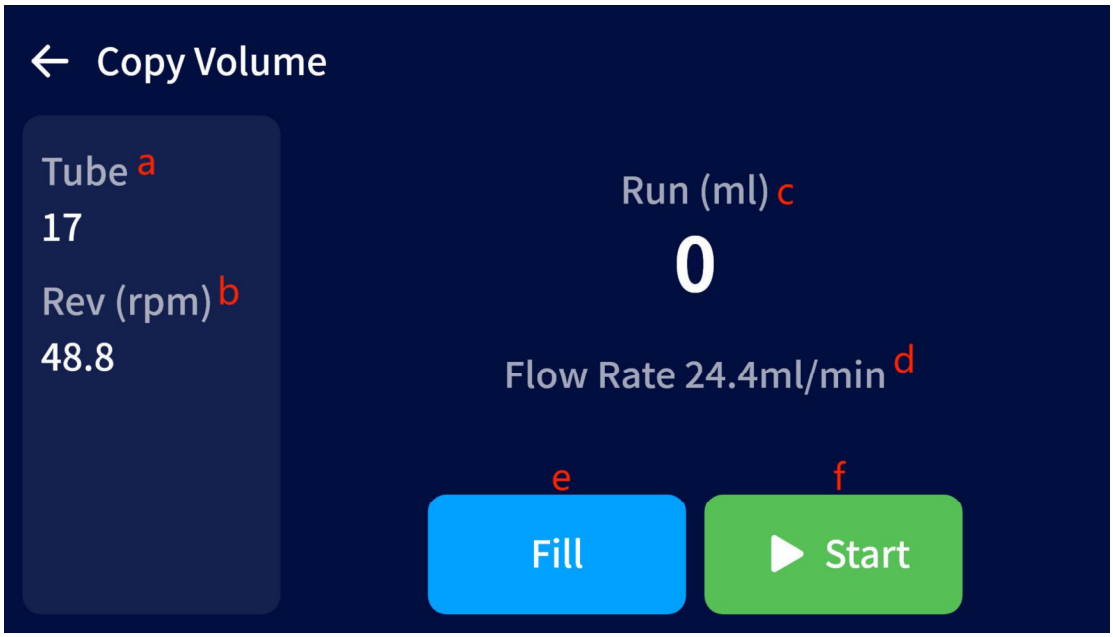


Figure 2-2-2-1 Copy Volume in Ration mode

a、Tube: The tube type in the Ration mode, set in the system settings;

b、Rev(rpm): The rev of the Ration mode is converted based on the flow rate setting of the Ration mode;

c、Running volume (ml): Real-time running volume after the start of the copy;

d、Flow Rate: Flow rate in Ration mode, set in the Ration mode operation interface or the Ration Mode interfac;

e、Fill: Before starting the copy, it is necessary to exhaust the air from the pump pipe. Click the Fill button to start the motor running, and then click the button again to stop the pump running;

f、Start/Stop button: Click to start copying, click again to stop copying;

2.3 Remote mode

In Remote mode, the user can control the operating state of the pump without touching the screen. Such as RS485, 0~5V/10V analog capacity, suitable for supporting user systems. Select "Switch Mode" in the title bar to enter the mode selection screen, and click "Remote" to enter the Remote Control interface.

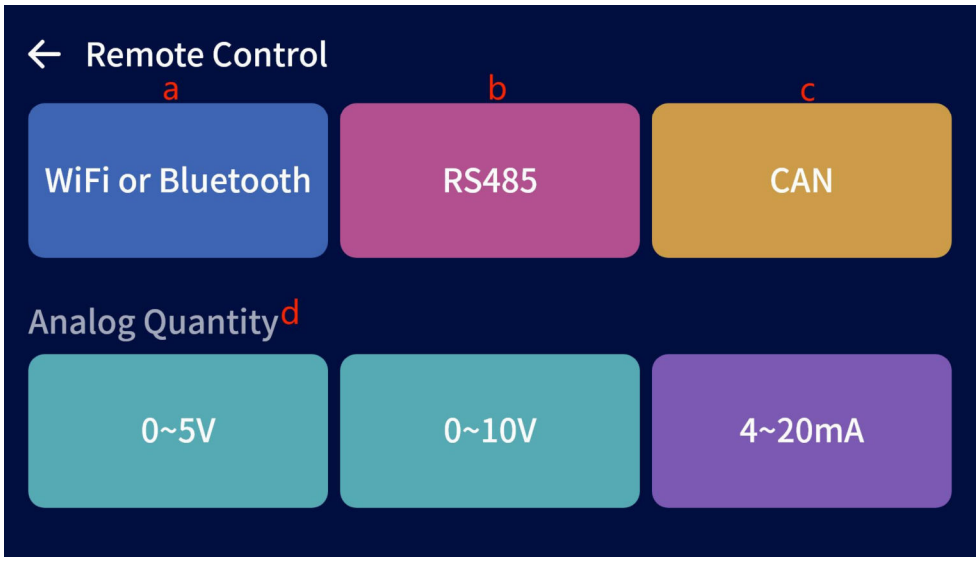


Figure 2-3-1 Remote Control

a、WIFI or Bluetooth remote control: Refer to **3. APP operation Chapter**, which can be customized according to needs, temporarily closed;

b、RS485 remote control: UIP includes 485 remote control function. For the specific operation method, please refer to UIP 485 remote control protocol;

c、CAN remote control: UIP includes CAN remote control function. For the specific operation method, please refer to UIP CAN remote control protocol, which can be customized according to needs, temporarily closed;

d、Analog quantity control: The machine includes 0~5V analog quantity control, 0~10V analog quantity control. The 4~20mA analog quantity can be customized according to needs, temporarily closed. For details, refer to **2.3.1 Analog Quantity Control;**

