

X2S

WATER CHANGE PUMP USER MANUAL



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Product information

Introduction

The X2S is a two channel app controlled water change pump. Through the App users can set the pump to perform regular automated water changes or if required a manual change at the press of a button.

This unit also comes equipped with an automated top up system to replace water lost through evaporation and an emergency sensor to prevent overfilling.

Features

- Stepper motor driven pump heads for long accurate operation
- Built in auto top up system
- Pharmed long life pump head tubing
- Up to 12 water change plans per day
- Programmable water change cycle between 1 and 99 days
- Pump heads can be calibrated
- Built in real time clock with battery back up
- App supports IOS and Android devices
- Pump firmware can be updated via the app
- Manual and automatic water change options
- Emergency high water level sensor with alarm

Unpacking

Please check for delivery damage before unpacking. Once opened, please inspect the product for any visible damage and check all parts are included. If any defects are found when unpacking, please contact your retailer immediately.

Box Contents

- X2S water change unit
- Power adapter
- 10ml plastic measuring cylinder
- 4x6mm PVC tube
- 8x11mm PVC tube for ATO
- 2 x Tube clamp
- Y tube connector
- 2 x Float Sensor
- 2 x Magnetic Float sensor mounting bracket
- 24v Auto top up pump
- DC connector wire
- Anti-siphon tube connector for ATO
- Pump head silicon grease

Product Layout



- 1. Waste water outlet
- 2. Waste water inlet
- 3. Clean water outlet
- 4. Clean water inlet
- 5. Left pump status indicator
- 6. Power/Wi-Fi Status indicator
- 7. Right pump status indicator
- 8. Left Pump manual button
- 9. Right pump manual button

- 1. 24v DC Power connector
- 2. Wi-Fi reset button
- 3. Operating level sensor port
- 4. Emergency overflow sensor port
- 5. Not used
- 6. Not used
- 24v DC outlet for auto top up pump



Status lights

The X2S unit has three status lights. One to indicate the unit's power or Wi-Fi status and two that show the individual pump head status.

State Indicator	Status	Description
	On	The X2S is in router connection mode allowing
Red		the app to control via the router.
Wi-Fi Status	Off	The X2S is in direct connection mode allowing
Indicator		the app to control directly from the mobile
		device.
	Fast Flashing	Wi-Fi configuraton mode is active.
	Slow	Connection has been lost with the router.
	Flashing	
Green	On	Power supply is active.
Power		
Indicator	Off	No power to the unit

Note if the green power light and red Wi-Fi indicator light are active at the same time the 'State' indicator will appear orange.

The 'Pump 1' and 'Pump 2' status lights indicate if the pump heads are running. When the pump head is running the corresponding indicator will be on and when the pump stops the indicator will switch off.

Installation

The X2S pump heads are self-priming. When there is big difference between the inlet and the outlet height, siphoning may occur. To avoid siphoning, the dosing pump should be placed in a position to ensure that the height difference between the inlet and the outlet is within 0.5m. The inlet tubes should be as short as possible, and the wastewater outlet tube should not be submerged.

Please carefully check that the inlet and outlet tube connections are correct on the pump heads and that the hoses are pushed fully onto any connections.

The pump should be secured into place or installed in a stable location not above open water or very humid environments.

When installing the auto top up system the anti-syphon connector needs to be positioned inline on the tube just above the full water level of the freshwater ATO reservoir.

Pipe and Sensor Connection Diagrams



Installing the Kamoer Pump App

Option 1. Scan the QR code on quick start leaflet included with the pump and download the app corresponding to the icon below.



Option 2. Apple users visit the App Store, Android users visit the Google Play store, search for "Kamoer Pump", find the app with the corresponding above icon and download.

Kamoer Remote App supports Android 4.4 and above and supports iOS 9.1 and above.

Controlling the pump

There are two options for controlling the X2S. It can be connected to the home router or controlled directly with a mobile device through the app.

Direct connection

Direct connection will allow you to control the X2S directly from your mobile device. This is useful in situations where Wi-Fi signal is weak, there is no Wi-Fi available or the router can only broadcast a 5ghz signal.

Before making a direct control connection to the pump it will need to be reset into direct connection mode. To do this press and hold the reset button on the back of the unit. When the 'State' indicator flashes red twice, and the buzzer sounds twice, release the button immediately. The 'State' indicator will show solid green to indicate power is on and it is in direct connection mode.

Make sure the app is closed and open the Wi-Fi settings page on the mobile device. The Kamoer X2S pump should appear in the list of available devices. Select the pump and connect using the password "a12345678".

Open the Kamoer Pump App and it will automatically search for the pump then display it in the list of available devices.

Tap on the pump in the list of available devices to enter the control settings page.

When you have finished setting the pump return to the Wi-Fi settings page on your device and re-connect to the home network.

Before going into the app again to control the X2S you will first need to join the network of the pump by going into the Wi-Fi settings and selecting it from the list of available devices.

Connection through a router

Connect the power supply to the X2S and make sure that your mobile device is connected to the home Wi-Fi network.

