Pure water everywhere

Installation, Programming and Maintenance User Guide

Oxymatic® Smart

Vs2.0 summary – Feb. 2017

CONTENIDO

1. IMPORTANT SAFETY INSTRUCTIONS

PLEASE READ AND FOLLOW THESE INSTRUCTIONS

It is essential when installing a control and disinfection system at a pool to take certain precautions
whilst handling equipment, also more generally when using the pool.

DANGER: Low-voltage electricity risk: Do not open or touch the control unit: there is a risk of electric
shock. Contact your local retailer or the manufacturer.
Follow the electricity safety instructions specified by your company, also local or national regulations.

DANGER: Risk of accidents or drowning: Use of the pool calls for special care. Observe the safety and hygiene instructions laid down. These are displayed near the pool, or in accordance with local or national regulations.

16. ELECTRICAL SPECIFICATIONS AND FEATURES

OXYMATIC® SMART complies with:

- Low-voltage regulations in accordance with ITC-BT standard 031 (2002)
- Electrical and electromagnetic safety standards in accordance with directive 7323 / ECC / EN61010-1(93)

ELECTRICAL SPECIFICATIONS: Mod. OXYMATIC® SMART

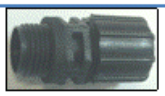
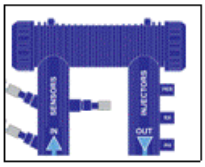
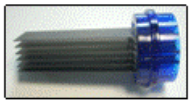
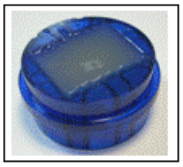
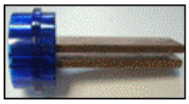
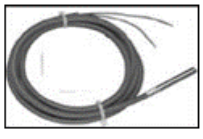
Power supply	110/250 V AC
Operating frequency	50/60 Hz
Energy consumption when not running	120 mA
Oxidation sequence consumption at 6 amps	350 mA
Ionisation sequence consumption at 2 amps	180 mA
Operating temperature	+ 5° / + 55°C
Maximum operating humidity	95% with no condensation
Protection of the environment	IP55
Maximum voltage at the Titanium compartment	12 VDC (with galvanic separation)
Maximum voltage at the Copper compartment	12 VDC (with galvanic separation)

OPERATING ALGORITHMS: Mod. OXYMATIC® SMART

Manual/ automatic operation?	Yes
User programs?	Yes
Temperature display	At 5°/55°C intervals; accurate to +/- 0.2ºC
pH display	At 5 - 50 pH intervals
ORP display	At intervals of +/- 2000 mV
Automatic pH dose corrector	By peristaltic pump (setting P + I)
Automatic Rx dosing	By peristaltic pump (setting P + I)
Touch-screen	Colour 10"
Programming	By touch-screen and password
Type of programming	User-friendly and intuitive

17. OXYMATIC CONTENT

3.1.INCLUDED ITEMS

	CONTROL UNIT X1	 	TEMPERATURE PORA-PROBE X1 PH PORTA-PROBE X1 RX PORTA PROBE (OP) X1 CAP + ORING X6
	OXYMATIC CHAMBER X1		PH SENSOR X6
	REDUCERS 75 - 63mm X2 75 - 50mm X2		PH PUMP X1 PER/CL PUMP (OP) X1 REDOX PUMP(OP) X1
	END CAP X2		BUFFER SOLUTION PH 7 X1 BUFFER SOLUTION PH 9 X1 BUFFER SOLUTION RX (OP) X1
	PORTA-ELECTRODES ORING X2		PVC PIPELINE X1 PE PIPELINE X1
 	TITANIUM PORTAELECTRODES X1 TITANIUM COMB X1		EMPTY PORTAELECTRODES X1 (MODELS WITHOUT COPPER>)
	COPPER PORTAELECTRODES X1 (ONLY COPPER SYSTEM)		INSTALED CABLES
	TEMPERATURE SENSOR X1		

3.2. OPTIONS

pH REGULATOR: (INCLUDED IN SMART PLUS MODEL, NOT IN SMART PRO)

- Peristaltic pump
- pH probe
- Accessories & PVC pipe
- Buffer pH7 - Buffer 9 pH
- Probe-holder
- Injector

REDOX REGULATOR:

- Peristaltic Pump
- Redox Probe
- Accessories & PVC pipe
- Rx Buffer mV 468
- Probe holder, injector
- Redox Software

PEROXIDE INJECTOR:

- Peristaltic pump
- Accessories & PVC pipe, injector

CHLORINE FREE REGULATOR

- Accessory to regulate free chlorine
- Peristaltic pump
- Cl^- probe
- Probe-holder
- Injector and accessories
- Free chlorine software

COPPER REGULATOR

- Copper probe
- Cu ++Buffer
- Software Copper regulation

COPPER TESTING KIT::

- Solution A
- Solution B
- Tube pipe
- Colour card.

