X1 PRO T User Manual 2022-03-11

1 Reading Tips

1.1 FCC warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures: --Reorient or relocate the receiving antenna. --Increase the separation between the device and receiver. --Connect the device into an outlet on a circuit different from that to which the receiver is connected. --Consult the dealer or an experienced radio/TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

FCC Radiation Exposure Statement The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located for operating in conjunction with any other antenna or transmitter.

1.2 User instruction

Kamoer provides the following documents for users of X1 PRO T Micropump：

1. 《X1 PRO T User Manual》
2. 《X1 PRO T Quick Start Guide》

It is recommended that users first read the 《X1 PRO T Quick Start Guide》 to understand the usage process. For detailed product information, please read "X1 PRO T Micropump User Manual".

1.3 Download Kamoer Remote App

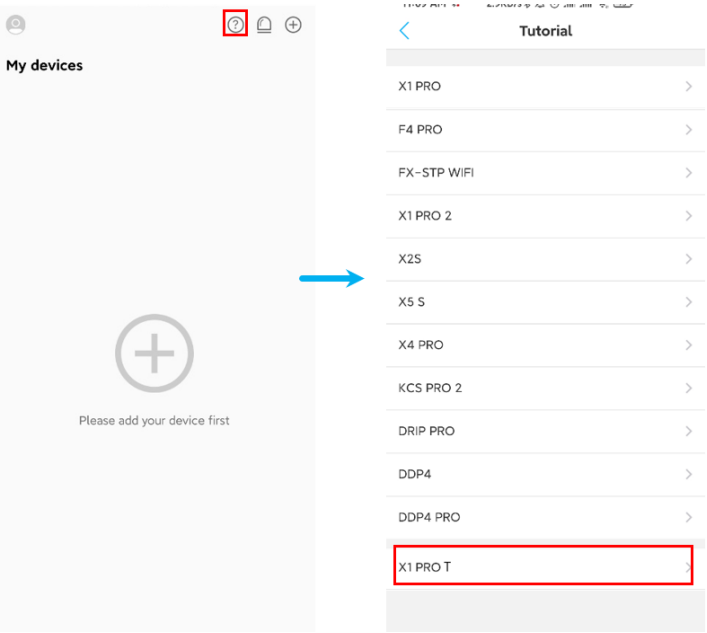
1. Scan the QR code to download the application corresponding to the following icon。

1. Go to App Store or Google Play, search "kamoer remote" to download.

Kamoer Remote App supports Android 4.4 and above systems, and supports iOS 9.1 and above systems。

1.4 Get the tutorial

On the device list page, click the "?" icon in the upper right corner to enter the "Tutorial" page, and select "X1 PRO T" to view the tutorial. The tutorial includes the user manual and frequently asked questions .



2 product description

2.1 Introduction

X1 PRO T is a single-channel WIFI Micropump, remotely controlled by mobile phone App, using a longer-life stepping motor, can be used as a dosing pump, can also be used as a calcium back pump; as a dosing pump, it can be flexibly and accurately The marine biological tank supplements various elements needed for the growth of marine organisms, such as calcium, magnesium, KH enhancer, trace elements, etc. Through automatic addition, the workload of manual addition can be greatly reduced, and mistakes such as missing addition, excessive addition or insufficient addition caused by manual addition can also be avoided. When used as a calcium reactor, it can provide a stable flow of water to the calcium reactor。

X1 PRO T uses a plastic gear pump, which will not slip and rust. High-reliability threaded joints are used to ensure that there will be no leakage problems, and long-life imported pump pipes are standard

2.2 Feature highlights

- Small size, high cost performance
- All dosing calcium reactors are supported, and the speed is adjustable *App remote control, support iOS and Android systems, one App can control multiple X1 PRO T
- Setting parameters will not be lost when power off *The backup battery guarantees time to run during power outages
- Use imported PharMed BPT pump tubing
- Support remote firmware upgrade

2.3 Application occasion

- Marine life breeding
  - Including the dosing or calcium reaction of bony corals (SPS), soft corals (LPS) and polyculture corals (SPS/LPS)
- Plant breeding
  - Used to supplement different elements consumed during plant growth
- Other occasions
  - Used to supplement different elements consumed during plant growth

2.4 Unpacking preparation

- Before opening the packaging box, check whether the outer packaging is damaged during transportation。
- After opening the packing box, refer to the packing list in the appendix, confirm that all parts are not missing, and check for visible damage。

If you find any defects during unpacking, please contact the manufacturer immediately。

2.5 Part Name

1.Liquid outlet 2. Liquid inlet 3. KFS pump head
4.Indicator light 5. Reset button 6. DC 12V power
7. Screw fixing holes

2.6 Status indicator description

Status indicator（blue)

Status	Description
Long light	Connected to the cloud through the router
Off	The connection with the router is disconnected
Fast flashing	Routing network distribution mode, at this time App can configure the Micropump to connect to the router
On for 200 milliseconds, off for 2 seconds	AP network configuration mode, the App can configure the Micropump to connect to the router
Slow flashing	Disconnected from the cloud

Power indicator (red)

Status	Description
Long light	Powered on
Off	Power is not connected or power failure

Note: X1 PRO T uses red and blue two-color indicator lights. When the blue status light is on or flashing, the red light does not need to be on。

