

F4 PRO USER MANUAL 2022-03-11

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1 Reading tips

1.1 FCC warning

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 Recommendations

Kamoer provides the following documentation for the F4 PRO dosingpump user:

1. 《F4 PRO User Manual》
2. 《F4 PRO Quick Start Guide》

Users are advised to read the F4 PRO Quick Start Guide first to understand the process. For detailed product information, please read the F4 PRO dosingPump User Manual.Kamoer provides

2 product description

2.1 Introduction

F4 PRO is a 4-channel intelligent dosing pump with Wi-Fi remote function. It is mainly used to regularly, quantitatively and accurately add various elements needed for the growth of marine organisms to marine bio-cylinders, such as calcium, magnesium, KH enhancer, trace Elements and so on. Through the automatic addition of F4 PRO, the workload of manual addition can be greatly reduced, and mistakes such as missing, excessive or insufficient addition caused by manual addition can be avoided.

2.2 Feature highlights

- Small size and powerful
- amoer's patented gear-driven pump head ensures that the pump head will not slip and rust
- Highly reliable threaded joints ensure no leakage problems
- dosing channel uses 4 different color pump heads to distinguish
- Pharmed BPT imported pump tube, long life, heat resistance, acid and alkali resistance, ozone and UV radiation, anti-aging and oxidation
- Up to 24 titrations per day, 1-99 day cycle dosing or specified weekly titration
- Support traffic calibration
- It contains real-time clock and runs automatically according to the setting parameters. The power-down parameters are not lost.
- Support iOS and Android devices to control the dosing pump through WiFi, support App upgrade dosing pump firmware

2.3 Application

- Marine life breeding
- These include hard coral (SPS), soft coral (LPS), and polyculture coral (SPS/LPS).
- Plant farming
- Used to supplement the different elements consumed during plant growth.
- Other occasions requiring regular quantitative and discontinuous addition

2.4 Out of the box

- Before opening the package, check if the outer packaging is damaged during transportation.
- After opening the packing box, refer to the packing list in the appendix to confirm that all parts are not missing and check for visible damage. If any defects are found during the unpacking process, please contact the manufacturer immediately.

2.5 Part Name

□

2.6 Indicator description

Status indicator (red)

Status	Description
On	Connected to the cloud
Off	Disconnected from the router
Flash fast and continuously	Configure network by router. When the router turns on AP isolation, this mode cannot be used, and you need to switch to AP network configuration mode
Slowly flashing(on for 0.2 seconds and off for 2 seconds)	Configure network by AP
Slowly flashing(on for 2 seconds and off for 2 seconds)	F4 PRO has disconnected from the cloud

Power Indicator (green)

Status	Description
long light	Power on
Off	No power or power failure

3 Product installation

- The dosing pump is a self-priming pump. When the difference between the inlet port and the outlet port is too large, siphoning or reflow may occur.
- In order to avoid siphoning and reflow, the dosing pump should be placed in a reasonable position to ensure that the height difference between the inlet and the outlet is within 0.5 m.
- The inlet pipe should be as short as possible, and the outlet pipe should be suspended above the vessel.
- Please check carefully that the inlet and outlet connections are in the correct direction. Refer to the component connection chapter.

4 App use

This chapter focuses on how to use the App to control the F4 PRO dosing pump.

4.1 Connect the dosing pump to the cloud

After the dosing pump is turned on for the first time, the status indicator (red light) flashes slowly. At this time, you need to use the App to connect the dosing pump to the cloud through the 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 the device, enter the Add Device interface, select "Kamoer_F4 PRO" in the list of supported devices and click to enter;
- 4. Make sure that the mobile phone connection requires Wi-Fi with the network, and ensure that the Wi-Fi can connect to the external network. (The device does not support 5G Wi-Fi, and cannot use 5G Wi-Fi hotspot); Enter the Wi-Fi password, be careful not to enter the wrong password, click "Next" to enter the device networking operation;
- 5. If the indicator light continues to flash rapidly (configure network by router), select the "The red light is flashing fast and continuously" icon on the App interface, click the "Next" button, and wait for the network configuration to be completed.
- 6. If the indicator is flashing slowly at a frequency of 0.2 seconds and off for 2 seconds (configure network by AP), select the "The red light is flashing slowly and intermittently" icon on the App interface, click the "Next" button, and complete the network configuration according to the interface prompts.
- 7-8. Click "Start using" in the interface to enter the device list interface. At this time, the red status indicator lights up, indicating that the dosing pump is connected to the cloud, and the user has also completed the binding with the dosing pump.

