

# AQUA-REX WK4

## INSTALLATION, OPERATING & MAINTENANCE INSTRUCTIONS

### CONTENTS

- 2 Introduction &  
Controller Diagram
- 3 Installation
- 4 Commissioning
- 4 Operating
- 6 Maintenance
- 7 Specification

#### MAINTENANCE - BATTERY CHANGE INTERVAL - 5 YEARS

See Page 6 - Battery Backup

DATE OF COMMISSIONING MM/DD/YYYY

BATTERY CHANGE DATE

DUE

DONE

FIRST

MM/DD/YYYY

MM/DD/YYYY

SECOND

MM/DD/YYYY

MM/DD/YYYY

THIRD

MM/DD/YYYY

MM/DD/YYYY

FOURTH

MM/DD/YYYY

MM/DD/YYYY



### PHYSICAL WATER CONDITIONER

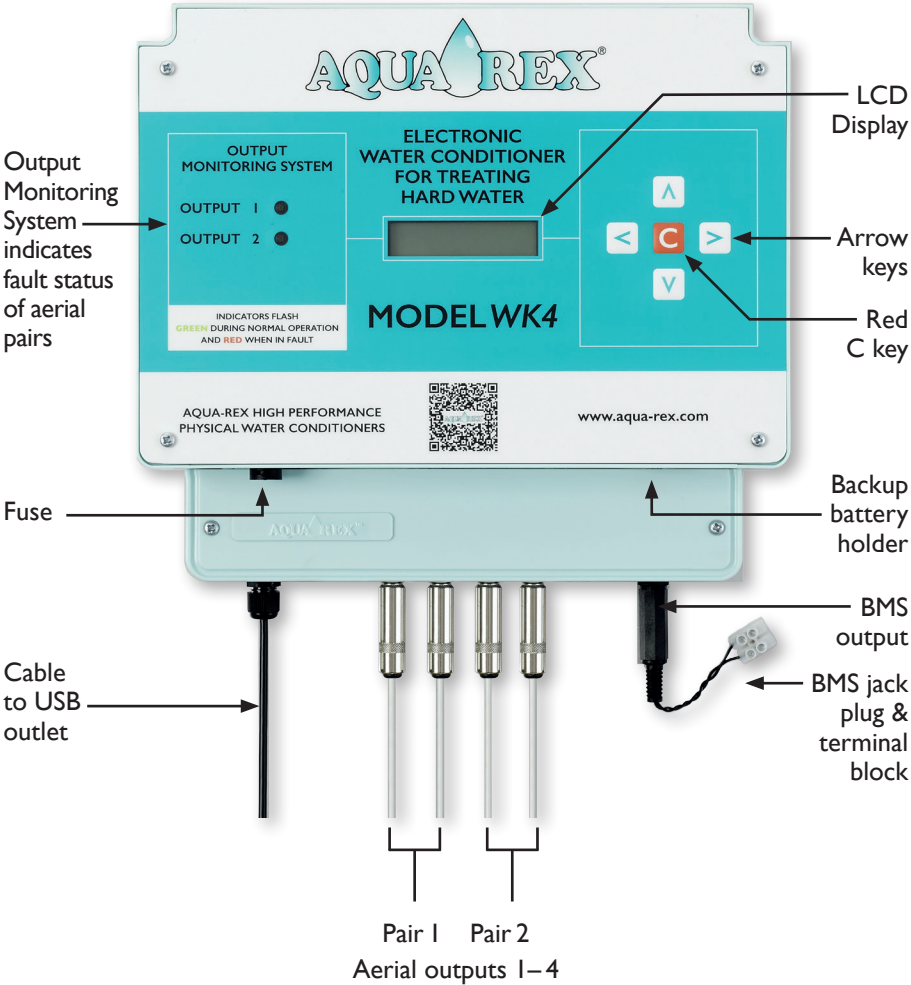
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# INTRODUCTION

The **Aqua-Rex WK4** is a Physical Water Conditioner for treating hard water suitable, for all pipe sizes and materials up to 4" diameter.

The unit has four aerials arranged in two pairs. Each of the 23 foot aerials will allow at least fifteen wraps around a 4" diameter pipe. The signal generated by the aerials travels through the water, both upstream and downstream, regardless of whether the water is flowing or not.



# INSTALLATION

## Location

When selecting a location for the device the following points must be considered:

- The aerials require approximately 16" of pipework
- The unit is best installed after a pump or booster set
- Any earth bonds should be upstream of the unit
- Avoid installing on flexible pipes

## Installing the Control Box

The control box should be installed within 18" of the pipe being treated. It can be hung from pipes, support brackets or attached to a wall. The moulded lugs at the top of the unit can be used for screws, wire or zip ties. Take care not to over-tighten screws as this may damage the mounting points.