3 Product Installation

This chapter mainly introduces how to install the X1 PRO T Micropump and the precautions during the installation process。

prompt

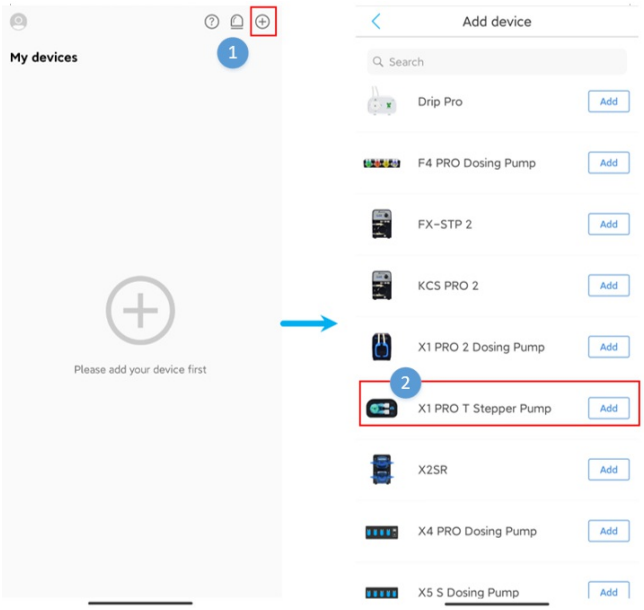
- This Micropump is a self-priming pump. When the gap between the liquid inlet and the liquid outlet is too large, siphon or backflow may occur。
- To avoid siphoning and backflow, the Micropump should be placed in a reasonable position to ensure that the height difference between the liquid inlet and the liquid outlet is within 0.5 meters。
- The connecting pipe for the liquid should be as short as possible, and the connecting pipe for the liquid should be suspended above the container。
- Please carefully check whether the connection direction of the liquid inlet and the liquid outlet is correct, and do not connect them in reverse。Refer to the chapter on component connection。

4 App use

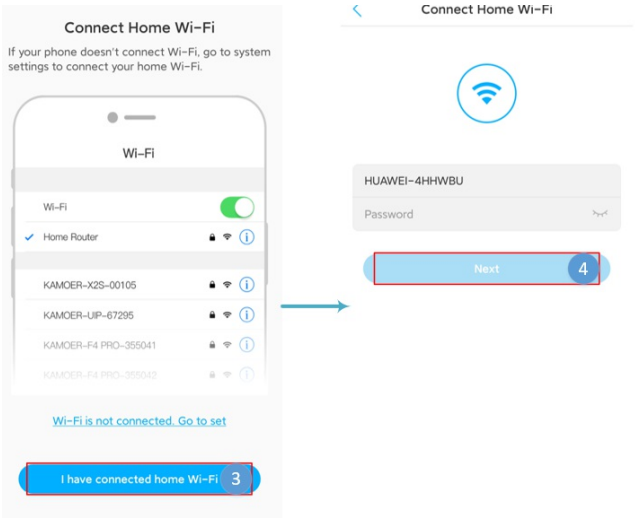
This chapter mainly introduces how to use App to control X1 PRO T Micropump.

4.1 Connect the Micropump to the cloud

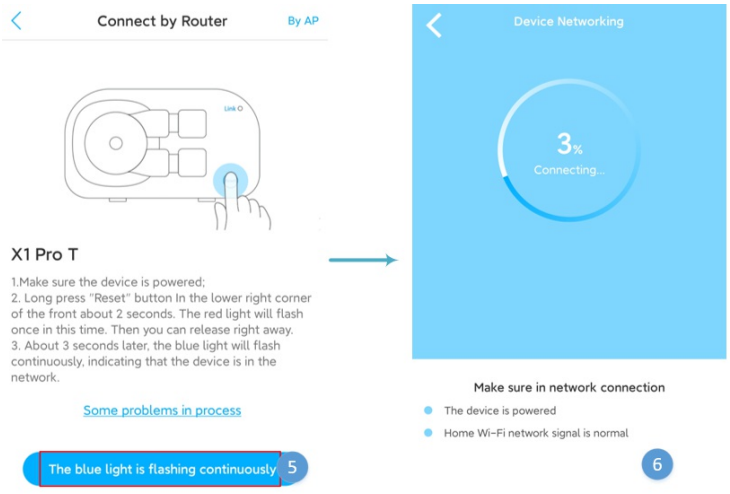
The Micropump is powered on for the first time after unpacking, and the status indicator (blue light) flashes slowly. At this time, you need to use the App to connect the Micropump to the cloud through a wireless router. The specific steps are as follows：



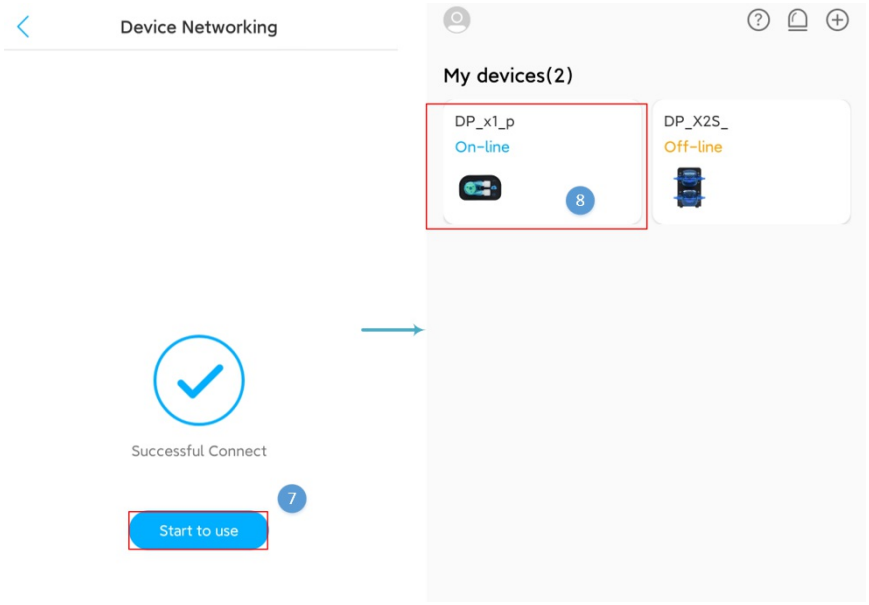
- 1-2. Open the App, click the "+" button in the upper right corner of the device to add a device, enter the add device interface, select "Kamoer-X1PRO" in the list of supported devices and click to enter;