Prompt

- Configure the device to connect to Wi-Fi only once. Once the configuration is successful, as long as the app can be networked, the device can be found in the device list after the app is opened.
- If the device configuration fails to connect to Wi-Fi, restart from the first step.

4.2 Binding dosing pump

There are two ways for the user to bind the dosing pump. The first way is to bind the dosing pump through the re-distribution method above; the second way is that the dosing pump has been connected to the cloud through the wireless router, and the mobile phone can be connected to the wireless Under the router, the App will display the locally available dosing pump. The user can click on the corresponding dosing pump in the list of dosing pumps scanned by the locally available equipment to perform binding. The specific operations are as follows:

- 1-3. Open the App, click the "+" button in the upper right corner of the device to add the device, select "Add Device" to enter the Add Device interface, select the dosing pump to be bound in the list of available devices locally, and click to enter;
- 4. After the binding is successful, the binding success prompt will pop up, click to start using, and return to the device list;

4.3 dosing pump control interface overview

Open the App and click the dosing pump in the device list to enter the dosing pump operation interface. The dosing pump operation interface contains three modules:

- a. Plan:** Implement two functions in this module, The first is to set up the dosing plan. The dosing pump is titrated according to the schedule set by the user, which solves the cumbersome and inaccurate manual operation. The second is to check the total amount of the solution bottle, the remaining amount, let the user know the status of the solution bottle, when the solution bottle reagent is insufficient, there will be a yellow color prompt, telling the user to add the reagent in the solution bottle in time.
- b. Manual:** Manually add a certain amount of solution to facilitate the user to operate at any time.
- c. Settings:** contains 3 functions
 - (1) Name setting:** Set the name of the dosing pump and the names of the four pump heads to facilitate the user to distinguish between different equipment and pump heads;
 - (2) Firmware upgrade:** Upgrade the dosing pump firmware;
 - (3) Time setting:** Set the real-time clock time of the device so that the device can execute the plan normally;
 - (4) Flow calibration:** calibrates the flow rate of the four pump heads of the dosing pump to make the dosing pump run more accurately;

4.4 Plan dosing - plan channel list

In the list of planned channels we can see the basic information of each pump operation:

- a. **Pump head name:** indicates which pump head is, the pump head name is set in the setting module;
- b. **Daily addition amount:** The pump head is set according to the planned amount of one day, and is set in the plan details page;
- c. **Cycle period:** the cycle of the planned dosing, divided into two modes: weekly and per day, weekly mode, we can choose to titrate from any day from Monday to Sunday; every few days of mode We can choose the time range from 1 day to 99 days;
- d. **The state of the solution bottle:** It means that the remaining liquid of the solution bottle can be added for several days according to the current daily addition amount;
- e. **Plan switch:** When the switch is turned on, the pump performs the planned titration. When the switch is turned off, the pump does not perform the planned titration;

4.5 Plan titration - plan settings details page

1. **Automatic mode channel list** In the Planning Module Channel list, click the channel that needs to modify the plan to enter the channel plan details page. The channel plan details page contains the following functions:

- a. **Solution bottle status setting / viewing:** The module can view the volume set by 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; we can click the setup button to set The volume of the solution bottle; Note: The daily addition amount displayed on the interface shows the planned addition amount of the titration day, and does not include the manual titration. Actually, if the manual solution is also added, the amount of reduction of the solution bottle is also counted.
- b. **Cycle:** The cycle of the planned titration, divided into weekly and weekly modes, weekly mode, we can choose to titrate from any day of Monday to Sunday; every few days of mode We can choose the time range from 1 day to 99 days;
- c. **Plan group list:** list the set plan group and plan. Just enter the interface, the app only lists the plan group, click the plan group drop-down arrow to list all the plans of the group;
- d. **Add plan group:** Click the button to enter the add plan group interface, set the group name and group time range in the add plan group interface, click save, a plan group is created; a channel can create up to 6 plan groups ;

