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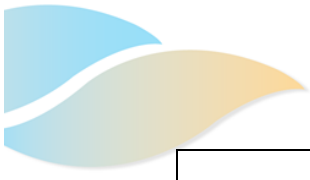
## Pool Twin display water treatment using liquid chlorine





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## INTRODUCTION

This WiFi pool set contains all components to measure and regulate pH and Redox (liquid chlorine).

The peristaltic pumps start and stop according to the automations defined via the display **WiFiPoolApp**. You can start your pH or RX control pump based on the pH and your chlorine pump based on the measured Redox.

## SAFETY

To ensure optimal product usage and prevent accidents, please thoroughly review this manual before installing and using the product. It is imperative to strictly adhere to the instructions for your safety and proper operation of the salt chlorinator. Failure to follow safety warnings could result in severe consequences including serious injury, property damage, and even life-threatening situations.

### General

- Installation personnel should read this manual carefully before proceeding with installation. In case of incorrect use, contact your provider.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental abilities, or lack of experience and knowledge, except under the supervision or instruction of a responsible person regarding its safe use.
- Improper installation can create an electrical or chemical hazard, resulting in serious injury.
- Always wear gloves and safety goggles when working on the facility.
- If you are not familiar with the pool filtration system and dispensing equipment:
  - o Read all installation and operating instructions before using dispensing equipment.
  - o Only a qualified installer, center, individual, or authorized dealer can repair this product.
  - o Never change anything without consulting your supplier, a professional pool contractor.
  - o In case of damaged parts, use only original spare parts. Failure to do so will void your warranty.
- Maintenance and use should be performed in accordance with the recommended time and frequency as indicated in the manual.
- Do not install the device in an area where the electronic may be damaged by moisture or rain.
- Install the water treatment unit on a solid base or against the wall (always vertically).
- Always keep the product in an upright position. If the product is tilted or placed on its side, the probes will not be able to measure properly, resulting in incorrect readings.
- In case of damaged parts, it is preferable to purchase replacement parts from the manufacturer. Use only original standard parts. Failure to do so will void your warranty.




## Electrical

- Disconnect all power supplies during installation or during any other operation on the equipment.
- It is recommended that the water treatment unit be installed in a bypass configuration so that:
  - o Chlorine and acid pumps cannot operate if the filtration pump is not working. This can be done by purchasing a metering device with a flow switch, adding a flow switch to the facility, or using the same or shorter timer than the filter pump.
  - o Chlorine and acid pumps can be turned off manually. This can be done by using the on/off button at the bottom of the dosing pump or via the manual control of the app.
- If a frequency converter is used, we recommend to locate it at minimum 3m from the dosing unit, to use a separate electrical circuit for the converter and the pH/RX pumps unit and to verify interactions between frequency converter and pH – Redox measurement (verify that pH and Redox do not deviate when switching on-off the converter).
- All external power supplies and adapters for pool equipment must be connected to a power source with 30 mA residual current protection.
- Make sure all equipment and pool water are properly grounded. The pool hose is grounded via an in-line grounding to an independent grounding pole.
- Before performing any maintenance or operation, make sure all electrical equipment (the peristaltic pumps, salt electrolysis etc ..) are disconnected and the "OFF" position switch off the power source.
- NEVER make adjustments inside the equipment.
- Our devices do not have an audible alarm, only an on-screen alarm.

## Chemical

- Keep the installation and chemicals out of the reach of children. Always wear safety gloves and goggles when working on the installation.
- Calibrate pH and Redox probes before first use and at least every 3 months thereafter. Check the chlorine level and pH "regularly" with a high quality color method.
- The addition of pool chemicals should be done downstream of the pool accessories such as the water heater, UV lamp, filter and downstream of the measuring probes
- Chlorine and acid react together to form toxic chlorine gas. Make sure the chemicals are placed outdoors or in a very well-ventilated area, in a drip tray, that they cannot come into contact with each other, and that they are kept out of reach of children...
- Make sure water or chemicals cannot drip onto the installation. Do not place equipment under the dosing system. Dripping of Chemicals onto equipment will not make part of a guarantee compensation.
- Have 2 sumps underneath the equipment to collect leaks at peristaltic pumps and injection nipples. Sump pans should be positioned so that chlorine and acid leaks cannot mix.
- Repair leaking pipes immediately. Do not operate equipment with leaky pipes.
- Only use liquid chlorine with anti-scaling precipitation agent.
- For Chlorine injection leakage, please read the scaling cleaning chapter in the full manual.
- Make sure the machines you use are programmed so that acid and chlorine are never added at the same time.
- The acid dispenser should not be used with hydrochloric acid (HCl).

- 
- Use only liquid chlorine approved for swimming pools and with anti-calc remover, or add an anti-calc remover to liquid chlorine.
  - Use a maximum of 14.99% sulfuric acid as the min pH.
  - Make sure the chlorine container and the acid container are not confused. Make clear markings on your installation and on the chemicals.
  - Do not allow children or unauthorized persons to reach the chemicals.
  - To ensure proper operation of peristaltic pumps, check the pumps weekly for leaks. In case of leaks, please refer to the complete manual of your installation on [www.beniferro.eu](http://www.beniferro.eu)
  - Ensure that the measuring probes remain consistently moist during transportation, especially when being transported for maintenance or repair work at the supplier's facility. Flush all lines with water before dismounting the equipment.

### **Additional notes for product "Box"**

In the "Box" Product, acid and chlorine – which can react and form chlorine gas – are next to each other. There are additional safety measures to be taken:

- Secure the box to the ground in an area protected from possible physical impacts (e.g. by a ball) so that the box can never move.
- Lock the box with a padlock if children or people with reduced physical, sensory or mental abilities may have access to the facility (padlock not included)
- Make sure that the chlorine and acid drums are well closed, with watertight tube passages (level measurement, suction and aeration). The exhaust air from the drum must be carried out outside the box (cable and hole provided in delivery).
- Be careful, open and check the installation regularly. Be careful when opening the box, as chemical gases and liquids can accumulate in the box.
- In case of leaks: stop the installation immediately.
- Follow the installation plan included with the box / in this manual

## PRODUCT SUMMARY

This WiFi pool set offers all the necessary components for effectively managing your pool's water quality. Crafted from durable materials resistant to chlorine, acid (specifically sulfuric acid), and alkali, it ensures longevity even in pools with salt electrolysis. However, it's essential to note that the dosing units are incompatible with hydrochloric acid (HCl).