2.3.1 Analog Quantity Control

In the case of using analog quantity to control the device, analog quantity control can be used to control the motor speed. The value of the analog quantity determines the running speed of the motor. There are two types of analog quantities: current or voltage. The current mode can be customized according to the needs, temporarily closed. Connect the analog communication line according to the analog interface definition (as shown below), select the corresponding analog quantity in the remote control interface, and click to enter the corresponding analog quantity control interface;

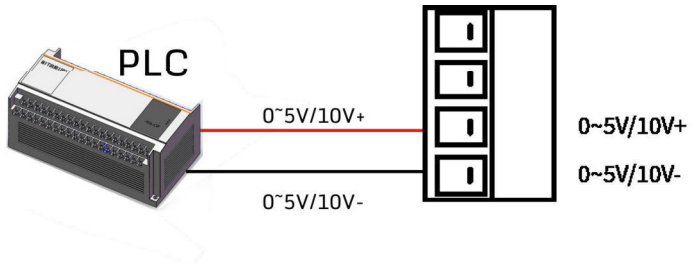


Figure 2-3-1-1 Analog quantity connection diagram

The following is the 0-5V control interface: (Taking 0-5V control as an example, the 0-10V control process is the same as the 0-5V process, and the operation process for 4-20mA control is also the same)

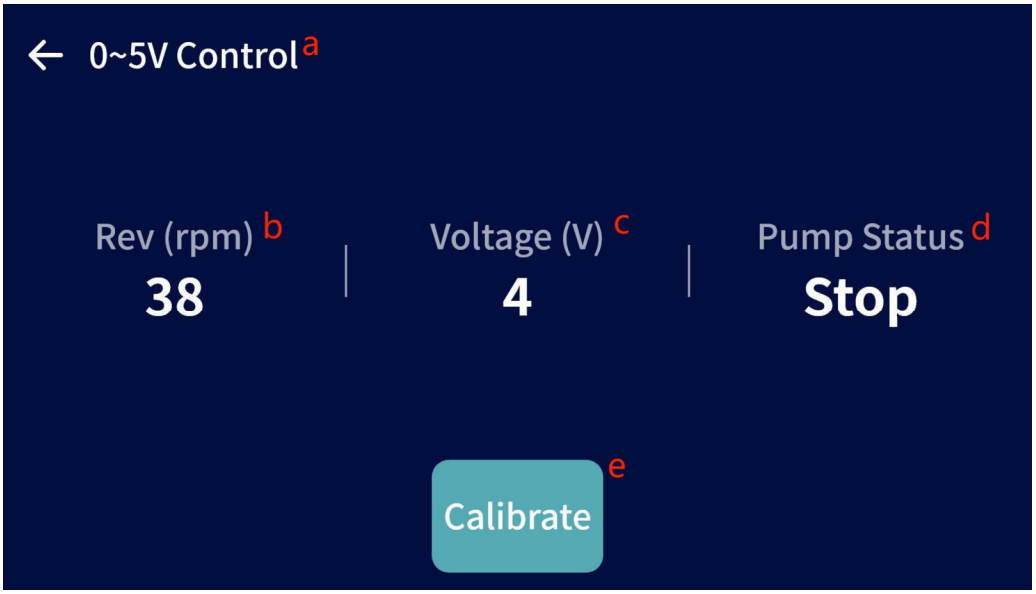


Figure 2-3-1-2 0 to 5V control

a、0-5V Control: Control method title;

b、Rev(rpm): The current motor operating speed;

c、Voltage(V): Display the real-time voltage value of the analog input;

d、Pump Status: Pump working state, divided into "running" and "stop" two states;

e、Calibrate: Click to enter the analog calibration interface;

The following is the 0~5V calibration interface:

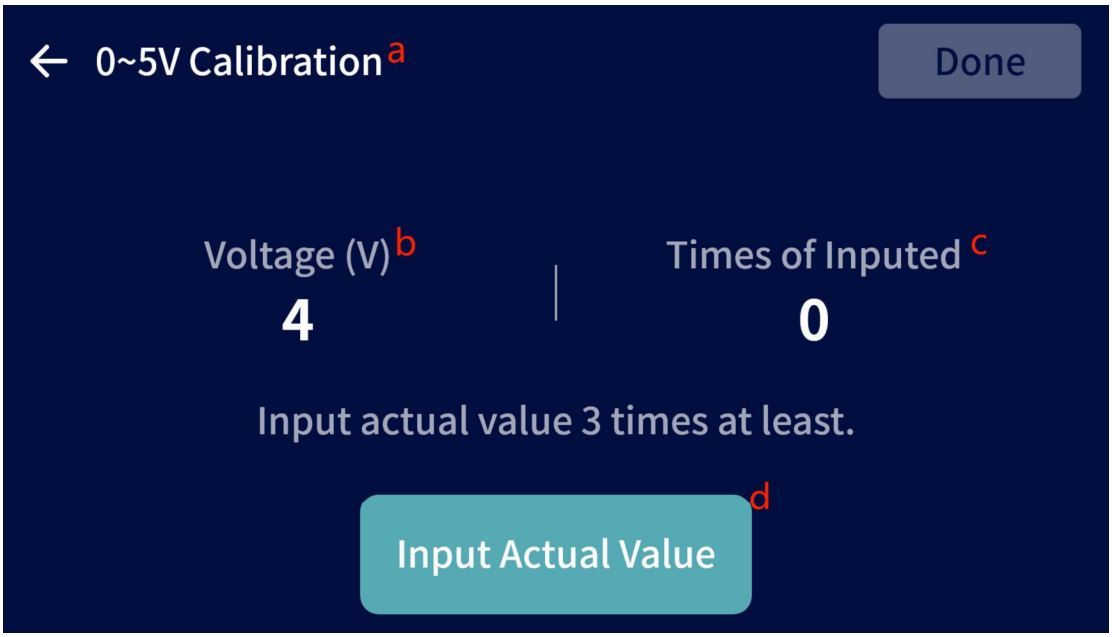


Figure 2-3-1-3 0-5V Calibration

a、0-5V Calibration: Analog calibration title;

b、Voltage(V): Real-time voltage value of analog input;

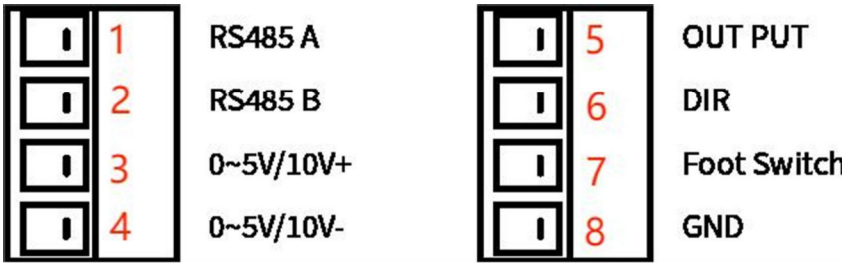
c、Times of Inputed: The number of times that have been calibrated. Analog calibration requires at least 3 calibrations to ensure accuracy after calibration;

d、Input Actual Value: Click to enter the on-screen keyboard, type the actual value of the analog input;

e、Done: Click to complete calibration. Click Done button only after completing the three calibrations;

2.3.2 IO control (foot pedal, photoelectric switch, etc.)

In application scenarios that require the use of digital control equipment, digital control can be used to achieve pump start/stop, direction control, etc. Digital start/stop control such as foot switches, photoelectric sensor switches, etc



When a foot switch needs to be connected, pin 7 in the above figure is connected to the positive side of the foot switch, and pin 8 is connected to the negative side of the foot switch.

When using a photoelectric sensor, the photoelectric sensor has three wires:

positive power supply, negative power supply, and ground wire.

Pin number	Photoelectric sensor
5	Power supply (brown)
7	Signal line (black)
8	Ground (blue)

Note: The above photoelectric sensor wire sequence colors are for Kamoer's reference of photoelectric sensor colors, and the specific colors are subject to the actual sensor.

2.4 Fill & Rec

Apply to situations where liquid needs to be filled or recovered. You can select "Fill&Rec" in the title bar to enter the operation selection interface, where you can quickly fill or recycle with one click;

Figure 2-4-1 Fill & recovery

a、Fill & Recycle: Fill & recovery title;

b、Fill: Click to start quick filling, and the interface displays "Filling...";

c、Recycle: Click to start quick recycling, and the interface displays "Recycling...";

2.5 System Settings

If you need to modify the operating parameters of the device, select System in the title bar to enter the settings interface;

