

## **Harmo Pool Duo water treatment system**

**ZWMX0113-P and ZBSX0114-P**



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## Introduction

This manual contains all of the necessary information for installation, debugging and maintenance. Read the manual thoroughly before opening or using the unit.

The manufacturer of this product will not be responsible for damage or damage caused by the product as a result of improper installation or maintenance. It is essential that the instructions of this manual are always followed. Qualified personnel must install the product.

- Only a qualified installer, center, person or authorized dealer can repair this product
- Maintenance and operation should be performed according to the recommended time and frequency as specified in the manual
- Use only original standard parts. Failure to do so will void your warranty

## Characteristics

- Durable: The materials used are chlorine, acid (sulfuric acid) and base-resistant. This can cause prolonged exposure to swimming pool water (even with salt for salt electrolysis)  
The dosing devices are not suitable for use with hydrochloric acid (HCl)
- Simple operation: The system is user-friendly to operate: Turn it on and adjust desired pH (acid) or redox value (chlorine)
- Low cost: The operational cost is very low, because the pool water will never turn green when used correctly

## Specifications

### ZWWX0113 -P/ ZWWX0114 -P

PH CONTROL	ZWMX2155 Peristaltic pomp
CHLORINE CONTROL	BSV salt electrolysis ZBSX0003 = ZWMX0113-P ZBSX0004 = ZWMX0114-P
POOL CONNECTION	50mm rubber
FLOW SWITCH SAFETY	Optional
DIMENSION PLATE	100 x 50 cm
DISPLAY CARD	Harmo pool ref ZWMX7010
RELAY CHART	Harmo pool ref ZWMX7011

## Installation

### Installation items

The company provides the plate with water treatment devices without a plug for the metering devices. It is electrically connected to the salt electrolysis device.

### Attention!

- The electrical installation must be that:
  - The acid pumps cannot work if the filter pump does not work
- Adding the chemicals to the swimming pool must be done downstream of the swimming pool accessories such as heating, UV lamp, filter etc.
- It is recommended to install the water treatment unit in bypass configuration
- Install the water treatment unit on a solid basis
- Always keep the product upright. If the product is tilted or placed on its side, then the electrodes cannot measure correctly

- The product must be installed indoors. If you want to do this outside you should contact your supplier
- The dosing devices must not be used with hydrochloric acid (HCl). Sulphuric acid 15 or 30% must be used.
- The device's electronics (metering devices) must be installed indoors. Make sure - in case of leak - the water cannot over install to walk
- Make sure the acid container are placed OUTSIDE or in a well-ventilated area
- Calibrate the pH and Rx electrodes for initial use, and then "regularly". We recommend 2 calibrations per year, and extra calibrations if in doubt of water quality / machine operation.
- We recommend to verify the water quality using a independent technique once a month.
- The peristaltic tube inside the acid dosing system must be replaced on a yearly basis.
- The acid container has to be placed lower than the peristaltic pump.
- The acid injection nozzle need to be detartrated regularly, minimum on yearly basis.

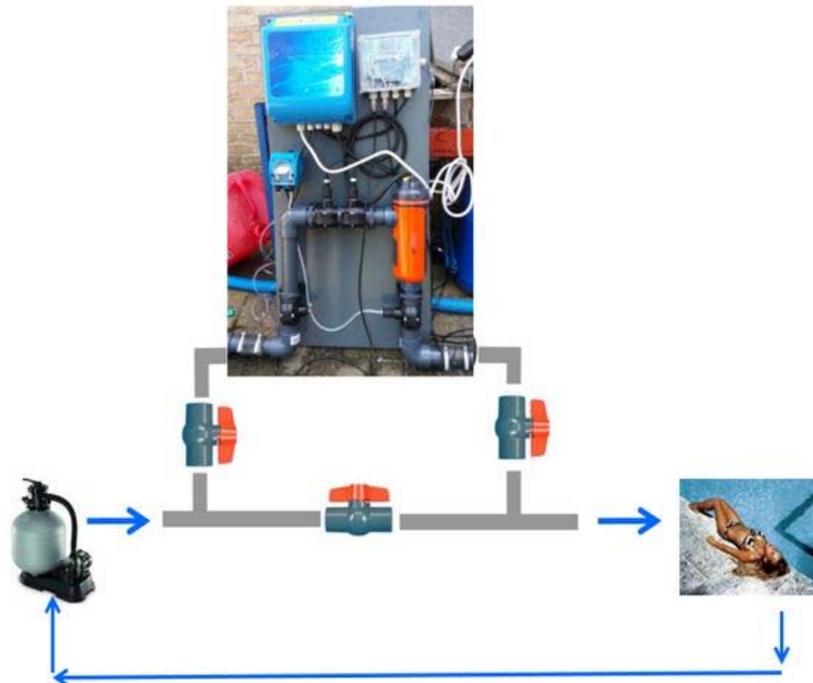
### **Installation of water treatment plate**