Operating the device is a breeze, designed for user convenience. Simply power it on and adjust the pH or redox values to your desired settings. Plus, with minimal operating costs, proper usage ensures your pool water remains clear, eliminating the need for extensive chemical treatments.

Regular calibration of the pH and RX system is crucial. Ensure proper functionality by employing a sonic color measurement method, such as the Poollab .


During the pool's initial fill, adjusting pH and chlorine levels may take several hours to days. It's vital to perform calibrations and measurements during this start-up phase. Inadequate grounding of the pool installation can adversely affect measurement accuracy, resulting in abnormal pH and chlorine readings. Proper grounding involves grounding the pool pipe near the measuring probes through inline grounding on a second independent grounding pole.

Only use city water for filling the pool; refrain from using rainwater or spring water. When it comes to chemicals, use 15% sulfuric acid for pH adjustment and liquid chlorine containing 12-15% concentration, supplemented with an antiscaling additive.

## Specifications

	<b>ZWWX7520-P</b>
pH control	ZWMX2155 Peristaltic pump
Chlorine control	ZWMX2155 Peristaltic pump
Connection pool	50mm rubber ZALX120
Flow monitor	Optional ZPHS0008
Panel size	48 x 38 cm
Graffiti map	Harmo pool ref ZWMX7010
Relay card	Harmo pool ref ZWMX7011

## Technical specifications

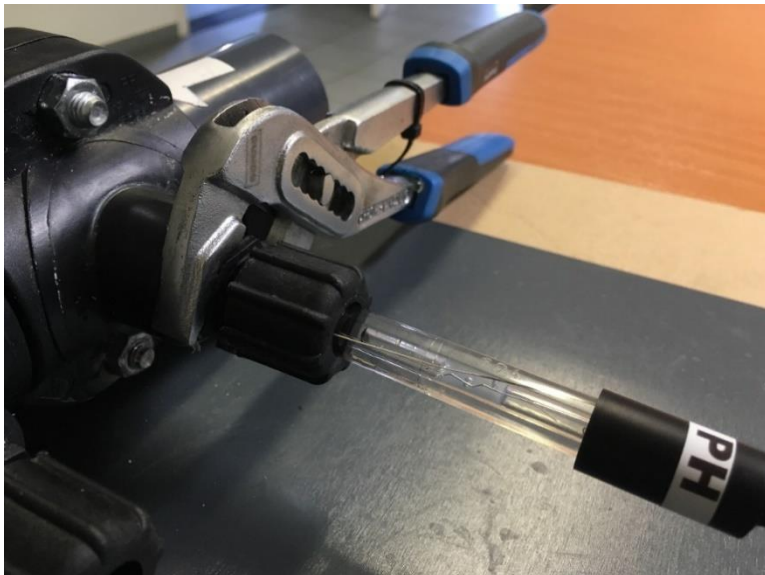
pH/RX Sensor measurement	Connection with BNC connector
Measuring range	pH: 5-9 +- 0,1 Rx 200- 999mV +- 10mV
Configuration	Via the display menu
Relay output	16 A AC1
Reproduction	Available
Dosing pumps	ZWMX2155
Power supply	230V ~, 50 Hz
Housing	IP65 IK07 Rohs 
Installation	Wall mount with screws and plugs
Dimensions	480x380
Weight	12 kg
Power switch	Optional or already available with ZWMX7522-P
Detection of acid and chlorine tank level	Optional

# INSTALLATION

## ***Installation of the water treatment panel***

**1)** Attach the water handling unit to a solid wall. Attach both the lower and upper part of the panel.

**2)** Place the pH and chlorine electrodes in the electrode holders. Tighten the nut with pliers or a wrench to tighten the cap. If you do not do this, there is a chance of a leak that is not covered by the warranty.

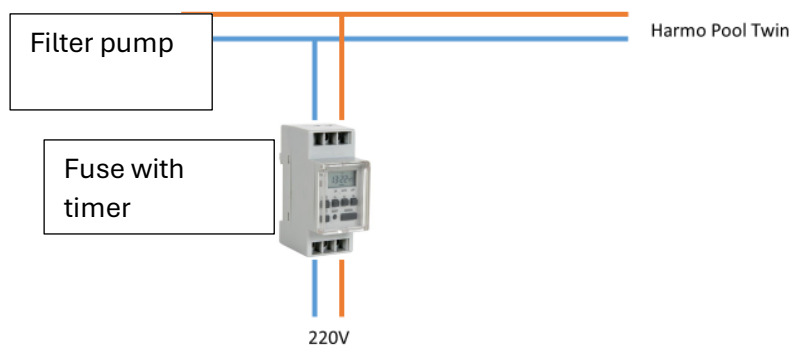


**3)** Connect the water inlet and outlet in such a way that the water first passes along the pH dosing cap and the pH measuring electrode and then along the redox measuring electrode and the redox dosing cap. (according to the direction of the yellow arrows on the pipe) The default setting is an installation in the bypass configuration:



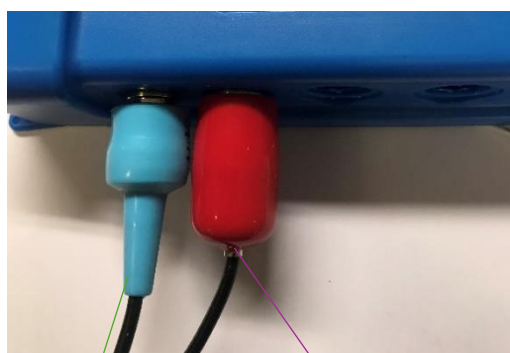
**4) Adjust the electrical connections so that**

- The chlorine and acid pumps cannot work if the filter pump does not work, via the menu item Flow switch (on).
- Of chlorine- in acid pumps can become disabled when of filter pump in action is.