4.6 Plan titration - plan settings

1. Planning group creation, editing, deletion

The plan for the dosing pump exists in the planning group. To create a plan, first create a planning group, or create a plan within an existing planning group. The purpose of the planning group is to group the plans in a certain time period to facilitate identification. And management, you can create up to 6 groups; the following describes the creation of the plan group:

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

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

2. Plan to create, edit, delete within the group

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

- a. **Number of plans:** Display the number of plans in the plan group;
- b. **Display total addition amount:** Display the total amount of plan added in the plan group;
- c. **The start time of the plan within the plan group:**
- d. **The amount of plans planned within the group:**
- e. **Add an in-group plan:** Click to enter the Add In-Group Plan page. The add plan contains two parameters, one is the start time of the plan, and the other is the added amount of the plan;
- f. **Quick plan to add entries:** Through the quick plan settings, you can add multiple plans in turn;
- g. **Plan start time:** Add start time for a single plan
- h. **Planned addition amount:** Add the added amount of a single plan
- i. **save plan:** plan save

After the plan is created, you can also edit it. Click the plan you want to edit to enter the plan editing interface. Plan the editing parameters and plan to create the interface parameters.

The following describes the addition of shortcut plans and the deletion of individual plans.

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

- a. **number of additions:** the number of plans to be added;
- b. **Total addition amount:** the total addition amount to be added;
- c. **Single addition amount:** the added amount of a plan, divided by 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 shortcut settings plan, if the requirements are met, you can click the save button to save the plan;
- f. **save:** save the shortcut plan;
- g. **Delete a single plan:** Click the plan you want to delete to the left, the delete plan button will appear, click the delete button to delete a plan;

4.7 Manual dosing page

Manual dosing can be done at any time to meet the user's temporary add requirements.

- a. **Manual mode:** Click to enter manual mode
- b. **Pump name:** can be set in the setting module;
- c. **Drip titration:** set the amount to be titrated manually, and the pump will stop automatically after titration;
- d. **Start/Stop button:** Controls the start and stop of the pump;

5 Settings page

- - a. **Equipment serial number:**
 - b. **Current version of firmware:** displays the current version of the firmware. If the firmware is updated, there are prompts below;
 - c. **Name:** Here you can modify the device name and the name of each pump head to identify the purpose of the equipment and pump head;
 - d. **Update:** Firmware update, if there is a new firmware release, there will be a prompt;
 - e. **Time setting:** set the real-time clock time of the firmware to ensure the correct execution of the pump dosing plan;
 - f. **Flow rate calibration:** The flow rate of each pump head is calibrated here. The purpose of flow calibration is to improve the accuracy of the added elements;
 - g. **Anti-chemical interference:** Set the anti-chemical interference time of the dosing pump to prevent the chemical interference caused by the simultaneous addition of elements, and prevent chemical interference time. It is only effective for the automatic mode and does not work for the custom mode.

5.1 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 to ensure the normal execution of the device dosing plan.

- - a. **device time:** the current real time clock time of the device;
 - b. **App time:** the current time of the mobile phone;
 - c. **Time synchronization:** After the click, the device time synchronization is synchronized. After the 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 real-time clock time and mobile time of the device after time synchronization;

5.2 Flow calibration

The purpose of calibration is to improve the accuracy of the added elements; In the setting interface, click "Flow Rate Calibration" 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 measuring cylinder. The pump is equipped with a 10ML measuring cylinder at the factory. Considering the different concentration of the dosing solution of the pump tube, the aging degree of the pump tube is different. It needs to be calibrated for the first time. If the dosing is not accurate, it should be calibrated in time.