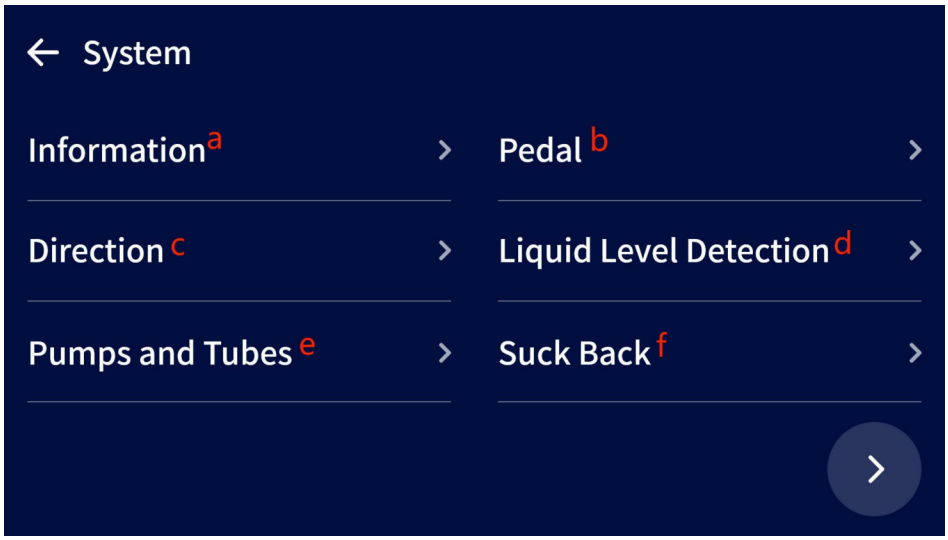


Figure 2-5-1 System Settings Page 1

a、Information: Click to display system information, including type, serial number, and version;

b、Pedal: Click to switch the pedal switch control on and off. If the pedal switch function is enabled, the pump can be started and stopped through the pedal switch. For details, refer to **2.5.1 Pedal Settings**;

c、Direction: Click to switch the liquid path direction. It is set when the pump stops running and cannot be operated during operation;

d、Liquid Level Detection: Click to switch the opening and closing of liquid level detection. If the liquid level detection function is enabled, you can choose between high level alarm or low level alarm. If a liquid level alarm is detected during the operation of the pump, the pump will stop working and give an alarm prompt. This function can be customized according to needs, temporarily closed;

e、Pumps and Tubes: Click to confirm the pump being used first, and then confirm the tube to be used. After selecting the tube type, you can click "Apply". If it is not in use, there is a confirmation prompt, otherwise there is no prompt. There is a corresponding relationship between the rev and flow rate of each tube type. If it is not accurate, you can click "Calibration" after selecting the pipe type. For details, refer to **2.5.2 Flow Rate Calibration.** The pump and tube can be added, switched, and deleted. **Note that the selected type must be consistent with the actual type used;**

f、Suck Back: Click to enter the Suck Back setting, and you can enter the angle, rev, and delay time through the on-screen keyboard. In Ration mode, when the pump stops, it automatically sucks back the last drop of liquid to prevent it from falling and

affecting accuracy;

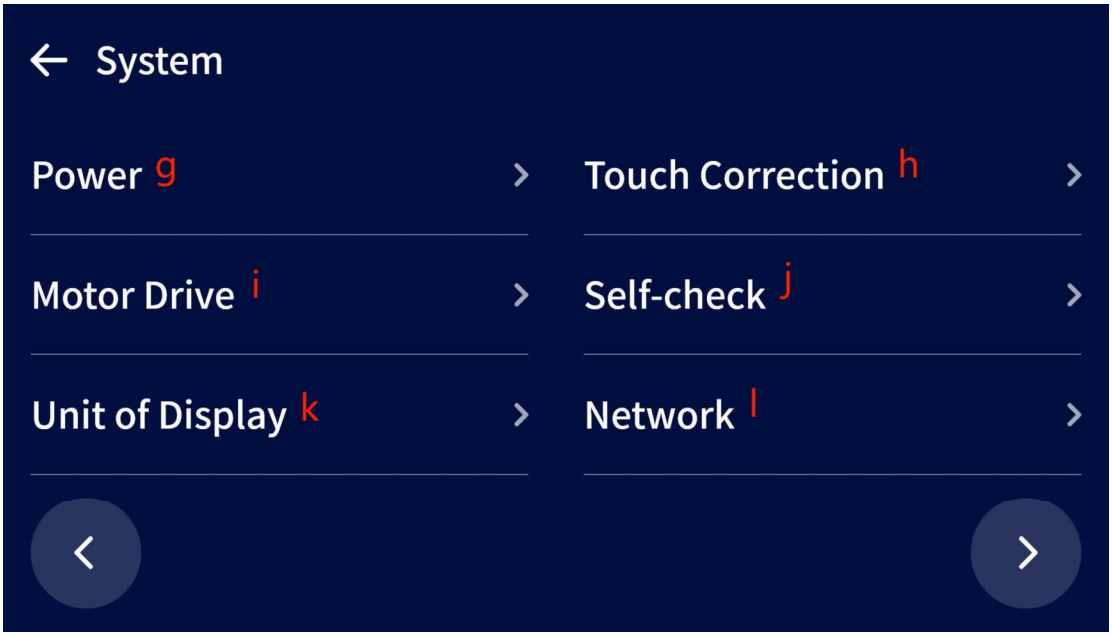


Figure 2-5-2 System Settings page 2

g、Power-on status: For the working mode, click to select whether to run or stop when powering on;

h、Touch Calibration: Click to enter the screen touch calibration interface, and then click on the color blocks on the screen to complete the calibration;

i、Motor Drive: Click to enter the motor drive mode selection, where you can choose between internal or external drives. The internal drive is to use its own chip to drive the stepper motor, while the external drive is to use pulse control external drivers to drive the motor;

j、Self-check: Click to check whether the functions of the system are normal. If the machine gives an alarm, it can self check the cause;

k、Unit of Display: Click to set the display unit of the system to ml or ul;

l、Network: Connect the device by Bluetooth in the mobile app. For details, refer to **3. APP operation Chapte;**