Turn off the acid and chlorine dosing unit (button at the bottom left of the dosing pumps) for the next steps during installation and calibration.

**5 Connect the pH and redox measuring heads to the BNC connector at the designated points at the lower left of the control unit:**



pH (left) Rx (right)

**6) Start the filter pump.**

**7) Make sure that the installation has no water leakage.**

**8) Stop the filter pump. Remove the electrodes from the holder and calibrate the pH and redox electrodes.**

**Be careful!**

- (1) (If you do not have a bypass configuration, you can place two rubber caps (product code: ZFPX4640) in

the electrode holders to prevent water from leaking from the electrode holders during calibration.

- (2) If you have a bypass, make sure that the dosing pumps cannot pump liquid when the bypass to the dosing nipples is closed. This can be done by switching off the dosing pumps themselves or by switching off the power supply
- (3) Calibrating the electrodes may take a few minutes. For an accurate reading, it is important to follow the steps below.
- (4) Ensure that the calibration fluids used in the calibration always correspond to the specified values and that the liquids are not contaminated.

## 9) Calibrate of probes

With the following steps, you will have calibrated the electrodes in no time:  
There are 2 ways to calibrate:

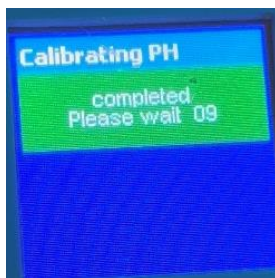
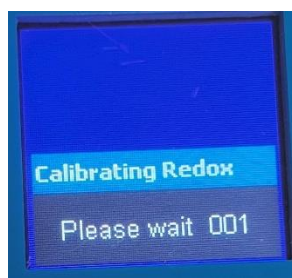
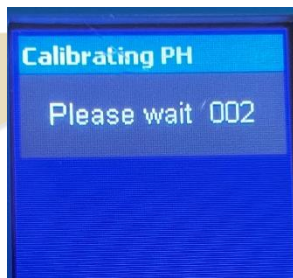
### **Method 1: Calibration via calibration fluid**

1. Immerse the measuring heads in the calibration fluids for pH (pH 7) and RX (465-468 mV) and wait 5 minutes to reach equilibrium before proceeding with the calibration procedure.

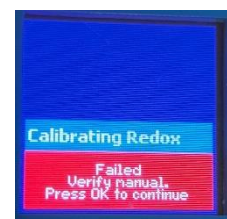
Press the pH or RX buttons (top and bottom buttons) separately for 10 seconds (top and bottom buttons)



As soon as the calibration starts, a screen is activated that shows what you are calibrating. You can calibrate only Ph or RX.



<- A timer stops after 120 seconds and indicates whether the calibration was successful



If the calibration is not successful, the following message is displayed ->

Reasons for a failed calibration:

- Poor calibration (try again)
- The calibration fluid is contaminated (replace the liquid). Recalibrate
- Probe defective (replace the probe) and recalibrate.

If Ph and Rx are properly calibrated, the screens are automatically hidden

After, about 2 minutes, the lights go out and you can read the values on the screen. If the calibration is correct, the values are as follows:

- a) pH 7,0 + 0,1
- b) Redox 468 + -10 mV

If the values are not within the range described above, you can repeat the calibration using the pH and RX keys.

## Method 2: Calibration using an alternative measurement method

### 10 Preparation of the pool water

Make sure that the pH value of the pool water is at least between 7.2 and 8.5 and as close as possible to 7.4

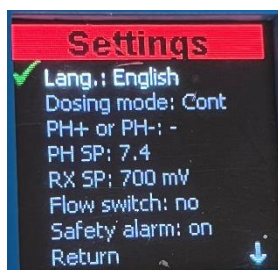
Make sure that the chlorine stabilizer content (cyanuric acid) of the pool water is between 20-40 ppm (20-40 g/ 10 m<sup>3</sup>)



## 11 Set parameters

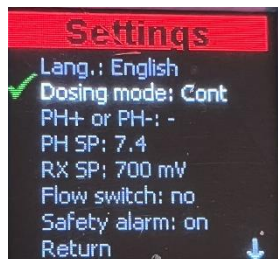
A number of parameters need to be set. Press the center button. You will see the following screen:

### 11.1) Language



You can set a (different) language. Press the middle button again. Then use the top or bottom button to navigate to the languages Français, Castellano, Italian, English, German. You confirm your choice of language by pressing the middle button.

### 11.2) Dosing method: proportional or continuous



Press the bottom button. The setting "Dosing method" is now checked. Press the center button to activate this setting. You will now see that the dosing method Prop (= proportional) is selected. Press the middle button again. The dosing method is now proportional.

### Be careful!

You should NOT choose the salt option for the addition of liquid chlorine.

#### Explanation of the dosing method proportional:

In the "Proportional" dosing method, the controller continuously goes through a cycle in which:

- pH and chlorine content are measured and stored for 40 seconds (no dosing is currently used).
- The chlorine (if necessary) is dosed for 2 minutes.
- The pH min (if necessary) is dosed for 2 minutes.

This dosing method (prop) is recommended for working with liquid chlorine and liquid pH

With this dosing method, pH and liquid chlorine are never dosed simultaneously

#### Explanation of the dosing method Cont:

- The pumps always run if pH and/or redox setpoint are not reached.
- **If you decide to use this dosing method, the injection point for pH and chlorine should be at least 2 metres apart.**

First, adjust the pH for at least 5 minutes.