- - a. **Flow rate calibration:** Click the flow rate calibration in the setting interface to call up the flow rate calibration channel selection interface;
 - b. **Channel selection:** flow rate calibration channel selection, the current flow rate of the pump head is marked on the interface;
 - c. **Start emptying:** the purpose of emptying is to let the air in the pump tube discharge, so that the accuracy will not be affected after the calibration; after clicking the emptying, it is found that the air in the pump tube is discharged and can be stopped by clicking;
 - d. **Drip timing:** set the running time of the pump during calibration; Before proceeding to the next step, make sure that the pump inlet is immersed in the water and the pump outlet is placed in the cylinder;
 - e. **Start dosing:** Click the dosing button, the pump will run the last set of time and stop;
 - f. **Input volume:** input the volume of the liquid in the measuring cylinder and input it in ml;
 - g. **Calibration completed:** Click the "Calibration Complete" button to complete the flow calibration.

5.3 Firmware upgrade

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

- - a. **current version of the firmware:**
 - b. **New version prompt:** If there is a new version, there will be a new version prompt;
 - c. **After the firmware update is completed:** the display status after the firmware update is completed; The upgrade steps are as follows:

Enter the App settings interface. If a new firmware version is found, click the b update button to update the firmware. Do not perform other operations at this time. Do not exit the app or re-enter the app. When the upgrade is complete, the red status indicator of the dosing pump will be on. The buzzer will ring twice, indicating that the device firmware upgrade is complete. After the device upgrade is complete, you can perform normal operations. If the upgrade fails, repeat the upgrade procedure.

**Note: You cannot power off during the upgrade process, and the App does not perform other operations during the upgrade process. **

6 Appendix

6.1 Technical Parameters

- **size(Length, width and height)** 250x59x49mm
- **weight** 950g (Does not include a power adapter)
- **power adapter**
 - Input: 100VAC -240VAC
 - output: DC12V 2A
- **Dosing parameter**
 - Dosing channel: 4 KFS pump
 - Number of dosing: 24 times/day - 1 time/99day
 - Dosing accuracy: <0.5
 - Volume range: 0.1 ml-9999.9 ml
 - Pump tube life: >1000 hours
- **interface** WIFI and CAN communication interface
- **working environment** Temperature 0 - 70 ° C, humidity 10% - 90% (non-condensing)
- **Storage environment** Temperature-20°C - 85°C ,humidity 10% - 90% (non-condensing)

6.2 After-sales warranty information

- **1. Warranty conditions** The free service during the warranty period is valid only for normal use and maintenance according to the user manual. Any malfunction or damage caused by human beings is not covered by the warranty. Users should take good care of the purchase invoice and user manual so that you can get satisfactory after-sales service in time.
- **2. Warranty scope** The company will provide free warranty service for any damage caused by manufacturing processes or components within one year from the date of purchase. The free repair service provided during the warranty period includes free repair, free replacement and replacement of faulty spare parts, and products that cannot be repaired are replaced by the same model (the model has been discontinued, and the model is similar). The free service does not include shipping costs for the product due to repairs.
- **3. Non-warranty scope** The following factors are not covered by the free warranty, and customer repairs are subject to a fee.
 - 1) Product appearance (please confirm at the time of purchase);
 - 2) Improper use, maintenance or storage (please use, maintain and keep it in accordance with the user manual);
 - 3) Access to an improper power source;
 - 4) Damage to components caused by short-circuiting of the circuit board caused by various types of insects entering the machine;
 - 5) Losses due to accidents;
 - 6) Use of inappropriate spare parts (not applicable to our spare parts);
 - 7) Those who are not authorized by the company are negligent in handling, modification or repair (please do not disassemble and repair);
 - 8) malfunction or damage caused by use outside the applicable place;

- 9) Damage caused by force majeure;
- 10) consumable parts (such as pH electrodes, ORP electrodes, etc.);
- 11) The warranty period has expired.

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7 update log

date	detail
2021-03-17	Update connection network process
2020-05-18	Delete QRCode
2022-03-11	Add fcc warning