- 3.Make sure that the mobile phone is connected to the WiFi that needs the network, and that the WiFi can be connected to the external network, (the device does not support 5G Wi-Fi, and 5G Wi-Fi hotspots cannot be used)；
- 4.Enter the Wi-Fi password, be careful not to enter the wrong password, and click "Next" to enter the device networking operation：



- 5.Press and hold the "Reset" button on the rear panel for more than 4 seconds and then release it. Wait for 3 seconds. At this time, the blue status indicator flashes quickly and the device enters the network configuration state. In the device network configuration state, click on the App" The light is flashing quickly" button to start network configuration;
- 6.Wait for the network configuration connection to be successful, after the connection is successful, the App will pop up a successful connection interface：



- 7. Click "Start using" on this interface to enter the device list interface. At this time, the red status indicator light is on, which means the dosing pump has been connected to the cloud and the user has completed the binding with the Micropump。

prompt

a. Configure the device to connect to Wi-Fi only once. After the configuration is successful, as long as the App can connect to the Internet, you can find the device in the device list after opening the App。

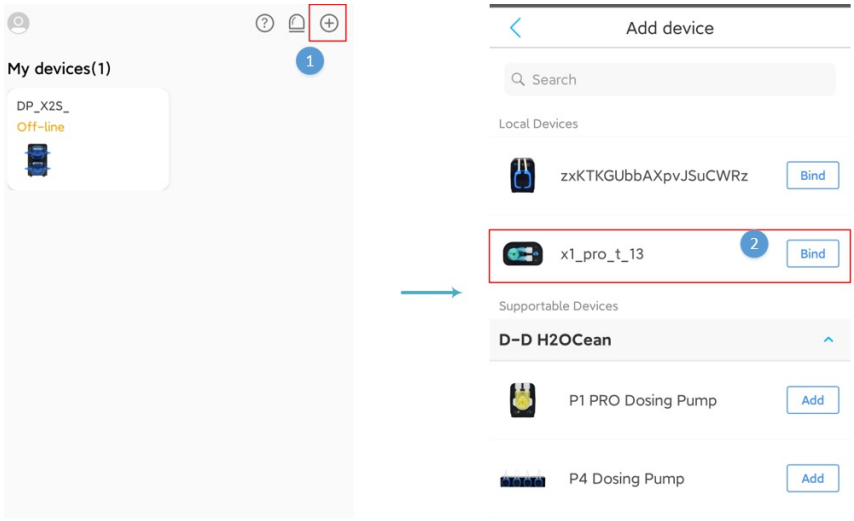
b. If the device configuration fails to connect to Wi-Fi, start over from the first step。

4.2 Binding Micropump

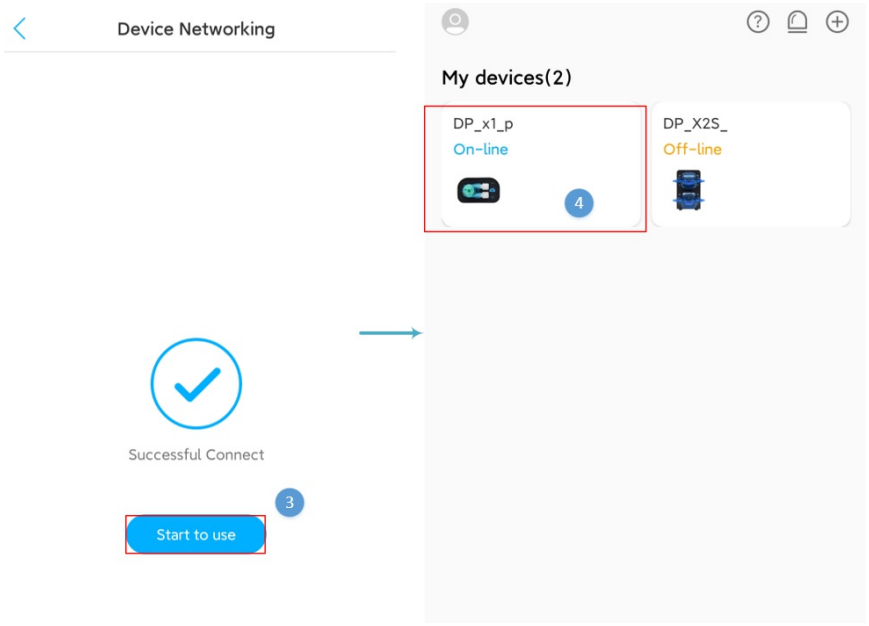
There are two ways for users to bind Micropump，

The first method is to bind Micropump through the above re-distribution method：

The second method is that Micropump has been connected to the cloud through a wireless router. At this time, the mobile phone can be connected to the wireless router. The App will display the locally available Micropump. The user can click on Micropump list scanned by the locally available equipment. To bind the corresponding Micropump, the specific operations are as follows：