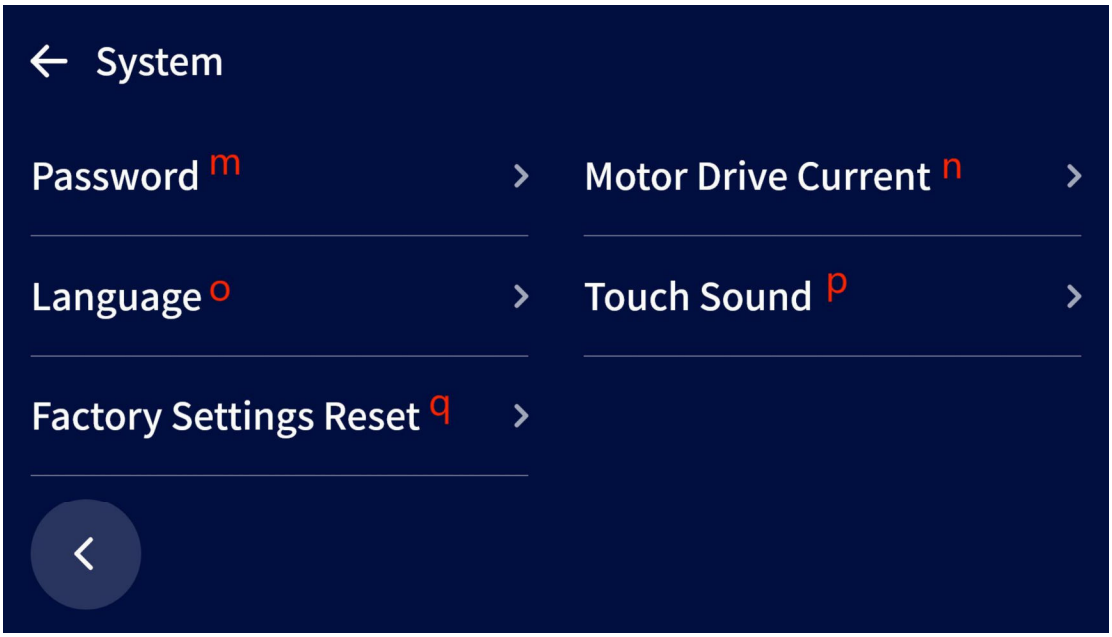


Figure 2-5-3 System Settings Page 3

m、Password: Click to switch the password function on and off. If the password function is on, set the machine's password through the on-screen keyboard. After setting the password, you can set the automatic screen lock time or modify the password. If the password function is enabled, the screen will be frozen in the final operation interface when the screen is locked, and you need to enter the password to unlock again. When turning off the password function, it is also necessary to enter the set password;

n、Motor drive current: Click to set motor drive current(A);

o、Language: Click to switch the machine display language, support Chinese and English;

p、Touch Sound: Click to switch the touch sound on and off;

q、Factory Settings Reset: Click to jump to the secondary confirmation interface, click Reset then all parameters are restored to the factory default values;

2.5.1 Pedal Setting

This function can be set when the pedal is needed to control the operation of the device;