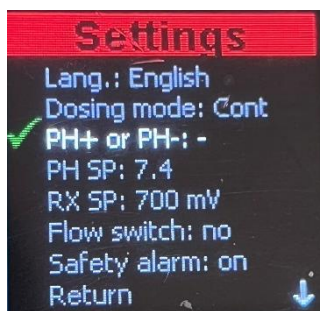
- Wait for 30 seconds.
- If the pH has reached the desired level, then adjust the redox (for at least 5 minutes). If after 5 minutes the pH is off-target again, stop the redox adjustment and proceed with pH adjustment.

### Additional Method: pH-Master

Another method that can be used is the pH-Master method. Originally developed for salt electrolysis, it can also be applied for liquid chlorine dosing.

When you choose pH-Master, chlorine is only produced once the set pH value is reached; no chlorine is produced beforehand. If the pH value changes, chlorine production stops, and the system first brings the pH value back to the desired level.

### 11.3) PH+ of PH-



Press the bottom button. The "PH+ or PH-" setting is now highlighted. Press the center button to activate this setting. On - sign appears. Press the middle button again. You have now turned on the power supply with PH-. PH- should always be adjusted when salt electrolysis is used. When chlorine is produced by the salt electrolysis unit, PH+ (NaOH) is formed as a by-product.

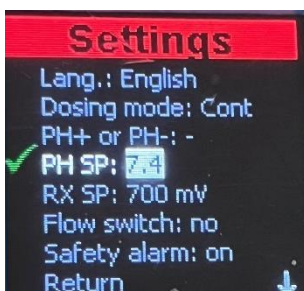
PH- should always be adjusted when liquid chlorine is used. After all, liquid chlorine already contains PH+, which is always added as a stabilizer.

PH- should always be adjusted when using the salt electrolysis. When chlorine is produced by the salt electrolysis unit, PH+ (NaOH) is produced as a by-product.

It is not possible to add PH+ AND PHOTO: PH or PH+, never both at the same time.

In other cases, PH plus can be adjusted.

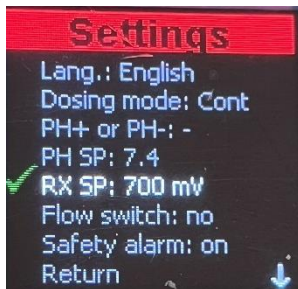
### 11.4) PH SP(SetPoint)



Press the bottom button. The "PH SP" setting is now activated. Press the center button to activate this setting. You will now see a preset value. Now you can move the value up or down with the top or bottom key. Then confirm with the middle button. The value is now set according to your needs.

As a rule, the pH value is set to 7.4.

### 11.5) Rx SP (Redox SetPoint)



The redox is a measure of the chlorine content.

During commissioning, we recommend setting the set point to 700 mV, as described above for the pH value. After the first commissioning, measure the chlorine content using a colour method. If necessary, adjust the redox setpoint (decrease if the chlorine content is too high, increase if the chlorine content is too low).

*Read carefully the chapter "Setting the Rx setpoint" in the manual*

### 11.6) Flow monitor no, and

Here you can indicate whether the unit is equipped with a power switch. If you enter YES, the device assumes that a power switch is active.

If there is a water flow, the Ph and chlorine dosing pumps can function. When there is a water flow, the dosing pumps do not work

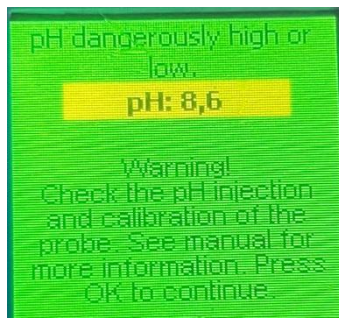
A flow switch is included in the ZWMX7525 version, but not in the ZWMX7520-P version.

### 11.7) Security alarm on or off or info

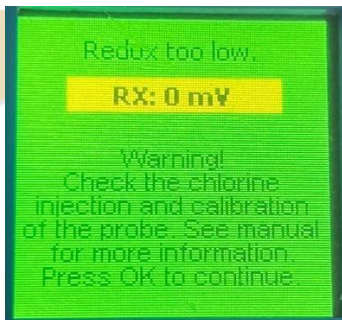
The alarm function is prepared to ensure the safe operation of this device and the swimming pool.

#### Alarm on:

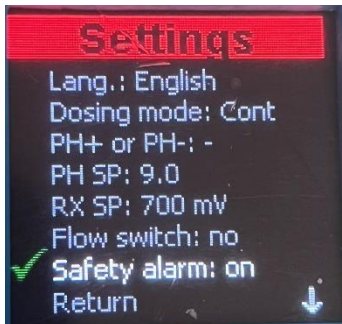
The alarm screen shows the following:



- pH too high (pH >8.5)
- pH too low (pH <5.5)
- pH setpoint not reached after 200 minutes of dosing



- Redox too low (<100)
- Rx Setpoint not reached make 400 minutes dosage

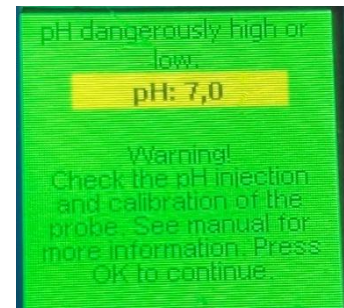


The alarm function is necessary to warn the user of abnormal behaviour of the unit and to prevent a very large dose of a pH liquid from being dosed or from dosing or generating too much chlorine.

The alarm message disappears when the middle menu button (reset) is pressed or after a power failure.

### **Please note**

You might receive a warning even if your pH or RX appears to be at an optimal value. This is because the warning indicates the current pH or RX value, which could have been higher or lower than the optimal level earlier. The device activates the alarm to halt dosing when the level becomes too high. Therefore, while the current reading may seem normal, it could have previously reached dangerously high or low levels.




If after resetting the alarm function the values deviate as described above, the alarm will continue.

Swimming is not allowed in the pool if the "alarm" indicates a deviation

### **Alarm off:**

Never use the device in the alarm OFF position during normal use. If you turn off the alarm, the alarm function described above will not work for 240 minutes.

The alarm OFF mode is only used to check the values of a swimming pool that deviate significantly. (as at the first start)."