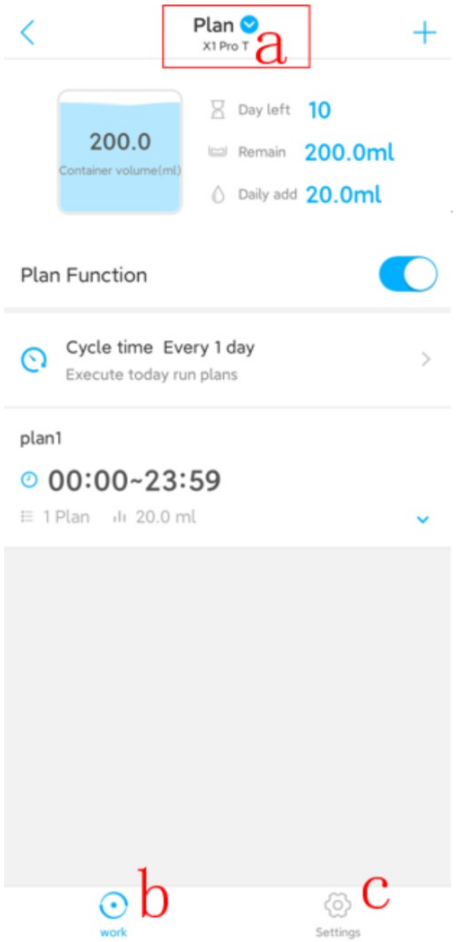
- 1-2. Open the App, click the "+" button in the upper right corner of the device to add a device, enter the add device interface, select Micropump to be bound from the list of locally available devices, and click to enter：



- 3.After the binding is successful, a successful binding prompt will pop up, click Start to return to the device list：

4.3 Overview of Micropump control interface

Open the App, click on the Micropump in the device list to enter the Micropump operation interface. The Micropump operation interface contains the running function and setting function：

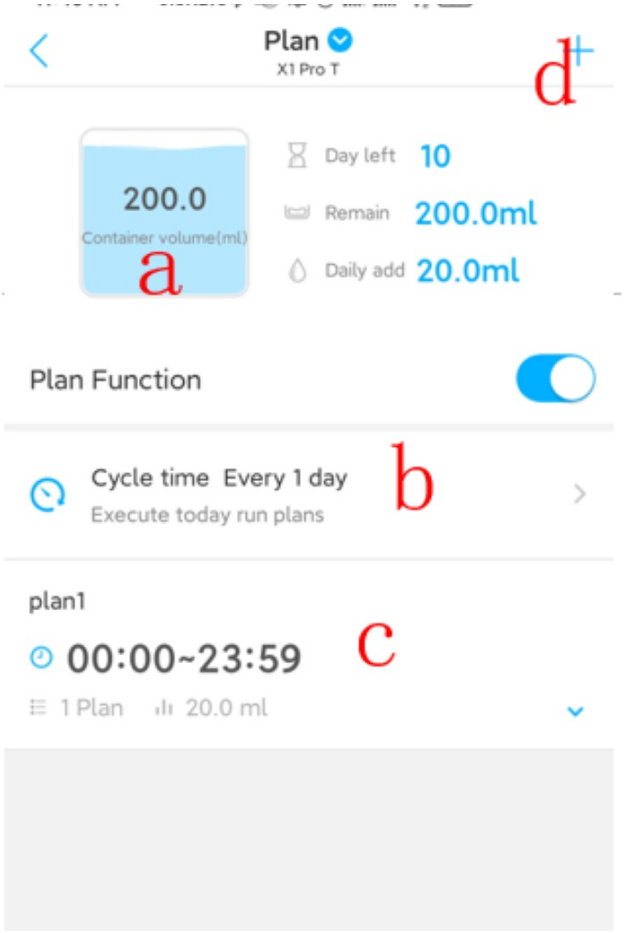


- **a. Plan：** indicates the current working mode, where you can switch the working mode. There are 3 working modes, which are the planning mode，
  - **Planning mode**The first one is to set up a dosing plan. The Micropump will titrate regularly and quantitatively according to the plan set by the user, which solves the tedious and inaccurate manual operation。 The second is to check the total amount and remaining amount of the solution bottle to let the user know the status of the solution bottle. When the solution bottle is not enough reagent, there will be a yellow prompt to tell the user to add the reagent in the solution bottle in time。
  - **Manual mode**Manually run a quantitative
  - **Continuous mode**It runs continuously at one speed and the speed is adjustable. This function can be used for calcium reaction
- **c.Settings：** Mainly firmware upgrade, time synchronization, flow calibration and other functions

4.4 Schedule dosing-Schedule Setting Details Page

1.Channel details in auto mode

Click on the plan in the bottom navigation bar to enter the plan details page. The plan details page contains the following functions：

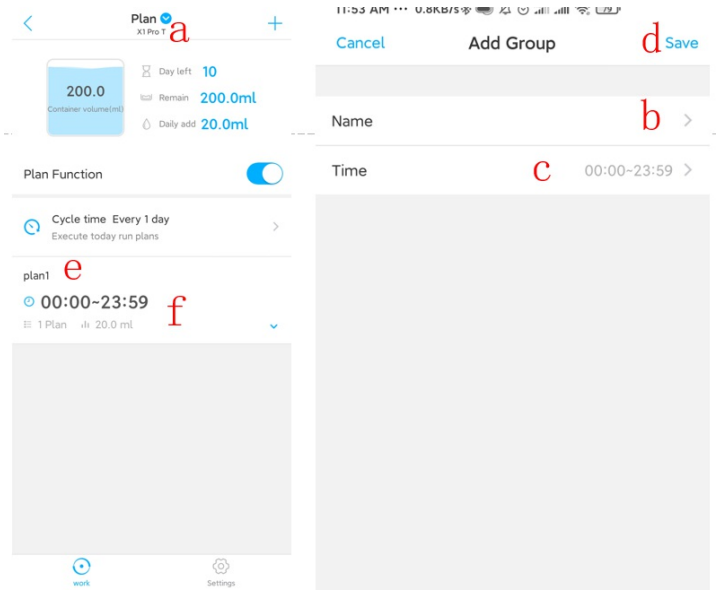


- **a.Solution bottle status setting/viewingv：** This module can view the volume of the solution bottle, the remaining volume of the solution bottle, the number of days the remaining volume of the solution bottle can be added, and the planned daily addition amount; we can click Set the button to set the volume of the solution bottle：
- **Note: The daily addition amount displayed on the interface shows the planned daily addition amount for the dosing, and does not include the manual dosing amount. In fact, if the solution bottle is added manually, the reduced amount is also calculated.**
- **b. Cycle cycle：** The cycle cycle of the planned dosing, divided into two modes: weekly and every few days, weekly mode, we can choose any certain day from Monday to Sunday to titrate; In the mode of days, we can choose the time cycle range from every 1 day to every 99 days：
- **c.List of plan groups：** List the set plan groups and plans. Just after entering this interface, the App only lists plan groups. Click the drop-down arrow of the plan group to list all plans in the group：
- **d. Add a plan group：** Click the button to enter the add plan group interface, set the name of the group and the time range of the group in the add plan group interface, click save, a plan group is created; a channel can be created at most 6 planning groups：