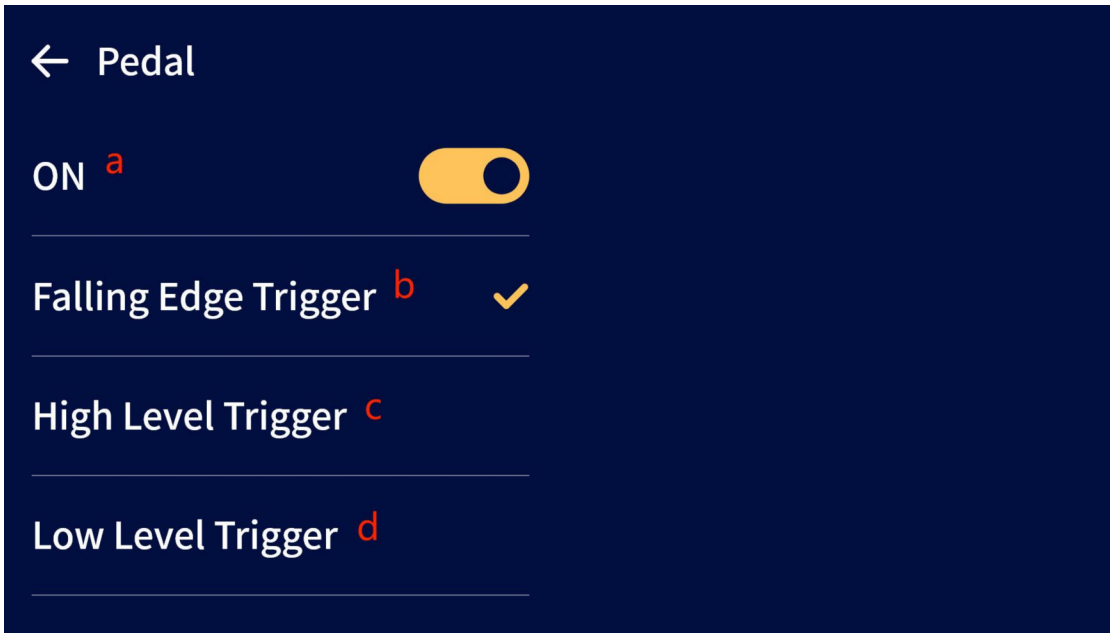


Figure 2-5-1-1 Pedal setting

a. **Pedal switch:** Turn on or off the pedal switch function;
b. **Falling edge trigger:** Press the pedal switch to trigger the pump to run, and press it again to stop the pump;
c. **High level trigger:** The pedal switch defaults to a high level when not operated, and the pump will continue to run in this state. Press the pedal switch and the pump stops running;
d. **Low level trigger:** Press the pedal switch to trigger the pump to run. When the pedal switch is kept pressed, the pump continues to run. When it is lifted, the pump stops running;

2.5.2 Flow Rate Calibration

When the flow rate of the pump is found to be deviated, the pump needs to be calibrated;

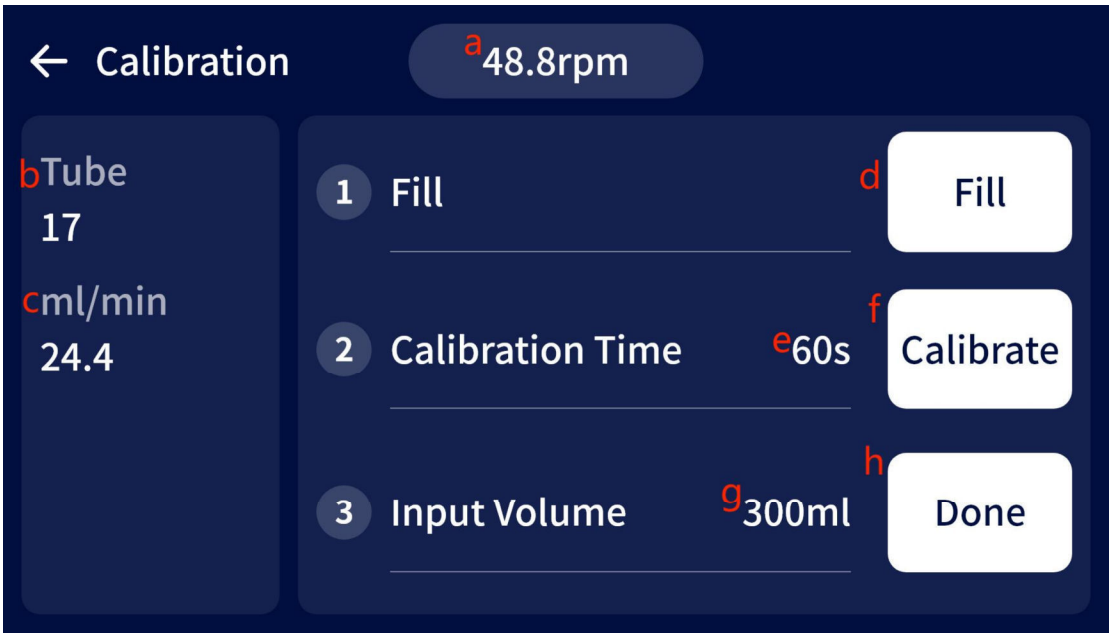


Figure 2-5-2-1 Flow rate calibration

a、Rev(rpm): The speed corresponding to the current flow rate. It can be set, and the flow rate value **c** is displayed after conversion according to the set speed

b、Tube: The currently calibrated tube;Flow rate: the flow rate before calibration;

c、Flow rate: The flow rate before calibration;

d、Fill: Click to start filling, click again to stop filling. This step is required before calibration.

e、Calibration time: The duration of pump operation required for calibration. Click to set the calibration time. During calibration, the time progress is displayed. After the countdown ends, the pump stops running and the initial setting time is displayed;

f、Calibrate: Click to start calibration, then click the button again to stop calibration;

g、Input volume: Click to enter the volume of the calibration process, and then click OK to complete the input;

h、Done: Click to complete the calibration. Click this button only after calibration is completed;

Calibration process and points to note:

1. Preparation before calibration: Connect the outlet of the pump pipe into the measuring cylinder, place the inlet into a water container, and fix the outlet and inlet of the pump pipe to prevent the pump pipe from splashing water onto the operating

platform due to backflushing during pump operation;

2. **Enter the calibration function:** Click on System Settings ->Pumps and Tubes ->Select the pipe type that needs to be calibrated to enter the pipe type calibration interface. **Note that the calibrated pump tube must be the pump tube type that has been selected for use, that is, the pump tube being used;**