1. Place the water treatment system to fixed wall
2. Insert pH and chlorine electrodes into the electrode holders. Fix the nut with a pliers or tighten the cap. If you do not do this, there is a chance that a leak will occur which is not guaranteed

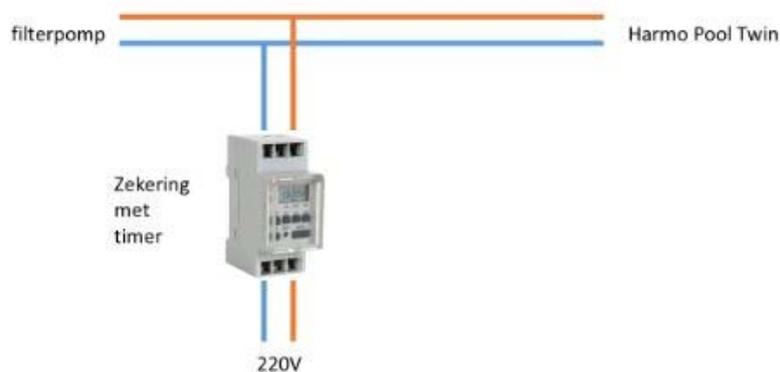


3. Connect water inlet and outlet so the water first passes through the redox and pH measuring electrode and then along the salt electrolysis.

Preferred installation in bypass configuration:



4. Make the electrical connections in such a way that:
  - The salt electrolysis and acid pump cannot work if the filter pump is not working
  - The salt electrolysis and acid pumps can be switched off when the filter pump operates



5. Start the filter pump
6. Verify that the installation does not leak
7. Stop the filter pump and remove the electrodes from the container and calibrate pH and redox electrodes

**Attention!**

- a) If you do not have a bypass configuration, close the holes of the electrode holders with a rubber stopper (Product Code: ZFPX4640) that prevents the water from spraying the probe during the calibration
- b) The electrodes calibration procedure may take several minutes. To ensure accurate reading, it is important to follow the steps below
- c) Make sure that the calibration fluids used in the calibration process always match the indicated values and the fluids are not contaminated

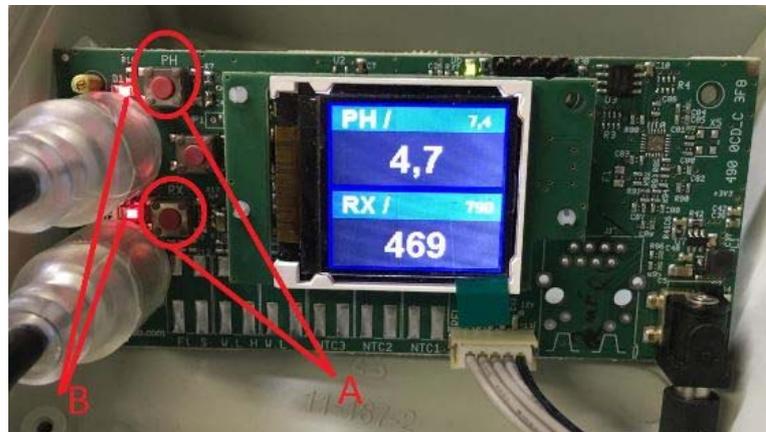
8. Calibration electrodes

In a few short steps, you have calibrated the electrodes within the shortest time:

- 1) Dip the measuring heads into the pH (pH7) and Redox calibration fluids (465-468 mV) and give them 5 minutes the time to equilibrate before continuing the calibration process



- 2) Press pH and Redox for 10 seconds: (A) buttons (upper and lower buttons) separately in to 2 red led; (B) light up



- 3) After about 2 minutes the lights turn on and you can read the values of the screen. If the calibration is correct, the values are as follows:
  - a. pH 7.0 + - 0.1
  - b. Redox 468 + -10mV

If the values are not within the range as described above, you can press pH and Redox buttons again to repeat the calibration process.

If the calibration fails, the LED (B) remains flicker, and the electrode must be changed.

If you do not have a bypass configuration, you can insert two rubber caps ZFPX4640 into the electrode holders to avoid water coming out of the electrode holders during the calibration

## Setting parameters

A number of parameters must be set. If you press the middle button, you will see the following screen:



Press the middle button again. The "Language" setting has now been checked

### 1. Language

If you press the middle button, you can choose from multiple languages. Now Dutch is selected, so press it again to set the language Dutch. To choose another language, press the middle button again. Then navigate through the top or bottom buttons to the languages French, Castellano, Italian, English or German. You confirm your language selection by pressing the middle button.

### 2. Method of dosing (salt electrolysis, proportional or continuous)

Press the second button from the top. The "dosage" setting has now been checked. Press the center button to activate this setting. Press the lower button until the dosing method "salt electrolysis" is selected.

#### Explanation of the salt electrolysis dosing :

- The device will measure the pH and Redox for 30 seconds. This measurement is stored in memory

- During 2 minutes, the following happens:
  - o If the PH value is much higher than the setpoint (target), the metering pump always rotates
  - o If the PH value comes closer to the setpoint value, the metering pump goes on and off. The closer PH value you get to the set point value, the less the pump is running
  - o The salt electrolysis device will allow salt electrolysis to function for 2 minutes, if the Redox is lower than the setpoint. After two minutes, salt electrolysis and pH dosage will stop, and pH and Redox will be measured again. This circle repeats continuously

### **3. PH + or PH-**

Press the lower button. The setting "PH + or PH-" is now checked. Press the center button to activate this setting. If the character appears, press the middle button again. Now you have the supply of PH-settled.

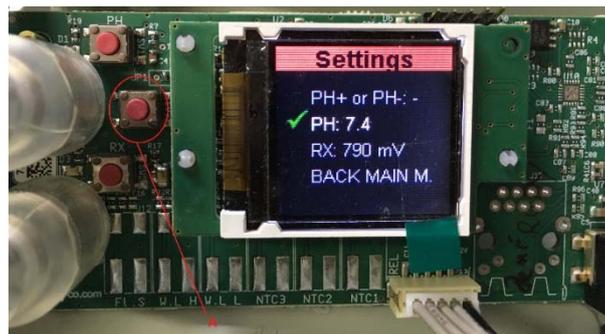
PH- must be adjusted when using liquid chlorine. Liquid chlorine already contains PH + which is always added as a stabilizer.

PH- must be set using salt electrolysis. In the production of chlorine by the salt electrolysis device, PH + (NaOH) is formed as by-product.

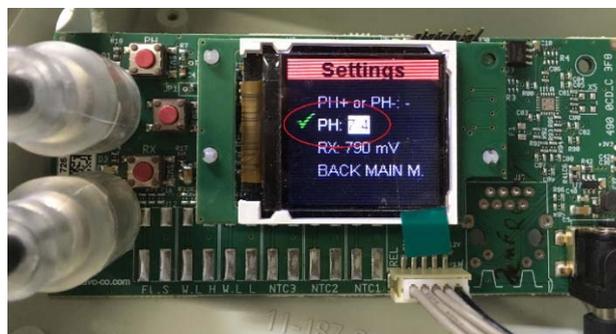
It is not possible to use PH + and PH- at the same time : one of both needs to be selected.