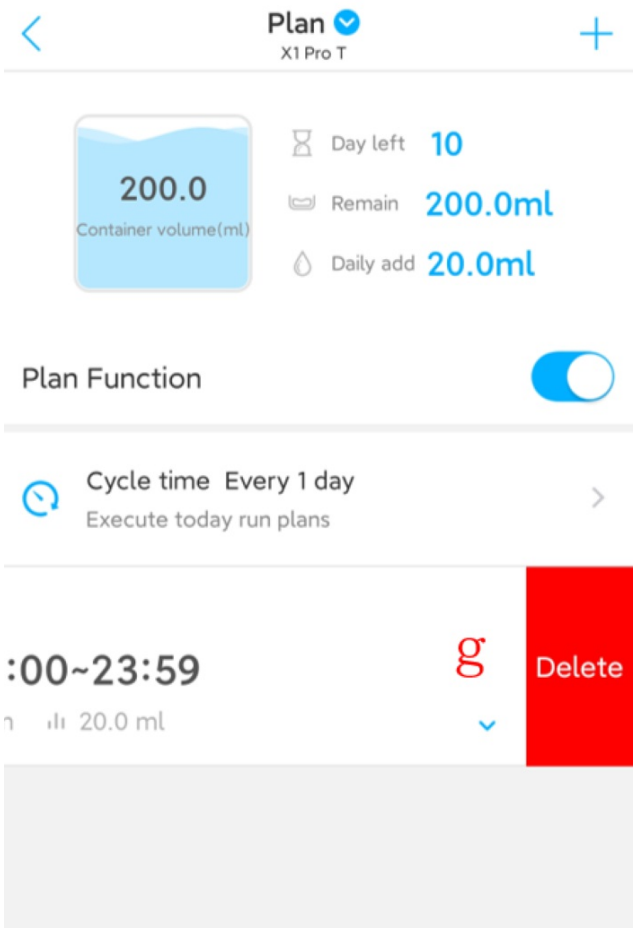
4.5 Schedule dosing-Schedule Settings

1. Planning group creation, editing, deletion

The plan of the Micropump exists in the plan group. If you want to create a plan, you must first create a plan group, or create a plan in an existing plan group; the function of the plan group is to display the plans in a certain time period in groups for easy identification And management, you can create up to 6 groups; the following describes the creation of planning groups：



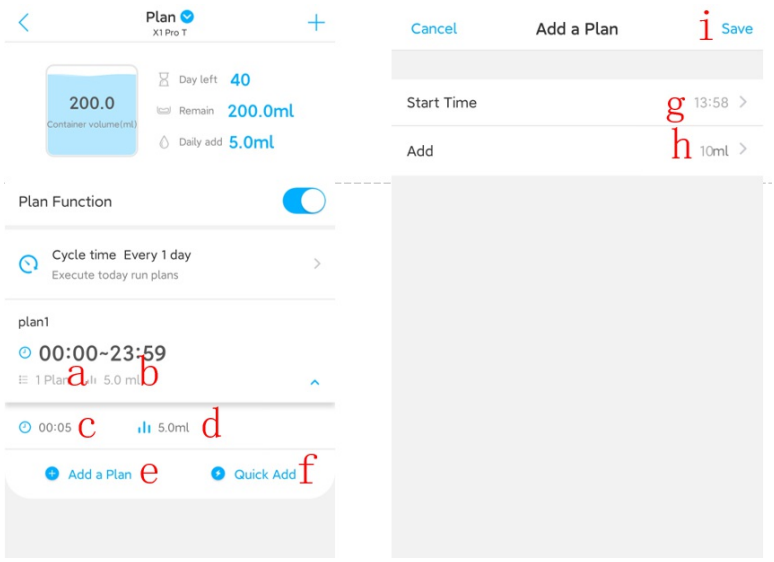
- **a.Create a plan groupv:**In the channel plan details page, click the "+" add button in the upper right corner to enter the plan group add interface;
- **b.Set the name of the plan group:**Used to distinguish and identify other plan groups;
- **c.Set the time period range of the plan group:**After the time period range is set, the plans created in the group will be executed in this time period. The maximum time period range is 00:00~23:59 ;
- **d.Save the plan group:**After editing the plan group information, click the Save button to save the plan group.
- **e.Edit group information:** Click on the plan group to enter the edit group information interface, the parameters are the same as the group creation;
- **f. Enter the plan list:** Click the drop-down button of the plan group to enter the plan list of the plan group, and there is a plan creation entry at the bottom of the plan list;



- **g.Delete plan:** Click the plan group and slide to the left, and the delete button of the plan group will appear, click the delete button, the plan group will be deleted, and the plans in the group will also be deleted;

2.Create, edit and delete plans in the plan group

The operation of the plan is carried out in the plan group. The plans of all groups of each channel can add up to 24 plans; the following describes the related operations of the plan:

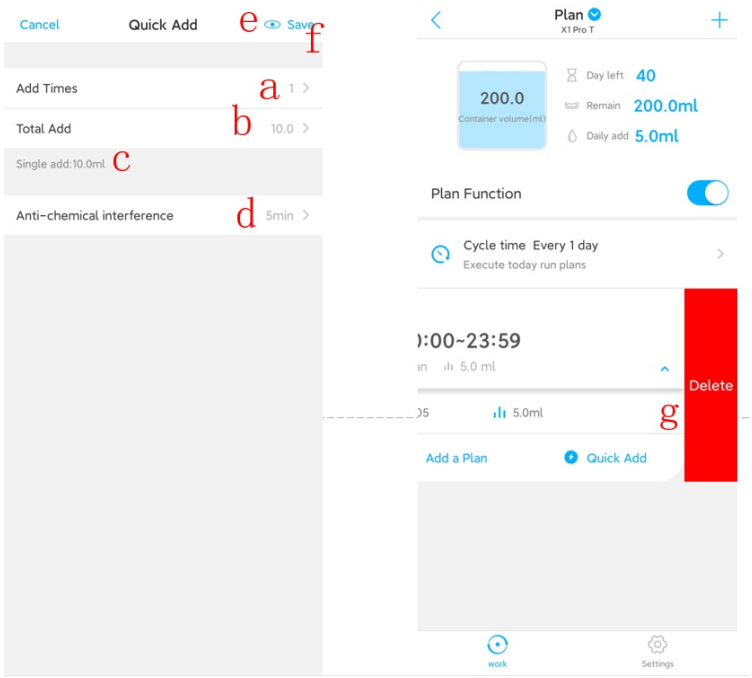


- **a.Number of plans:** Shows the number of plans in the plan group;
- **b. Display total added amount:** Display the total added amount of plans in the plan group;
- **c.The start time of the plan in the plan group;**
- **d. The planned addition amount in the plan group;**
- **e. Add a plan within a group:** Click to enter the page for adding a plan within a group, adding a plan contains two parameters, one is the start

time of the plan, and the other is the amount of plan added；

- **f.Quick plan add entry:** Multiple plans can be added in sequence through quick plan settings；
- **g.Plan start time:** Add the start time of a single plan
- **h. Planned amount:** Add the amount of a single plan
- **i.Save the plan:** Save the plan After the plan is created, you can edit it，Click the plan to be edited to enter the plan editing interface. The plan editing parameters are the same as the plan creation interface parameters；

The following describes the addition of quick plans and the deletion of individual plans:

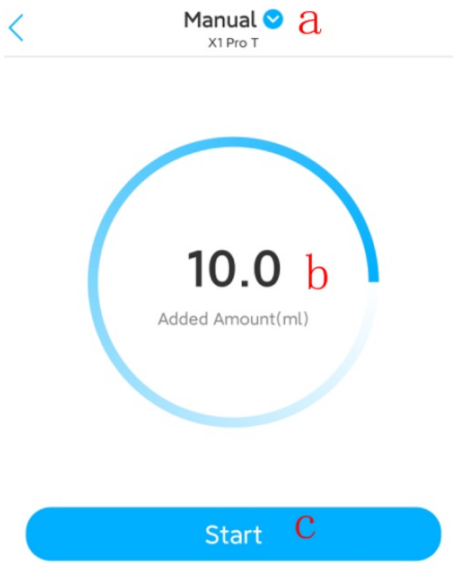


Quick plan can add multiple plans in the group at a time to meet the convenient operation requirements of adding multiple plans at once. When you need to add a quick plan, click "Quick Add" under the plan list to enter the quick plan adding interface:

- **a.Adding times:**The number of plans to be added；
- **b.Total addition amount:**Total addition amount that needs to be added；
- **c.Single addition amount:**The addition amount of a plan, obtained by dividing the total addition amount by the number of additions；
- **d.Anti-chemical interference time:**Used to stagger the addition time of this group plan and other group plans；
- **e.Plan preview:** Click to preview the quick set plan, if you meet the needs, you can click the save button to save the plan；
- **f.Save:**Save the quick plan；
- **g.Delete a single plan:**Click the plan to be deleted and swipe left, a delete plan button will appear, click the delete button to delete a plan；

4.6 Manual dosing page

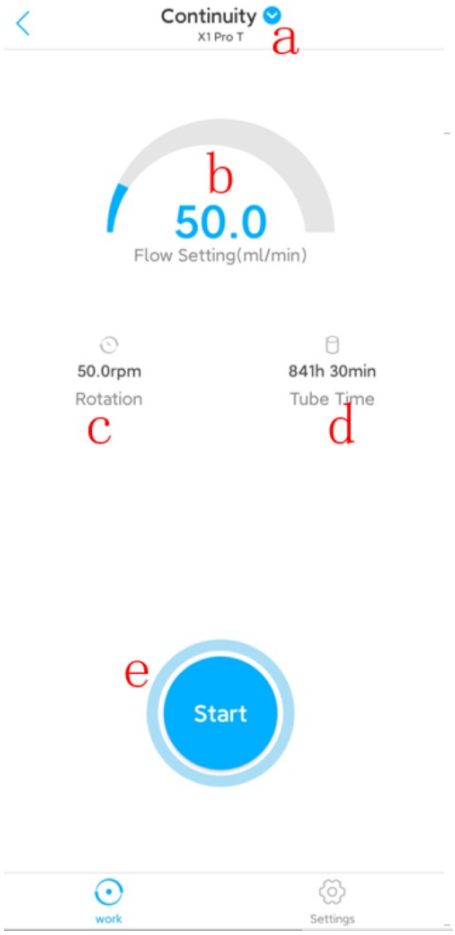
Manual dosing can be carried out at any time to meet the temporary addition needs of users。