## Aerial Wraps

The two aerials on the left of the box make up one pair and the two aerials on the right make up the other pair. Each pair of aerials must be wrapped in opposing directions away from a central point. When facing the pipe, one aerial should start by passing behind the pipe and the other should pass in front of the pipe. Leave a small gap between each set of aerials. Secure each end of the aerials with the zip ties provided.

Repeat the process with the other pair of aerials. Once installed ensure all aerials are plugged into the correct output socket prior to powering up the controller.

**Do not allow gaps between wraps.  
They should be tightly wound and close together  
so they look like a closed slinky.**

Each aerial requires a minimum of 15 wraps and we recommend installers make as many as the length of wire allows. You do not need to have the same number of wraps on all aerials. If there is going to be surplus aerial wire, ensure it is at the end with the rubber cap rather than the end with the plug. Surplus aerial wire can be cut off and the cap refitted to the end. You can wrap the aerials either side of a "T" junction or elbow, on a horizontal or a vertical pipe. Once installed, pipe insulation can be fitted over the top of the aerials.

**For guidance on where best to locate Aqua-Rex units, always refer to the Aqua-Rex Specifiers Guide\* or contact our technical helpline on 702 304 2170.**

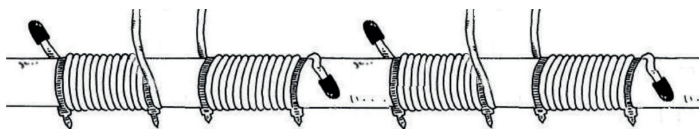
**\*Scan here to view the Specifiers Guide:**



**Alternatively, if a quotation has been supplied by Aqua-Rex, refer to the recommendations contained therein.**

## DO NOT GROUND ANY AERIAL

When you have finished it should look like this:



### Power Supply

Power to the unit is provided by a cable with a USB connector on the end. It can be plugged into any USB power outlet.

### Building Management System (BMS)

A BMS socket and 3.5mm jack plug with terminal block is provided for connection to the BMS to report power failures or output faults. The isolated BMS contact is rated for signal levels only. The maximum rating is 24V and 100mA. The contact remains closed during normal operation (fail safe) and opens upon fault.

## COMMISSIONING

The Aqua-Rex WK4 is high a performance physical water conditioner with integral self-resetting guard chip and fault monitoring system. Whilst the guard chip automatically resets the unit in the event of a program failure or power outage, the fault monitoring system provides a complete operating history for the controller; with each fault chronologically logged as it happens, then again as the fault is cleared.

Once the Aqua-Rex WK4 has been installed and powered up, the user must follow the operating instructions to set the time and date and clear any faults. When complete the LCD display should read "ALL OUTPUTS O.K. TESTING AERIAL X" (where "X" denotes the aerial under test). The controller is now commissioned.

We recommend installers label the enclosure with the date of commissioning before securing this operating manual nearby for future reference.

### Setting Time/Date

From the home screen press the right arrow to access the time/date screen. Whilst on this screen the outputs cease to operate and the output monitoring indicators and LCD display turn solid amber. If no keys are pressed for 30 seconds the controller will automatically revert to the home screen and normal operation will resume.

To set time/date press the right arrow a second time. This will change the LCD display green. The user can now use the right and left arrows to navigate between the time and date settings. The parameter that can be altered by using the up and down arrows will flash. To save the settings press the Red C key. This sends the information to the internal clock module and navigates the user back to the home screen.

# OPERATING

Before powering up the control unit ensure that the aerials have been correctly paired and installed (please refer to Aerial Wraps section of the Installation page for guidance). At power up the LCD display will show the start-up screen "INITIALISING MODEL TYPE:WK4" for five seconds, during which time the unit completes an initial test. The output monitoring indicators will flash green unless a fault is detected. The BMS contact will close.

Once the initial test protocol is complete the LCD display will change to the home screen, which shows the status of the controller on the top line and the continuous sequential testing of each aerial output on line 2.

If all outputs are fault free, the home screen display will read "ALL OUTPUTS O.K. TESTING AERIAL X" (where "X" denotes the aerial under test) and the output monitoring system indicators will continue to flash green.

Should any of the aerials be in fault the output monitoring indicator for the affected pair will flash red as will the LCD display. The home screen display will change to "Faulty Ae:--x- TESTING AERIAL X" (where "X" denotes the aerial at fault on the top line and the aerial under test on line 2). The BMS contact will also open.

To remedy the fault ensure that the aerial has been correctly inserted into the output socket. Check the insulation is intact and the aerial has not been grounded to the pipe.

Once the fault has been rectified the sequential testing will detect this and the LCD display will revert to "ALL OUTPUTS O.K. TESTING AERIAL X". The BMS contact will close.

## Fault Monitoring System

From the home screen press the left arrow to access the fault monitoring system. Whilst on this screen the outputs cease to operate, the output monitoring indicators turn solid amber; the LCD display turns light purple and the following instruction is displayed "MOVETHROUGH LOG WITH UP/DN KEYS".

The user can now access all logged faults by pressing the up arrow then using the up and down arrows to navigate through the entries. There are two types of faults that are recorded; power failures or output failures.