For example, the pH value can be very high and the Rx value very low when the pool is first put into use. In this case, you need to use the alarm function "OFF" to check the pH and chlorine.

When the "alarm off" function is used, swimming in the pool is not allowed

## 12) Install the suction nipple.

Place the pH suction cup in the acid tank and the chlorine suction cup in the chlorine tank.

It is recommended not to lower the suction cup to the bottom of the jug. If something goes wrong during dosing, the entire container with chlorine or acid is not pumped into the pool.

## 13) Start the device

Start the installation by turning on the flow of the pump and the dosing unit.

Switch on the pH dosage (via the switch on the bottom of the dosing pump) until the pH value is between 7.2 and 7.6. If the pH value is less than 7.2: add pH plus manually to the pool water.

Once the pH value is in the range of 7.2 to 7.6, switch on the chlorine dosage.

With the "Prop" dosing method, the acid and chlorine pumps never work simultaneously.

Make sure that the dosing nipples for acid and chlorine do not leak and that acid and chlorine are dosed effectively.

## 14) Verify

Regularly check the operation of the probes and the settings by measuring the pH value and the chlorine content using an alternative method (colour measurement). If necessary, adjust the set values of the system.

### ***Chlorine control via Rx: set the Rx setpoint value***


The Rx (redox) is a measure of the chlorine content (oxidizing capacity) of the pool water. The higher the Rx, the higher the chlorine content.

the Rx is expressed in mV (millivolts), the chlorine content in ppm (parts per million).

The chlorine content in a swimming pool is ideally between 1 and 1.5 ppm.

There is no clear link between Rx and ppm chlorine, but usually an Rx of 700-750 mV corresponds to a chlorine content of 1 to 1.5 ppm.

Therefore, the chlorine content should be checked at regular intervals at commissioning and thereafter using a color measurement method (e.g. Poollab). If it turns out that the chlorine content is too high, the Rx



setpoint should be lowered. If it is determined that the chlorine content is too low, the Rx setpoint should be increased. If necessary, repeat this procedure several times until the chlorine content remains constant between 1 and 1.5 ppm.

As an extra safety measure, we recommend that you do not lower the suction cup to the bottom of the jerry can when starting. If something goes wrong during dosing, the whole can of acid will not be pumped into the pool.

Read the safety instructions carefully before using chemicals.

### ***Specification pH addition***

Since pH + has been added to liquid chlorine, the pH value must be corrected with pH minus. We recommend the use of 15%-30% sulfuric acid. Boe "weaker" the sulfuric acid, boe more accurately the pH dosage will work.

In the exceptional case that the pH falls below 7.2, it is best to bring it back into the zone 7.2-7.6 by adding pH plus.

As an extra safety measure, we recommend that you do not lower the suction cup to the bottom of the jerry can when you launch it

If something goes wrong with the dosage, the whole can of acid is not pumped into the pool

Read the safety instructions carefully before using chemicals.

### ***Calibration and control chlorine /pH***

The accuracy of the pH value and the salt electrolysis content should be checked regularly (weekly) by means of a thorough colour measurement (e.g. Poollab ZWMX1060).

Each system shall be calibrated at least once a year. In case of a long bathing season or if there is a discrepancy between the colour method and the pH / Rx values, it is advisable to carry out the calibration also every six months, i.e. twice a year. The procedure for calibrating and setting the set point has already been described in detail above


### ***Deviation of the pH measurement compared with another method.***

We have a very specific order that we recommend in case of doubt pH measurement.

This is the result of many years of experience.

When working with probes, one must accept the following as true:

- In principle, a calibrated probe measures correctly, more correctly than a color method.
- The color method works correctly, only if the alkalinity of the water is correct
- A difference of 0.2 between two methods is normal, a difference of 0.5 is not acceptable.



- A simple measurement with droplets or strips does not give reliable results : Reliable measurements have to be done using a Poollab or equivalent instrument

Here are the steps to follow in case of doubt about the pH:

In case of opposite pH measurement (one method gives an acidic result, the other method gives a basic result):

Take a glass of water and add 2 tablespoons of vinegar. Both methods must measure an acidic pH. If the probe gives a pH > 7: add 10 spoons of vinegar and see if the pH rises or falls. If the pH rises: contact the sensor supplier

After this verification:

To take a correct sample : stop the dosing systems, wait 10 minutes while the circulation pump is on, and then take samples at the pool injector, always with the circulation pump on.

- 1 Recalibrate and remeasure pH with probe. If in doubt:
- 2 Check and adjust the alkalinity of your water between 80 and 120 and remeasure the pH with your color method. If doubt remains
- 3 Renew the pills/liquids of your measurement tool and remeasure the pH with your color method. If doubt remains :
- 4 Buy a new calibration solution and measure pH with probe. If doubt remains
- 5 Buy a certified pH 7.4 solution and measure pH with a probe. If the pH of the probe is between 7.2 and 7.6 accept the probe. If the measured pH is 7.0-7.1: check the pH at 7.6. If the pH of the probe is 7.7-7.8: control the pH to 7.2. If the pH is lower than 7.0 or higher than 7.8: contact your supplier (Pool Twin supplier as well as the supplier of the alternative method).

### ***Deviation of the Redox measurement compared with another method.***

A deviating RX value is not so bad, as long as the probe is sensitive to changes and the redox increases when more chlorine is added to the pool.

You can test this by mixing 5 drops of liquid chlorine in a bucket of water and measuring the redox before and after adding the chlorine. Due to the 5 drops, the Redox must rise significantly.

A deviating redox can be caused by a deviating pH and/or by "contaminants" in the swimming pool such as flocculant, anti-algae, wall cleaner, etc ...

A deviating redox is not so bad. You proceed as follows: measure the free chlorine content in the pool using a color method (before measuring the chlorine content, the pH and hey cyanuric acid content must be within specifications). Add chlorine to the pool until the chlorine level is 1-1.5ppm. The redox that you then read is the redox that you must set as the setpoint.