Please note the device does not support 5G Wi-Fi and cannot use a 5G Wi-Fi hotspot. If your internet supplier's router is running a mixed mode 2.4ghz/5ghz Wi-Fi network please check their online instructions, website or support forum to de-synchronise the bands into two separate 2.4 and 5ghz networks before attempting to connect the pump.

Open the Kamoer Pump App and select the device connection button in the top right corner.



Select the X2S from the list of available devices and choose the option to 'Connect devices through routers'.

Press the reset button on the back of the unit. The status light on the front of the unit should start quickly flashing red to show it is ready for connection. Tap on the blue confirmation bar at the bottom of the screen to continue.

Enter the password for the Wi-Fi network that your mobile device is connected to and that you are connecting the pump to. Then select connect.

The app will confirm the connection to the pump when it is successful and return you to the home screen. Tap 'search devices' on the bottom of the screen in the devices page and the X2S pump will be found and added.

Tap on the pump in the list of available devices to enter the control settings page.

Programming the pump

Main device settings page



After selecting the device from the available list in the app home page the device settings page will be shown.

In this you can

- a. Auto Change: This is the main device page used for setting up the automatic water change program.
- b. Manual Change: Used to operate the pumps manually.
- c. Tank: Settings page for the clean water and wastewater containers. In here you can set the volume of the containers and keep track of how full or empty they are.
- d. Setting: Advanced setting for the pump including calibration, setting the auto top up, firmware updates and factory reset.

Setting up an auto water change program



- a. Selected run times.
- b. Start time for the next water change program.
- c. Percentage of the tank volume to be changed.
- d. Volume of water to be changed.
- e. Total volume of the aquarium.
- f. Frequency of water change program e.g. 1 = every day, 2 = every 2 days.
- g. Status of emergency overflow sensor.
- h. Test run for volume correction.

To set the tank volume and water change volume parameters c, d, e and f tap on the individual settings to enter the desired values. Parameters c, d and e will automatically update if one is changed.

Tap on one of the run times to enter the 'Work Time' settings page. In here you can select up to 12 time slots for a water change to take place. The total volume of water that you choose to change that day will be split in to equal smaller changes. In the example below the pump

is set to perform a total water change of 1.8 litres over 6 of the available time slots. As a result, at the beginning of each time slot the X2S will perform a 300ml water change.

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	Work to	oday		04:00		\bigcirc
18:00	16:0	00	06:00	06:00		\bigcirc
			1	08:00		
16:00		9	8:00	10:00		
14:	00	10:00		12:00		
14:	12:00	10:00		12:00		
14: Ratio 0.6%	00 12:00 ©	10:00 Water change 1.8L	di	12:00 14:00 16:00		
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14: Ratio D.6% fank volume 300.0L	00 12:00 © 1 0	10:00 Water change 1.8L Cycle(day) 1	ılı E	12:00 14:00 16:00 18:00 20:00		
atio 0.6% fank volume 300.0L	00 12:00	10:00 Water change 1.8L Cycle(day) 1	ılı E	12:00 14:00 16:00 18:00 20:00 22:00		
Ratio 0.6% Tank volume 300.0L Anti-overflow Ser	00 12:00	10:00 Water change 1.8L Cycle(day) 1	ili E	12:00 14:00 16:00 18:00 20:00 22:00		

Please note that the maximum pump speed of each head is approximately 300ml per minute, so the maximum volume of water exchange is approximately 17.5 Litres per time slot, to allow for the removal of water and then refilling. Enough time slots have to be selected to perform the volume chosen for the water change, if this is not the case the program will not run and a warning will appear on the screen.

Testing the plan volumes

The individual pump heads can be calibrated, this should be performed before completing this stage and leaving the X2S to carry out its program. To perform this, see the calibration section in this manual.

Before running the plan test it is recommended to disable the auto top up function manually in the settings page and reactivate it when finished. The auto top up system will be automatically disabled during the plan test, it will however reactivate instantly when done and activate if the finishing water level is lower than the original. This will make accurate calculations difficult for this procedure.

Once the heads have been calibrated and the pump is in position with all the tubing connected you will need to perform a test run. Even though the pump heads have been calibrated the performance can vary slightly due to hose lengths and other external factors.

To perform a test run, select the 'Plan test' option from the device settings page.

Accurately mark the water level of the sump or aquarium, whichever will drop as water is removed from the system.

Tap on 'Exchange Water' in the app. The test run will begin according to the plan set. During this the inbuilt freshwater auto top up system will be disabled. This can be reactivated in settings once finished. The left hand pump will remove the planned volume of water and when finished the right hand pump will refill the system.

Once the cycle has completed compare the finished water level with the marked starting level. If there is a difference this should be calculated and entered in the app. This will ensure that the volume of water removed and then replaced are the same in future water changes. This is important to keep the operating water level constant and the salinity stable if used on a saltwater aquarium.

If necessary calculate the difference in water volume between the starting point and the finish point and enter the value. If the water level is lower after the water change add it as a negative value.

Select complete at the bottom of the 'Plan Test' page in the app to save the correction.