ENVIRONMENTALLY-FRIENDLY DESCALING

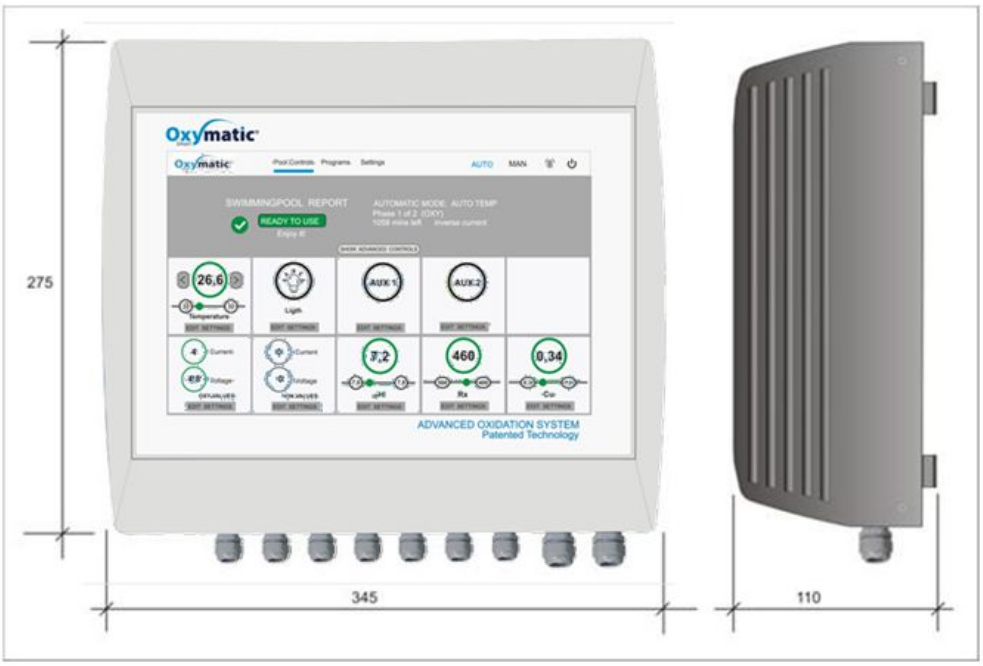
CONDUCTIVITY PROBE LEVEL SENSOR OF PH, RX, H_2O, ETC

VARIO FLOW

Enquire at your distributor about other options.