If you still have doubts about the redox value you have read, you can proceed as follows:

- 1 Change calibration fluid and recalibrate the device. If you still have doubts about the redox value read:
- 2 Exchange redox probe and recalibrate.

**Table 1**

The following table shows the ratios between mV, pH and the corresponding chlorine content in ppm. For example, your device has the following values on the screen: pH 7.2 and RX of 740, then your pool water has a chlorine content of 1.2 ppm.

Attention: this table is not always correct. Products such as flocculants, wall cleaners, settling agents, sulfates, copper sulphate, extreme shredder (Chloramines), electromagnetic interference and/or less than optimal grounding can cause an Rx of 700-750 mV NOT to correspond to a chlorine content of 1-1.5 ppm. This is often a temporary phenomenon that mainly occurs with salt electrolysis.

A color measurement with a solid-state device (e.g. Poollab ZWMX1060) gives the best indication of the chlorine content in the swimming pool.

Free chlorine RX/mV vs pH

pH

pH	6,9	7	7,2	7,3	7,4	7,5	7,6	7,7	7,8	7,9	8	8,1	8,2	ppm
mV	507	505	502	500	499	497	496	494	493	491	490	488	487	0,2
mV	561	558	553	550	548	546	544	541	539	536	534	532	529	0,3
mV	599	596	590	586	583	580	577	574	571	568	565	562	559	0,4
mV	629	625	618	615	611	607	604	600	597	593	590	586	583	0,5
mV	652	648	640	637	632	629	625	621	617	613	610	605	602	0,6
mV	663	658	650	646	642	638	634	630	626	622	618	614	610	0,65
mV	673	669	660	656	651	647	643	639	635	630	626	622	618	0,67
mV	682	677	668	664	660	663	651	647	642	638	634	629	625	0,75
mV	690	686	677	672	668	655	659	654	650	645	641	636	632	0,8
mV	698	694	684	680	675	670	666	661	657	652	647	643	638	0,95
mV	706	702	692	687	682	677	673	668	663	658	654	649	644	0,9
mV	713	708	698	694	689	684	679	674	669	664	659	654	650	0,95
mV	720	715	705	700	695	690	685	680	675	670	665	660	655	1
mV	733	727	717	712	707	701	696	691	686	680	675	670	665	1,1
mV	744	739	728	722	717	712	706	701	695	690	685	679	674	1,2
mV	755	749	738	732	727	721	716	710	705	699	694	688	682	1,3
mV	765	759	747	742	736	730	724	719	713	707	702	696	690	1,4

RX/MV

mV	774	768	756	750	744	738	732	727	721	715	709	703	697	1,5
mV	790	784	771	765	759	753	747	741	735	728	722	716	710	1,7
mV	798	792	779	773	766	760	754	748	741	735	729	722	716	1,8
mV	812	805	792	785	779	773	766	760	753	747	740	734	727	2
mV	824	818	804	797	731	784	777	771	764	757	751	744	737	2,2
mV	841	834	826	813	806	800	792	785	778	771	764	757	751	2,5

### Flow Switch

When a flow switch is added to the equipment, it will stop the dosing operation as soon as no flow is detected. To obtain this feature, the Flow switch has to be in the „YES“ position in the menu.

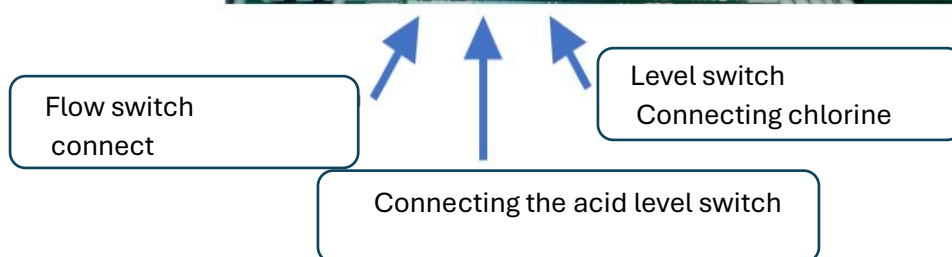
The flow switch will be activated from  $\pm 5 \text{ m}^3/\text{h}$  through a 50mm diameter tube.

For units manufactured in 2020 or later, a flow switch can be mounted on the unit.

On the circuit board with the display, the "FS" connector is located at the bottom left.

These are connected to the two contacts of the flow switch.


If no flow rate is detected, neither the acid nor chlorine pump runs and an alarm is triggered.



### Level switch

For units manufactured in 2020 or later, 2 level switches can be mounted on the unit.

On the circuit board with the display, the connections "WLH" and "WLL" are located in the middle and bottom right. These are connected to the 2 contacts of the level switch. Connect the WLH connection to the level switch in the acid tank and the WLL connection to the level switch in the chlorine tank.



When a low level is detected, the pump involved stops pumping and an alarm is generated, provided the option “level switch” in the menu is set to YES.

### ***Winter-ready***

#### **Be careful!**

If you do not protect your product from the winter, this can lead to damage that is no longer covered by the warranty.

In areas where it freezes a lot, you need to protect the pump, filter and dosing unit from frost.

It is recommended to store the dosing units indoors in a dry and warm environment. The electrodes must be immersed in KCl storage fluid in a frost-free environment. (ZWWX7168)

The PVC pipes must be anhydrous.

#### ***Spring begins:***

If your measuring equipment was protected during the winter, follow these steps before restarting the system in the spring.

1. Calibrate the electrodes.
2. Check that the check valves in the dosing nipples are not clogged.
3. Make sure that the installation does not leak when the whole thing is under pressure and the dosing pumps are running. Replace the dosing hoses and the peristaltic dosing tube every two years as a preventive measure.

## MAINTENANCE AND INSPECTION

### ***Maintenance***

o Regularly check the operation of the electrodes and the settings by measuring the pH value and the chlorine content using an alternative method (colour measurement). If necessary, adjust the setpoints of the installation.

o Regularly check the hose in the peristaltic pump. Replace this tube immediately in case of leakage. It is advisable to replace this hose preventively every year.

o Check the injectors regularly for leaks. Replace these nozzles immediately if there is a leak.

o Regularly check the power supply and cable connection. If the pump is working abnormally, turn it off and call a qualified technician.