3. **Calibration time setting:** Try to set the time as long as the measuring cylinder allows, so that the accuracy of the pump after calibration will be higher;

4. **Rev setting:** Set a desired working rev;

5. **Fill the pump pipe:** Click the fill button to let water fill the pump pipe and empty the air. If there is water in the measuring cylinder after filling the pump pipe, the water should be poured out to ensure that the measuring cylinder is empty. If the pump pipe is thick, keep one end of the pump pipe outlet horizontal to ensure that the pump pipe is filled with water before calibration, to avoid affecting calibration accuracy;

6. **Start calibration:** Click the calibration button, the pump will start running, and calibration will begin. A countdown will appear on the screen to indicate progress, and the button will display "Cal…";

7.Enter the volume obtained by calibration: After calibration is completed, click to enter the on-screen keyboard and enter the volume of water in the measuring cylinder;

8. Complete Calibration: Click the Done button to complete calibration, and then automatically return to the main interface;

3 APP Operation

3.1 Download Kamoer Lab App

1. Scan the QR code, and find the application download with the following icon.

iOS Kamoer Lab Android

2. Apple users enter the App Store, while Android users enter Tencent App Store, search for "Kamoer Pumps", and find the corresponding icon for app download.

Kamoer Lab App supports Android 6.0 and above, and iOS 9.1 and above.

Note: The operation through App only involves the firmware upgrade of the device, other functions need to be customized.

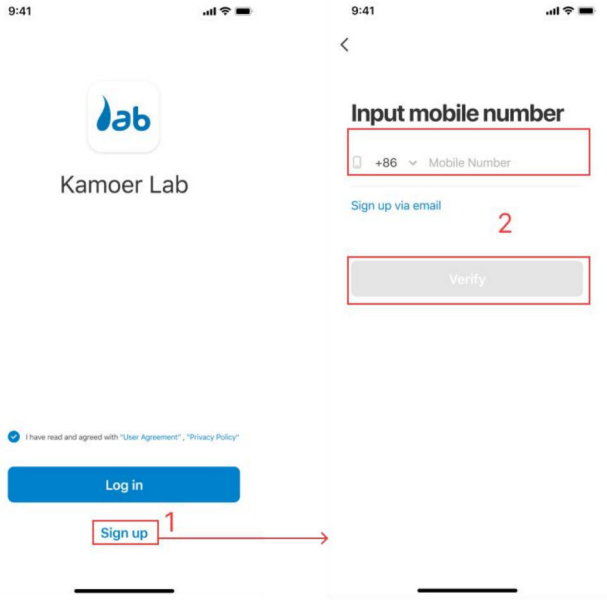
3.2 Register an account

Open the app, register through mobile or email, and follow the app prompts to complete account registration. Next login requires the set password. Registration process:

1. Click Registration on the initial page and confirm that "I have read and agree with ' User Agreement', 'Privacy Policy'" is checked;

2. Select the location and enter the mobile phone number to receive the verification code. To register by email, you need to enter the correct email address.

3. After successful verification, set the password and enter the APP home page;



3.3 Distribution network

This device includes Wi Fi, and users can upgrade their devices through the Kamoer Lab App; Distribution network process:

1. After the device is powered on, the display will light up, open the mobile APP to register and log in, and click the add button on the home page;