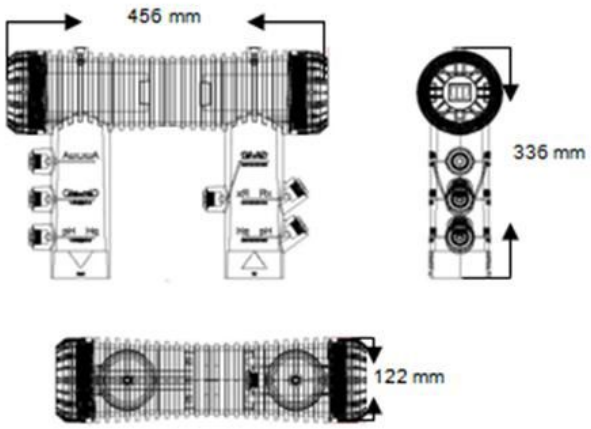
3.3. OXYMATIC DIMMENSIONS

CONTROL UNIT



Length: 345 mm Depth: 275 mm Height: 110 mm

ELETRODES HOLDER / CHAMBER



Length: 456 mm Depth: 122 mm Height: 336mm

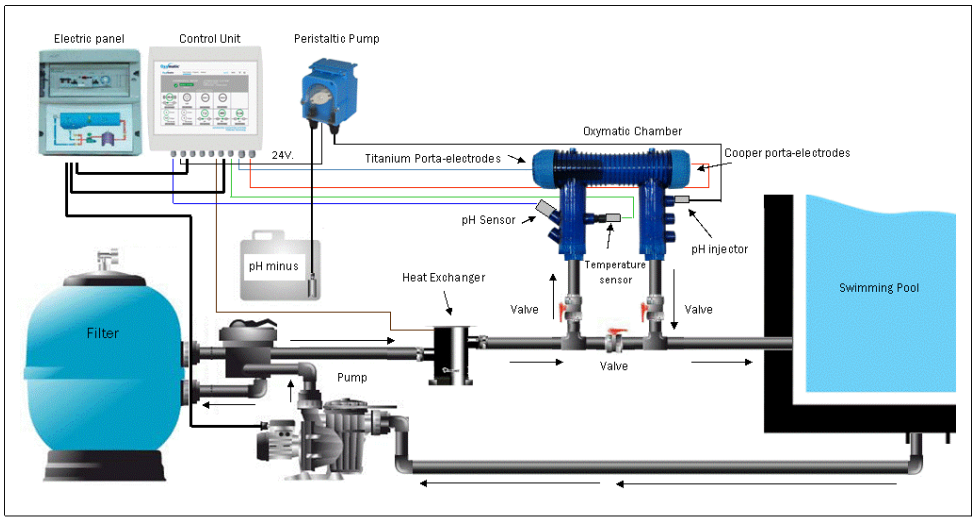
COMPLETE PACKING

14 Kg. (It depends on the model and options)

Length: 440 mm
Depth: 440 mm
Height: 340 mm

4. OXYMATIC SYSTEM INSTALLATION

4.1 PLUMBING



4.1.1 ELECTRODES HOLDERS - CHAMBER INSTALLATION

The chamber is installed as a by-pass on the pool's return line at the filter outlet. All pool-water will pass through the compartment, at which the operating titanium electrode continually generates hydroxyl ions. This will have the effect of raising the pool-water's ORP to the system's technical limit.

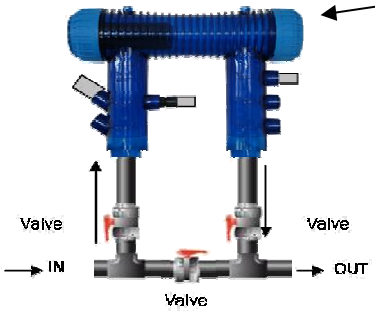
Taking into account that the titanium electrodes should be installed at the water's entry-point and the copper electrodes to the water's exit-point.

The equipment is compatible with PVC adhesives.

Correct Installation

IN

Waterintake
- Titanium electrode-holder
- Sensors (temperature, pH, Redox)



OUT

Wateroutlet

- Copper electrode holder
- pH injector
- Peroxide injector
- Chlorine injector

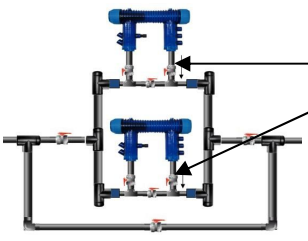
(depending on model)

Paralel

It is essential to consider the diameter of the recirculation pipe in relation to the time required for full recirculation. We must instal the number of compartments required in order that all pool-water shall pass through the compartments, and so that the circulation flow shall not fall below <10%, as a by-pass and in parallel. For example, we recommend using PVC pipes:

PIPE ≤ 63 mm –	1 chamber
PIPE63 a 90 mm –	1 chamber or 2 in line
PIPE 90 a 140 mm –	**Min.** 2 chambers in parallel
PIPE 140 ≤ 225 mm –	**Min.** 2 chambers in parallel
PIPE 225 ≤ 300 mm –	**Min.** Chambers in parallel