#### 4. PH SP (Setpoint)

Press the lower button. The setting "PH SP" is now checked. Press the center button to activate this setting. Now you see a preset value. In order to set the setpoints, navigate to the "Settings" menu. This can be done very simply by pushing the middle button (A). When you are ready, you will see the following screen:



Now, you can easily navigate using the upper and lower buttons, the green check mark indicates which option you are navigating. In the picture above, you can see that there is a green tick for PH. If you press the middle button again, you will see the following screen:



Now, you see that the value 7.4 is selected. Now, you can use the upper or lower buttons to set the value higher or lower which you confirm by pushing the middle button. The value is now set to your need.

As a rule, the pH should be adjusted to 7.4 (7.2 to 7.6 range)

## 5. Rx SP (Redox Setpoint)



The redox is a measure of the chlorine content.

In the beginning, we recommend setting the setpoint to 700mV, in the same way as described above for pH. After the first startup, measure the chlorine content using a color method. Change the setpoint for redox (decrease if chlorine is too high, increase if chlorine is too low).

6. Place the chlorine and pH suction cup in the chlorine and acid containers. It is advisable not to lower the suction cup to the bottom of the container. In case if something wrong with the dose, the whole bus will not be pumped sour into the pool
7. Add 0.4% pool salt to the pool water and dissolve the salt
8. Start the filter installation until the salt is dissolved and homogeneously distributed over the pool (usually 4-8 hours pumping time).
9. Verify the pH, and adjust the pH to 7.2-7.4
10. Start salt electrolysis and pH dosing, by plugging the instrument in the electricity
11. Check the electrodes and the settings regularly by measuring pH and Chlorine content using an alternative method (color measurement). If necessary, adjust the setpoints of the installation

### Winter ready

#### Attention!

- If you do not protect your product from winter, it may cause damages and is not covered by warranty
- In areas where it is freezing, you must protect the pump, filter and dosing equipment from freezing
- It is advisable to keep the dosing devices in dry and warm environments to preserve

- The electrodes must be stored frost-free, in KCl storage fluid
- The PVC pipes must be made water-free

### **Spring startup**

When your dosing equipment protected from winter, use the following steps to complete the system spring:

1. Calibrate the electrodes
2. Verify that the check valves in the dosing nipples are not clogged
3. Verify that there are no leaks in the system when it is under pressure and when the metering pumps rotate

## **Maintenance and inspection**

### **Maintenance**

- Periodically verify the operation of the electrodes and settings by measuring pH and Chlorine content using an alternative method (color measurement). If necessary, adjust the setpoints of the installation
- Regularly verify the hose inside the peristaltic pump. Immediately replace this hose with leakage. It is advisable to replace this snake every year
- Regularly verify the injection nozzles for leaks. These nozzles immediately replace with leakage
- Regularly verify the injection nozzles for blockage. Replace or detartrate these nozzles immediately replace with leakage
- Regularly check the power and cable connection. If the equipment works abnormally, turn it off and call a qualified technician

## Warnings

- Incorrect installation can create an electrical or chemical hazard, which can result in serious injuries
- Never mix acid and liquid chlorine
- Keep installation and chemicals out of reach of children. Always wear safety gloves and safety goggles during work on the installation
- NEVER make any internal adjustments within the dosing equipment
- If you are not familiar with the pool filter system and meter equipment:
  - Do not try to adjust anything without your supplier, professional swimming pool consultant
  - Read the complete installation and operating instructions before the dosing equipment going to use

Note: Turn off the power before you want to repair or maintain it

The white dosing hose in the dosing device must be replaced preventively every year. In the event of hose breakage, the chemicals flow into the dosing pump with the risk of irreparable damage to the dosing pump.

In general there are 5 mechanisms through which the dosing tube can break:

- A. The tube is at the end of its life (with chemical compatibility) after 500/600 hours of performance
- B. Determination of incompatible products with the "Santoprene" material of the tube (PH regulation with HCl)
- C. Increase of chemicals. Bottle with cling and acid on the pumps / pumps mounted on the vertical bus.
- D. Backflow blocks of the pump or injection blocked by limestone (more often in calcareous waters).
- E. Empty dosing vessel, as a result of which the peristaltic pump keeps running and the 500/600 hours of running time can be reached very quickly.