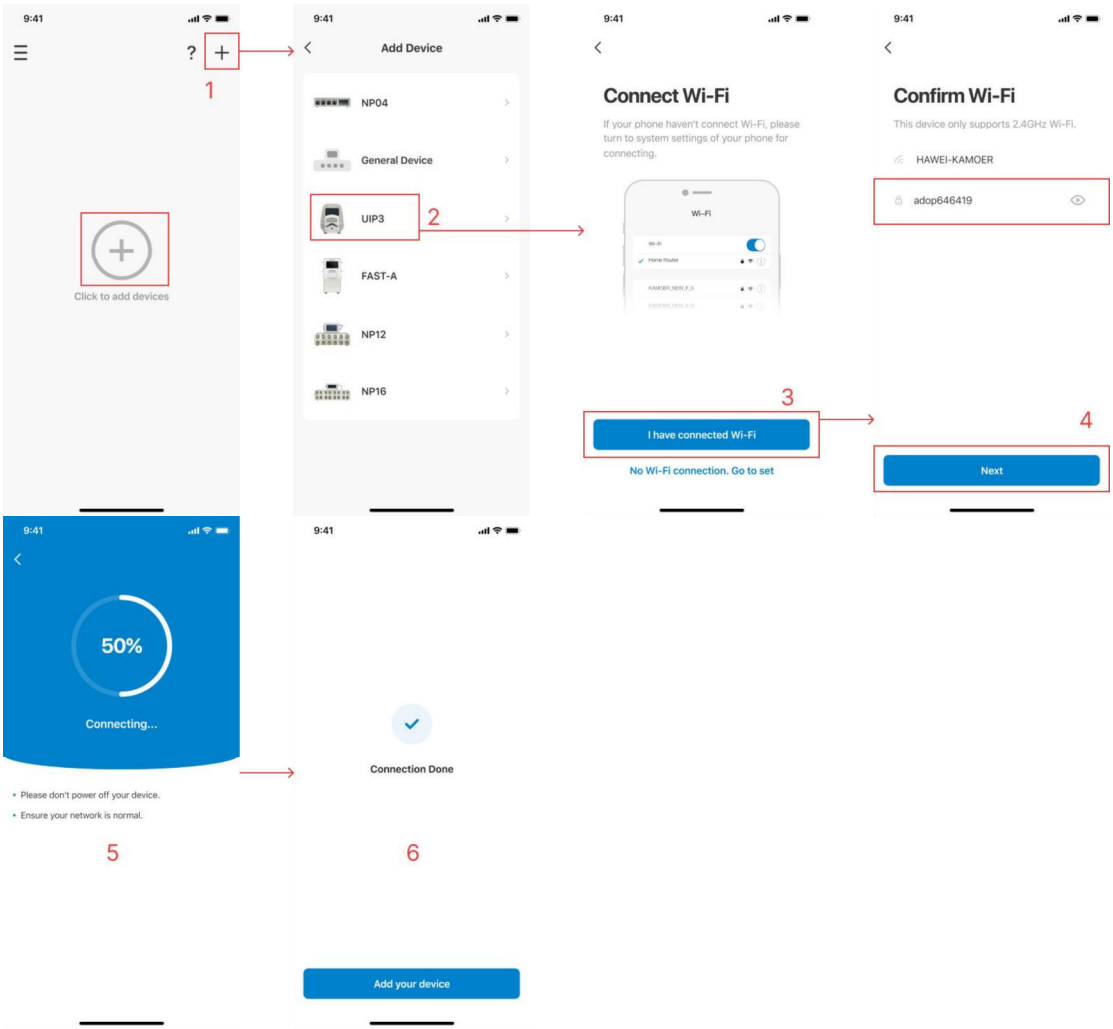
2. Select device UIP;

3. Enter the Bluetooth connection interface when Bluetooth is enabled, and find the corresponding device by the serial number;

4. Enter the WIFI connection interface, select available WI-FI, and enter the password. Then click Next to network the device;

5. Please wait for the device networking to complete;

6. Connection done. Ready for use;



The Wi-Fi connection mode and connection status are displayed in the upper right corner of the device screen:

indicates that the device is connected to the Internet normally;

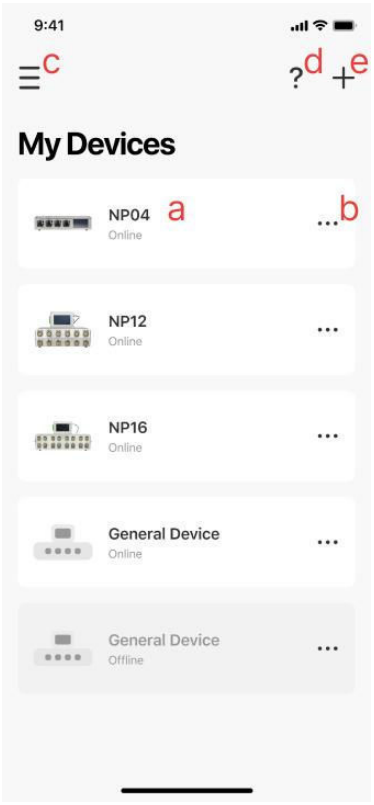
indicates that the device networking fails;

indicates that the device is being networked;

indicates that the machine fails to connect to the cloud;

3.4 App Introduction

Users can use the App to upgrade the firmware of the device.



a、Device information: Display device icon, name, online status, click to enter the device function interface, you can upgrade the version;

b、 "..." button: Click to display more device extension functions, including renaming, device version information, delete device operations;

c、Menu button: Click to display my account related functions;

d、 "?" button: Click to view the tutorial of the device;

e、Add button: Click Add device;

4 Maintenance

4.1 Chemical compatibility

The standard pump tube is a silicone tube, which can be applied to most occasions.If you are delivering a specific solution, please contact the manufacturer to determine chemical compatibility and match the appropriate pump pipe.

4.2 Storage

- When the pump is not working for a long time, the adjustment knob should be loosened to avoid the plastic deformation of the hose caused by long-term extrusion.
- The roller of the pump head should be kept clean and dry, otherwise it will speed up the hose wear and shorten the hose service life.

5 Technical parameter

Size(L x W x H)	324*164*219mm
Weight	Approximately 3145g
Power	Input: AC100-240V, Power < 50W
Speed range	0.1 to 350rpm
Speed resolution	0.1rpm
Pump head	KK1800 3 rotor, flow range 0.03~1500ml/min
External interface	RS485 Modbus Digital quantity, foot switch, direction control, status output, 0~5V/10V analog control
Working environment	Temperature 0~70℃, humidity 10%-90% (non-condensing)
Storage environment	Temperature -20℃~85℃, humidity 10%-90% (non-condensing)

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