OPTION VALVES

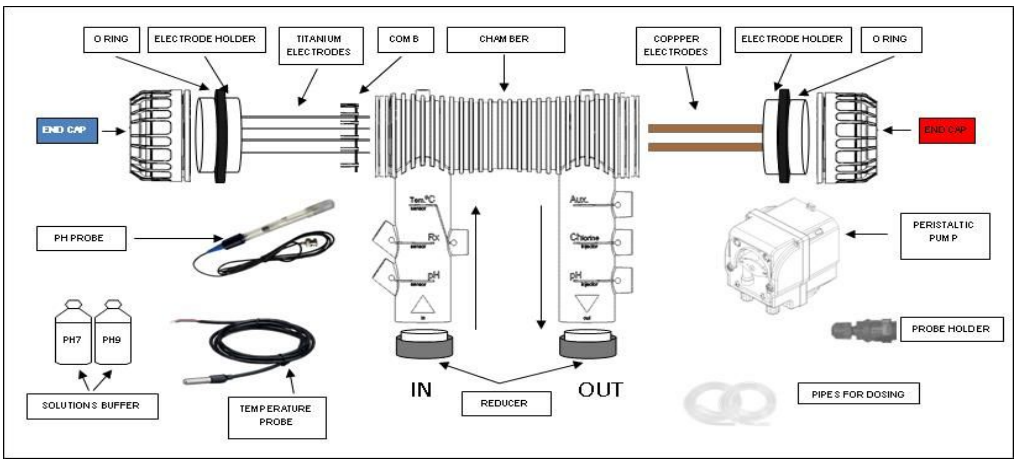


4.1.2. CONTROL UNIT INSTALLATION

Fix the **control unit AT LESS THAN 3 METERS** and dosing pumps to the wall close to the compartment,

near the product deposits.

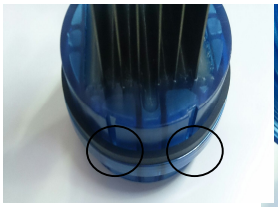
4.1.3. INSTALLATION OF ELEMENTS IN THE CHAMBER: ELECTRODES HOLDERS, PROBES, INJECTORS, ETC...

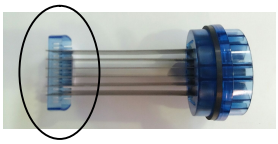


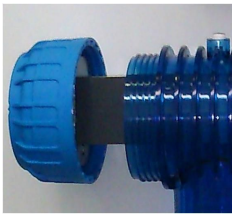
TITANIUM AND COPPER ELECTRODE HOLDERS

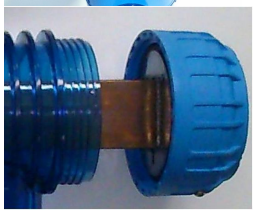
Screw **titanium and copper electrodes** in order input and output taking into the guides on the bottom.

Tighten with hands securely, or with a special key if necessary.





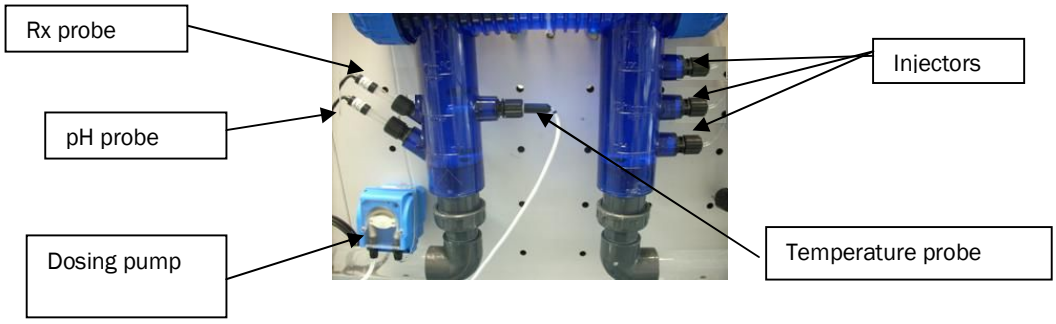




SINCE LEAVING THE COMB SEPARATOR of the titanium electrodes to inserting into the compartment

PROBES AND INJECTIONS

For installation of the pH sound compartment and injection canal, you should use the probe-holder (included), and then proceed in the sequence shown in the photo.



WARNING: Do not leave the system without water when probes are installed. If pH or RX probes dry out, they will be damaged and cannot be used.