## Maintenance of peristaltic pumps

- The pump hose has reached the end of its service life after 500/600 operating hours (chemical compatibility) and must be replaced annually
- The hoses of the drain and supply pipe must be replaced every two years.
- The nozzles must be descaled and rinsed every two years. The limescale can block the supply or return. We recommend the use of chlorine with anti-limescale agent (ZWCX1232).
- The drain and supply pipes must be replaced 2 times a year. .
- A maintenance kit is available: ZWMX2201-Z
- The pumps must always be higher than the supplied liquids.
- Use the correct, prescribed products for the peristaltic pumps and the Santoprene hose (to be replaced annually as indicated).

## Warnings

- o Improper installation may cause an electrical or chemical hazard that could result in serious injury
- o Never mix acid and liquid chlorine. These react to form dangerous chlorine gas
- o Keep the installation and chemicals out of the reach of children. Always wear protective gloves and goggles when working on the installation.
- o NEVER make internal adjustments to the dosing unit.
- o If you are not familiar with the pool filter system and the dosing unit:
  - Try not to rent anything without consulting your supplier, a professional pool contractor.
  - Read the entire installation and operating manual before using the dosing unit.



**Note: Very important**

1. Always turn off the device if it has been repaired or maintained.
2. When sending the device for inspection, make sure that the measuring probes are always in a storage liquid when you send them. If the measuring probes are dry for 3 to 4 hours, this may affect the following measurements and lead to incorrect measurements.

#### HOW TO RINSE A DOSING UNIT

We take the extraction nipples from the acid and chlorine tank.

We put 2 buckets of lukewarm water in the place of the buses

Place the suction nipple in the buckets of water and run the dosing unit for half an hour, the setting being such that the dosing pump system rotates.

After 30 minutes, remove the suction nipple from the water and let the dosing unit run for another 5 minutes so that all the water is out of the hoses.

You can now safely ship your dosing unit

## TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
The screen does not light up	Supply voltage is missing	Control voltage
Acid pump does not dose	Switch under the dosing pump is set to "O"	Set the switch to "1"
	pH control settings are wrong: pH+ while pH is dosed (or vice versa)	Check the settings
	A level indicator is connected that gives the wrong contact	Disconnect level indicator
	A flow switch is connected and indicates that there is no flow	Check the flow rate (min 5m <sup>3</sup> /h) and flow switch (go to the flow switch setting: no).
	Wrong cabling or wrong contact	Use the "administrator verification" procedure. See below
The acid pump continues to dose	Setpoint not yet reached	No action required
	Wrong parameter setting: pH + while pH- is dosed (or vice versa)	Parameter aanpassen

	Relays remain on	Contact the supplier.
Acid or Chlorine pump only doses occasionally	The acid / Chlorine dosing method is set to "proportional"	No action required
Chlorine pump does not dose	Switch under the dosing pump is set to "O"	Set the switch to "1"
	Rx control settings are incorrect	Check the settings
	A level indicator is connected that gives the wrong contact	Disconnect level indicator
	Wrong cabling or wrong contact	Use the "administrator verification" procedure. See below
The chlorine pump continues to dose	A flow switch is connected and it indicates that there is no flow	Check the flow rate and flow switch (go to the flow switch setting: none)
	Setpoint not yet reached	Check the settings and chlorine content using the color method.
Acid pump and chlorine pump do not pump.	Relay on circuit board remains switched off	Contact the supplier.
	A flow switch is connected and indicates that there is no flow	Check the flow rate and flow switch (go to the flow switch setting: none)
	Wrong cabling or wrong contact	Use the "administrator verification" procedure. See below
Chlorine or acid pumps do not absorb liquid	Level detectors are connected that have the wrong contact	Disconnect level indicator
	The vessel is empty or the suction foot is above the liquid level	Replace the acid or chlorine tank. Lower the suction foot.
	Suction foot is blocked	Replacing the suction cup ZWMX2205-Z
	The hose is leaking	Hose replacement ZWMX2231-Z
Liquid (acid or chlorine) in the dosing compartment of the chlorine or acid pump	Injection nozzle clogged	Replace the injection sprayer ZWMX2220-Z. Use Chlorine with anti-scaling additive.

	Santoprene dosing hose leaks	Check if the dosing nipple is clogged and replace the dosing tube.
Leak in Chlorine injection part (between peristaltic pump and injection)	Injection nipple blocked by scaling	Replace injector, adding a flexible tube of 5-10 cm to the injection outlet. Replace other leaking parts. Uns chlorine containing de-scaling liquid
Flow switch does not work	Too little flow	Increase flow by increasing pump speed if possible, backwash filter (or set filter on recirculation). Verify flow switch by manually toggling the switch.
	Flow switch not in correct position	Arrow in flow switch must be in the direction of the flow, and in a angle of 0° compared to flow direction. Verify flow switch by manually toggling the switch.
	Wiring not OK	Open control box and verify wiring. Verify flow switch by manually toggling the switch.
Level switch does not work	Level switch works “inverse” : high level is detected as low level and vice versa.	Dismount the white detector block and rotate it by 180°
	Wiring not OK	Open control box and verify wiring. Verify level switch by manually toggling the switch
The unit no longer functions : display remains black	<p>1: Connection between the PCBs: The connection between the rear and front PCBs may be defective, causing communication between different parts of the unit to be interrupted.</p> <p>2. Faulty relay: The relay may not function as expected, affecting the operation of the pH and RX pumps. The service menu can be used to test whether the relay is functioning correctly.</p>	<p>Check extra info below.</p> <p>--- appendix</p>

	3. Faulty display or display circuit board: If the pumps operate after disconnecting, but the unit still does not function properly, the problem may be with the display or the entire display circuit board.	
Water becomes green/ not correct water quality	pH or Chlorine content not correct	Verify values with Poollab or equivalent.  Recalibrate probes to ensure correct readings, which can affect the overall operation of the unit.
pH or RX do not match with other method	Read section Deviation of the pH (RX) measurement compared with another method.	Read section Deviation of the pH (RX) measurement compared with another method.
The unit does not dose. I can only read pH and Redox.	The unit is in read only. Possibly done by accident (pushing on different buttons too long / at the same time / during start-up etc ..)	Check instructions in appendix



**Extra info for problem:** The unit no longer functions : display remains black

Summary : Open the unit and disconnect the two circuit boards. The pH and RX pumps should start after disconnecting.