Performing a manual water change

To change water in the aquarium system manually via the app select the 'Manual Change' icon at the bottom of the device settings page.

No SIM ♥ く	16:16 Device	•
	Left out Right in	
	Out In)
Auto change	tanual change Tank	© Setting

In this page the pump heads can be operated manually.

Before performing a manual water change ensure the inbuilt freshwater auto top up has been disabled in the settings page and reset when finished.

Tap on the 'Out' button to start the left hand pump head removing water from the aquarium system. Once the desired volume of water has been removed tap the button again to stop the pump.

To refill the aquarium system tap on the 'In' button to operate the right hand pump to start filling. When the desired volume of water has been replaced tap the button again to stop the pump.

Container Volumes

The app can monitor the volume of water in the clean water and wastewater containers.

SM 🗢	16:17 Device	© D Setting	No SIM ♥	16:20 Setting	
Wastewa	iter Freshw	vater	Wastewater		h
			Refill System		
b 0.0%	100.0)% C			
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astewater Volume	Freshwater V	olume 🕐			
u	200.02	e			
¢ U	a	0			
iuto change Manual o	hange Tank	Setting	-		

- a. Container settings page.
- b. Wastewater container.
- c. Clean water container.
- d. Total volume of wastewater container.
- e. Total volume of clean water container.
- f. Settings page to activate container monitoring.
- h. Wastewater container activation switch.
- i. Clean water container activation switch.

To set the container monitoring, tap on the settings page in the top right corner and turn on the wastewater and clean water activation switches.

Return to the main page by selecting the chevron in the top left corner then enter the volumes of the containers by tapping on the volume and entering the desired number.

If the waste is sent directly to a drain the wastewater container can be turned off and the app will monitor the clean water container only.

Settings Page



- a. Settings page Tap on the gear symbol to enter the settings page.
- b. Work Mode / Dosing Mode The X2S can be used as a water change device (Work Mode) or set to run as a twin head dosing pump (Dosing Mode) for the addition of additives.
- c. Flow Calibration This is used to calibrate each pump head, please see the calibration section in this manual.
- d. Automatic top up function Tap on this to activate or deactivate the inbuilt freshwater auto top up function.
- e. Easy Guide This can be used as a quick reference guide to run through the basic settings of the X2S.
- f. Factory Settings reset This will reset all the programmed settings on the pump to factory default.

Pump head calibration

When the pump is initially set up, pump tubes have been replaced, or if the unit has been in service for a period of time it is worth calibrating pump heads to ensure accuracy.

To calibrate open the app and select the device.

Tap the 'Setting' icon located at the bottom right of the page. Select 'Flow Calibration' from the list and then choose the pump head to calibrate.

sm ≎ 16:31 (Setting	•	No SIM 🗢 16/3 K Flow cali Left o	थः bration ल
Work mode 🔻		Linsert the pump tube inlet into t "Start emptying",wait unit the wa click "Emptying,click to stop".	he water container,click ter fills the entire line and
Flow calibration Left out: 300.0ml/min Right In: 300.0ml/mi	in 💦 🗧	Start priming	
Refill Water	>	2.Insert the pump tube inlet into titration time and click "Add Star titrated water output.	the empty cylinder,set the t". The meter collects the
Guide	<i>*</i>	Add time	10
Factory Settings Reset	>	Start add	
		3.Enter the cylinder volume and o to complete the calibration.	lick "Calibration Complete
		Get volume	
Select pump and calibrate		Calibration	
Left out			
Right in			
Cancel			

Make sure the inlet hose for the pump is submerged and that the outlet hose is directed into a suitable collection container.

Tap on 'Start emptying' to prime the pump head and hose. Once all air has been expelled and the line is fully primed tap 'Emptying, click to stop'.

Move the outlet hose into a suitable measuring cylinder.

Set the time for pump calibration by selecting 'Add time' and scrolling through to the desired time. This can be set up to 60 seconds. For increased accuracy, a longer calibration time is best. Please be aware the measuring cylinder needs to be large enough to hold the volume of the water for the calibration.

Tap on 'Start add' and the pump will run for the time selected in the previous step.

Once the pump has stopped remove the outlet hose from the measuring cylinder and stand the measuring cylinder on a flat level surface. Use the scale on the side to determine the volume of liquid.

Enter the volume of liquid collected in ml by tapping in the space next to "Enter volume". Select calibration complete at the bottom of the page and the pump will calculate the flow rate from the time and volume you have entered. The chosen pump head is now calibrated.

Please be aware the calibration is only as accurate as the person performing the calibration.

Dosing mode

The X2S can also be used as a two channel dosing pump for the addition of additives or supplements. In this mode the freshwater auto top up system will function as normal but cannot be turned on or off via the app.

WARRANTY:

Should any defect in material or workmanship be found within 12 months of the date of purchase D-D The Aquarium Solution Ltd undertakes to repair, or at our decision, replace the defective part free of charge.

Our policy is one of continual technical improvement and we reserve the right to modify and adjust the specification of our products without prior notification.