- **a.Manual mode:** Click to enter manual mode
- **b.Titration amount:**Set the amount to be titrated manually, and the pump will stop automatically after titration；
- **c."Start/Stop" button:**Control the start and stop of the pump；

4.7 Continuous mode page

The continuous mode allows the pump to run continuously at a certain speed, and is generally used in calcium reactor applications。



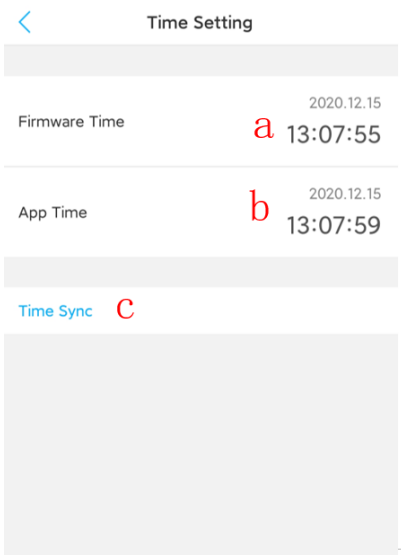
- **a.Continuous mode:** Click to enter continuous mode
- **b.Flow setting:**Set the flow of the pump. When the pump is running, it will run at the speed corresponding to this flow. The flow calibration is carried out in Settings -> Flow Rate Calibration；
- **c.Rotation speed:** Rotation speed corresponding to flow；
- **d.Pump tube use time:**Record the cumulative use time of the pump tube；
- **e.Start/Stop button:** Click to control the start and stop of the pump；

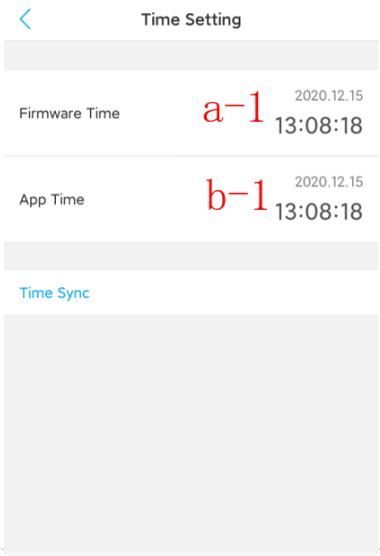
4.8 Settings page

- **a.Device serial number**：
- **b.Current firmware version:**Display the current version of the firmware, if the firmware is updated, there will be a prompt below：
- **c.Name:** Here you can modify the device name and the name of each pump head to identify the purpose of the device and pump head：
- **d.Serial number:**Click to enter the display device serial number：
- **e.Update:**Firmware update, if there is a new firmware release, there will be a prompt：
- **f.Tube type setting:**Check and set the life and use time of the pump tube, the pump tube is generally replaced after 1000 hours：
- **g.Time setting:**Set the real-time clock time of the firmware to ensure the correct execution of the pump titration plan：
- **h.Connect to the smart controller:**Set to connect to the smart controller, this function is currently not available：
- **i.Flow rate calibration:** Here the flow rate of each pump head is calibrated. The purpose of flow calibration is to improve the accuracy of added elements：
- **j.Restore factory settings:**Click to restore firmware parameters to factory settings：
- **k.Delete device**:Unbind App and device。

4.9 time setting

When the time of the device does not match the local time, you need to synchronize the real-time clock time of the device through the App to ensure the normal execution of the device titration plan：

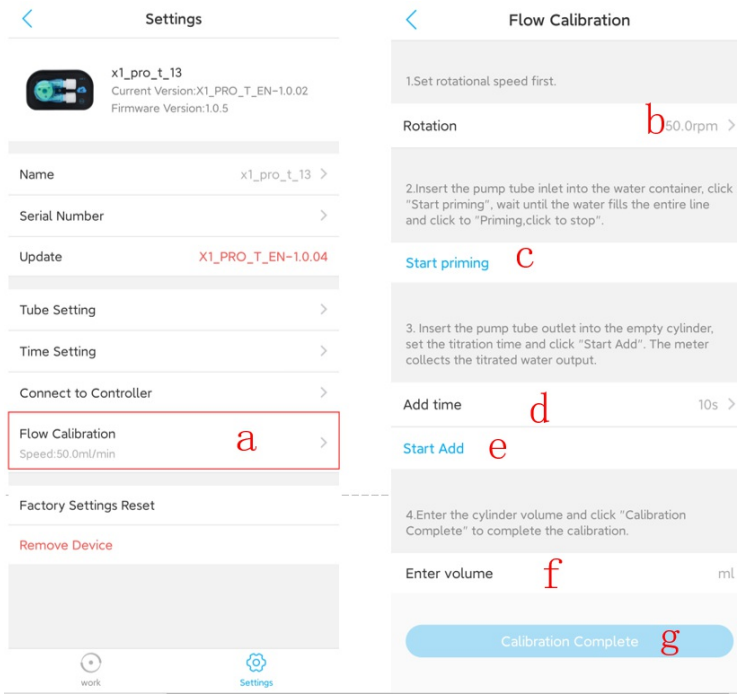




- **a.Device time:**The current real-time clock time of the device;
- **b.App time:**The current time of the phone;
- **c.Time synchronization:**After clicking, the device time will be synchronized. After time synchronization, the running time of the device will be the same as the time of the mobile phone； a-1, b-1 are the device real-time clock time and mobile phone time after time synchronization;