A power failure will be displayed as "POWER STATUS LOG OFF:- XX/XX/XX" and will always be followed by "POWER STATUS LOG ON:- XX/XX/XX" to record when power was restored (where "XX/XX/XX" denotes the date expressed as DAY/MONTH/YEAR).

An output failure will be displayed as "FAULT LOG: --X- UPDATED: XX/XX/XX" and will be followed by "FAULT LOG: ---- UPDATED: XX/XX/XX" when the fault is cleared.

The top line of the output failure display is a record of which aerial output is in fault (where “X” denotes the number and position of the aerial) whilst line 2 is a record of the date the fault occurred or was cleared (date shown as XX/XX/XX” for the purposes of this illustration).

When all logged faults have been scrolled through the display will show “END OF DATA LOG! PLEASE GO BACK”. Pressing the down arrow will navigate back through the log. Pressing the right arrow navigates the user back to the home screen, resuming normal operation. If no keys are pressed for 30 seconds the controller will automatically revert to the home screen.

**Please note that the fault monitoring system is designed to supplement the BMS contact, which should connect to the Building Management System. The BMS contact opens when a fault is detected and remains open until the fault is cleared.**

## MAINTENANCE

All Aqua-Rex models have a design life in excess of 25 years and benefit from a self-resetting guard chip that automatically resets the system if the program malfunctions or if it is upset by a power spike. While the guard chip ensures resetting of the output signal in all normal circumstances it is possible for the LCD to jam, in which case rebooting the controller at the on/off switch will reset the system.

### Fault Monitoring & BMS

The Aqua-Rex WK4 features a fault monitoring system, which can be accessed through the LCD display and provides a complete operating history with each fault chronologically logged. The monitoring system has capacity to log up to 1024 faults before automatically over-writing historic data, beginning with the oldest logged entry first.

As well as recording a fault, the controller will also notify the user in real time via the LCD display, output monitoring indicators and BMS contact.

### Battery Back-up

The fault monitoring system has an integrated battery back-up to enable data to be recorded and retained during power outages. If the back-up battery fails during an outage the time and date setting will be lost. Aqua-Rex will continue to perform effectively.

We recommend replacement of the battery every 5 years and suggest users record the date by affixing a dated label to the enclosure. To remove the battery, use a screw driver to make a half turn to the battery holder cap. The battery holder can be found on the underside of the upper section of the enclosure with the word “BATTERY” debossed across the cap. Please replace with a 3.6V lithium thionyl chloride 2600mAh non-rechargeable AA battery.

# SPECIFICATION

<b>Model</b>		Aqua-Rex WK4
<b>Sizing</b>	Maximum pipe diameter	4"
	Maximum flow rate	Aqua-Rex can treat any flow rate
<b>Output</b>	Aerial length	23'
	Aerial number	4
	Minimum aerial wraps	15
	Frequency range	1–10kHz
	Peak to peak voltage	82V
<b>Power</b>	Supply Required	USB Outlet
	Consumption	2W
	Cable length	7'
	Fuse	20mm I Amp.T. (time delay)
<b>Enclosure</b>	Dimensions (W x H x D)	12" x 10" x 4"
	Weight (boxed)	10lb
	Ambient temp range	32–160 F
	IP Rating	IP64
<b>Features</b>	Fault Monitoring	Integral fault monitoring system with LCD display, LED output monitoring indicators and battery back-up
	BMS	Yes (maximum rating is 24V and 100mA)
	Guard Chip	Monitors performance of program and auto-resets in the event of a malfunction, a system failure or if a power spike or outage occurs
<b>Lifecycle</b>	Design life	In excess of 25 years
	Maintenance	Back-up battery replacement every 5 years
	Running costs	Expected to be less than \$20.00 per annum
<b>Performance</b>	Testing & Standards	Performance verified by IAPMO R&T Labs using IGC-335 Rapid Scaling Test

All information is correct as of date of publication: January 2022.

Scan here to visit  
[www.aqua-rex.com](http://www.aqua-rex.com)



Aqua-Rex is manufactured in England by Lifescience Products Ltd  
and distributed in the USA by Aqua-Rex LLC

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### **100 Day Money Back Guarantee**

If, for any reason whatsoever, you are dissatisfied with your Aqua-Rex product, you may return it at any time during the first 100 days after purchase and the purchase price will be reimbursed in full. Simply return it to wherever it was purchased, together with your full name and address and proof of purchase, showing the price paid.

### **20 Year Manufacturer's Warranty**

Lifescience Products Ltd guarantees to repair or to replace the Aqua-Rex treatment unit in the event that it suffers from any manufacturing defect during the first twenty years after purchase. The unit should be returned to us properly boxed and wrapped, together with the proof of purchase, showing the price paid.

**AQUA-REX LLC cannot accept responsibility for consequential loss  
as a result of the performance or otherwise of the Aqua-Rex unit.**