**Steps:**

To disassemble:


- a. Turn off power
- b. Loosen four screws (press and turn 90 degrees).



Disconnect the connection between the rear and front circuit boards: Disconnect the cable between the two print plates



Switch on power. At this stage, both RX and PH pump have to start turning. If they do not turn, something is wrong with the Back print plate (plate with relays) or with the electrical power.



If the pumps turn, there is something wrong with the display print plate. This can be a fatal print plate error, or just a broken display.

You can test via the service menu. If the relay works, the system works. If the relay is not functioning, connect a wire from the pH pump going to the relay directly to the power. This should ensure that the pH pump or electrolysis functions

**Extra info for problem:** The unit is in read only.

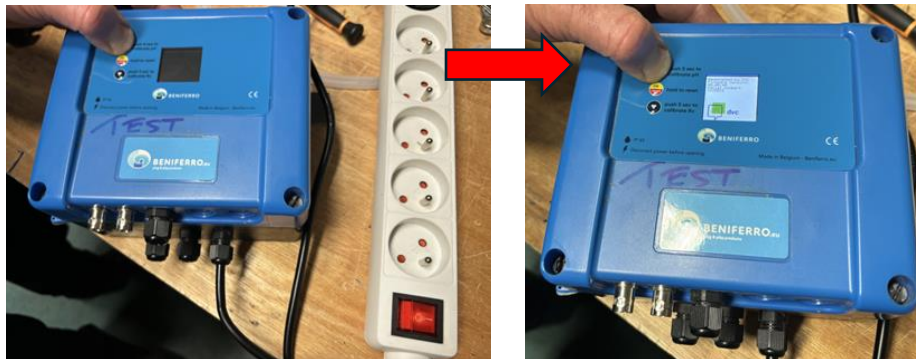
## Switching Your Pool Twin Display from Read-Only Mode to Normal Mode



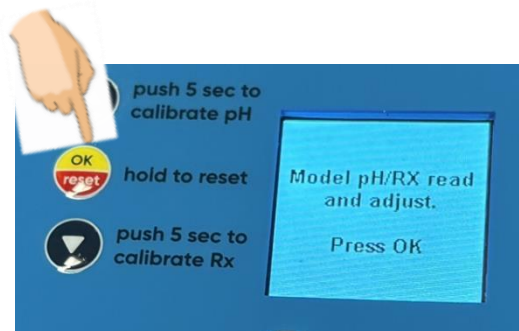
Occasionally, your device may enter "read-only" mode, meaning the Pool Twin display can only read values without making any changes. This mode is often activated accidentally. To reset the Pool Twin display and switch it back to normal mode, follow these steps:

### Steps to Switch from Read-Only Mode to Normal Mode:

- 1. Disconnect the System from the Power Supply**
  - Ensure the device is completely powered off.
- 2. Press the Top Button and Reconnect the Power Supply**
  - Hold down the top button.
  - While holding the button, reconnect the device to the power supply.
  - Continue holding the button until the system is fully started



- 3. Confirm Switching to Normal Mode**
  - After the system starts, press and hold the screen displaying the version.
  - A confirmation screen will appear, asking if you want to switch to normal mode.
  - Press "OK" to confirm.



Once these steps are completed, the device should operate in normal mode.



### What to Expect After Switching

Upon starting, if the system is still in read-only mode, you will see a screen indicating this status. In read-only mode, the device only measures values and does not control any functions.

### Operational Guide for Peristaltic Pumps and Salt Electrolysis Control Systems

The degree of activity of the peristaltic pump and/or salt electrolysis can be seen on the control screen, on the right of “pH and RX”. If the control box screen has a red background, it is in start-up modus, and peristaltic pumps or salt electrolysis will not work. The peristaltic pumps and/or salt electrolysis led screen will only work (turn and/or light up), if the control screen has a black background and if – next to RX – 100% of activity is indicated. If the pH activity is 100%, and the peristaltic pump does not turn, then switch the ON/OFF button at under the peristaltic pump . If the RX activity is 100%, and the Salt electrolysis does not work, then push the STANDBY/ON button of the electrolysis once.

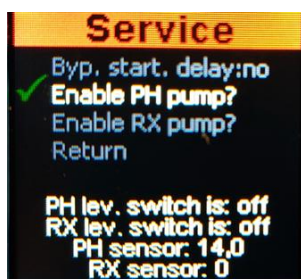


## ADMINISTRATOR VERIFICATION

Attention : this operation can only be executed by a person knowledgeable in swimming Pool technology and water treatment.

Go into the administrator menu via the main menu / administrator menu with password 2121.

Via this menu, it is possible to verify the correct cabling of the unit. This is done via starting separately the pH pump or RX pump (Salt electrolysis)



For the verification of the pH pump : Choose option “Enable pH pump”. The pH pump (the peristaltic pump on the left on a liquid chlorine dosing device) has to start. If it does not start, check the pump by switching ON and OFF the pump using the button on the pump itself. If the pump still does not start, contact your supplier or the manufacturer.

For the verification of the RX pump (or Salt electrolysis) : Choose option “Enable RX pump”. The RX pump (the peristaltic pump on the right on a liquid chlorine dosing device) has to start. If it does not start, check the pump by switching ON and OFF the pump using the button on the pump itself. In case of salt electrolysis : press the ON/Standby bottom once. If the pump / salt electrolysis still does not start, contact your supplier or the manufacturer.

### **Manufacturer**

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