4.10 Flow Calibration

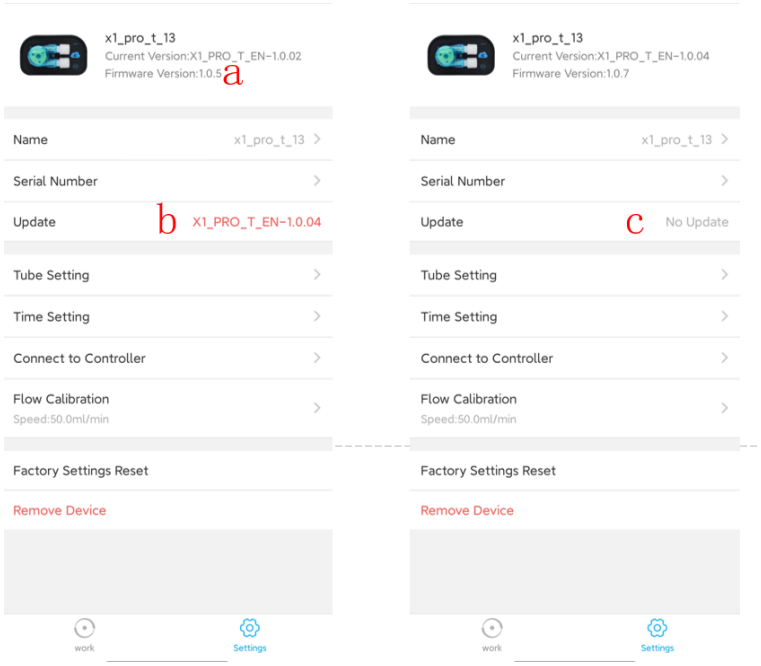
The purpose of calibration is to improve the accuracy of added elements; Click "flow rate calibration" in the setting interface to enter the calibration pump head selection interface, select the pump head to be calibrated, and enter the flow calibration interface. Calibration requires the use of a graduated cylinder. The pump is equipped with a 10ML graduated cylinder when it leaves the factory. Considering the different concentration of the titrant of the pump tube and the different aging degree of the pump tube, calibration is required when the titration is suspected to be inaccurate 。



- **a.Flow rate calibration:**Click on the flow rate calibration on the setting interface to enter the flow rate calibration interface；
- **b.Speed:**Set the speed of the pump to be calibrated;
- **c.Start emptying:**The purpose of emptying is to exhaust the air in the pump tube, so that the accuracy will not be affected during subsequent calibration; after clicking empty, you can click to find that the air in the pump tube is discharged stop；
- **d.Long titration time:**Set the running time of the pump during calibration； Before proceeding to the next step, make sure that the inlet of the pump tube has been immersed in water and the outlet of the pump tube is placed in a graduated cylinder；
- **e.Start titration:** Click the titration button, and the pump will run for the duration set in the previous step and then stop；
- **f.Input volume:**Input after reading the liquid volume in the measuring cylinder, the unit is ml；
- **g.Calibration completed:**Click the "calibration complete" button to complete the flow calibration。

4.11 Firmware upgrade

When the pump's firmware program is updated, the user needs to upgrade the firmware to use it。



- **a.Current firmware version:**
- **b.New version prompt:**If there is a new version, this release will have a new version prompt；
- **c.Status after firmware update is completed:**Display status after firmware update is completed； The upgrade steps are as follows: Enter the App setting interface, if you find a new version of the firmware appears, click the b update button to update the firmware. At this time, do not perform other operations, do not exit the App or re-enter the App. When the upgrade is completed, the red status indicator of the titration pump will be on for a long time At the same time, the buzzer will sound twice, indicating that the device firmware upgrade is complete. After the device upgrade is completed, normal operations can be performed. If the upgrade fails, please repeat the upgrade steps.
- **Note:** The power cannot be cut off during the upgrade process, and the App should not perform other operations during the upgrade process。

5 Appendix

5.1 Technical Parameters

- *Dimensions (Length*Width*Height)** 100 x 92 x 63 mm (including pump head)
- **Weight** 316g (not including power adapter)
- **Power Adapter**
  - Input: 100VAC -240VAC
  - Output: DC12V 2A
- **Titration parameters**
  - Dosing channel: 1 KFS pump head
  - Flow rate: >70ml/min
  - Number of titrations: 24 times/day-1 time/99 days
  - Dosing accuracy: <±2%
  - Volume range: 0.1 ml-9999.9 ml
- **Interface**WIFI
- **Working environment** Temperature 0-70℃, humidity 10%-90% (non-condensing)
- **Storage environment** Temperature -20℃-85℃, humidity 10%-90% (non-condensing)

5.2 After-sales warranty information

1.Warranty conditions

The free service during the warranty period is only valid under normal use and maintenance according to the user manual, and all man-made faults or damages are not covered by the warranty. Users please keep the purchase invoice and user manual properly so that you can get satisfactory after-sales service in time。

2. Warranty coverage

Within one year from the date of purchase, if there is any damage caused by the manufacturing process or components, the company will provide free warranty service. The free maintenance service provided during the warranty period includes free repair, free provision and replacement of faulty parts, and products that cannot be repaired are replaced with products of the same model (the model has been discontinued, and the model is similar to it). The free service does not include the transportation cost of the product due to maintenance。

3. Non-warranty coverage

The following factors are not within the scope of the free warranty, and customer repairs need to pay for it。 1) Product appearance (please confirm when purchasing); 2) Improper use, maintenance or storage (please follow the user manual for proper use, maintenance and storage); 3) Connect to improper power supply; 4) Damage to the components caused by the short circuit of the circuit board caused by various insects entering the machine; 5) Loss caused by accident; 6) Use inappropriate parts (not applicable to parts other than our company); 7) Negligence handling, modification or repair by personnel not authorized by the company (please do not disassemble or repair without authorization); 8) Failure or damage caused by use outside of applicable occasions; 9) Damage caused by force majeure, etc.; 10) Consumption and wearing parts (such as pH electrode, ORP electrode, etc.); 11) The warranty period has expired。

6 update record

Date	Updated content
2020-12-03	Update product user manual
2022-03-11	Add fcc warning