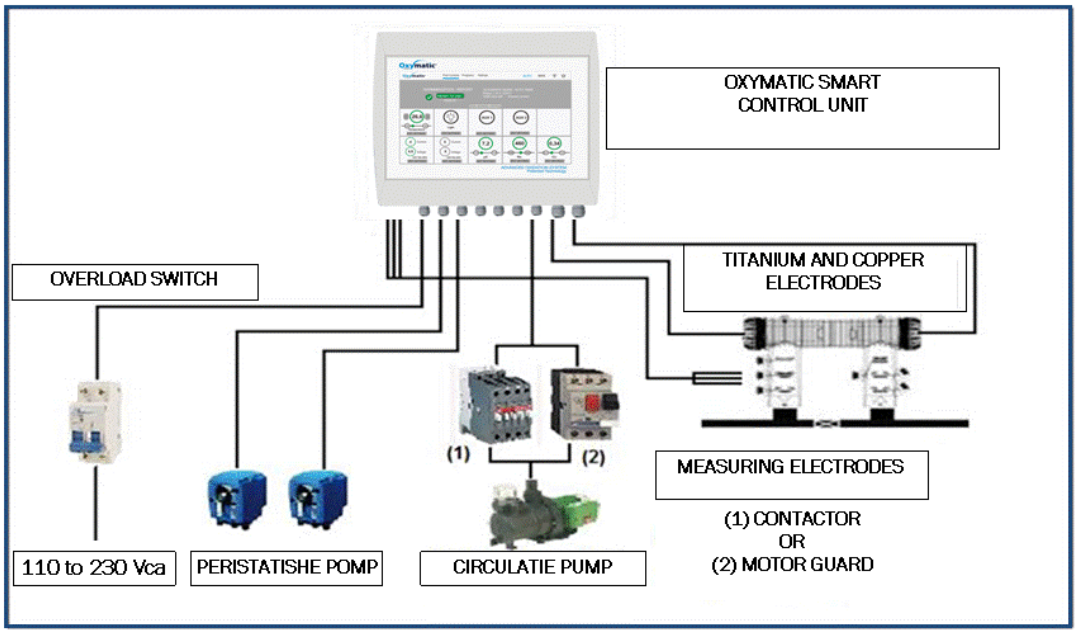
WARNING: USE SULPHURIC ACID AS PH MINUS. TO USE CHLORIDRIC ACID, RDUCE DRASTICALLY THE LIFE TIME OF THE SILICON INJECTION PIPES

4.2. ELECTRICITY

4.2.1. ELECTRIC CONNECTION OF THE CONTROL UNIT

The system is supplied ready to be used in the installations at 230v. There is no need for any power adaptor, but we recommend installing a motor protector before connecting to the mains, to avoid a possible surge in voltage that would severely damage Oxymatic's electronics (Such problems are not covered under the guarantee). (See illustration).

Place the power cables of the control unit to the electrical box of the pump with protector or plugging into an outlet of the engine room.



We remind installers that OXYMATIC has only one power input, which is the computer to the network. We must be careful ***not to connect the pump or any component to the main power supply***.

The power supply to the peripheral circuit systems is provided as follows:

PERISTALTIC PUMPS for pH, Redox, Peroxide, ... Direct outlet to the mains (*)

RECIRCULATION PUMP ....Dry contact (**)

(*) The voltage output depends on the mains input. If the mains is 117VCA, the output to the peristaltic pump will be 117VCA; if the mains is 230VAC, the peristaltic pump output will be 230VAC.

(**) OXYMATIC's cut-off relay is 4 amps at 230VAC: we therefore need to use contactors or motor shields with a consumption coil less than or equal to 4 amps at 230VAC.

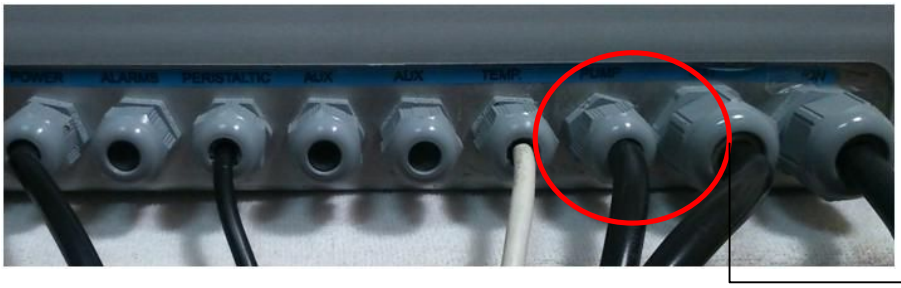
Since Oxymatic Smart is a pool manager, it should control and command the recirculation pump.

IMPORTANT: The Oxymatic cannot work if the pump is stoppedand water is notcirculating.

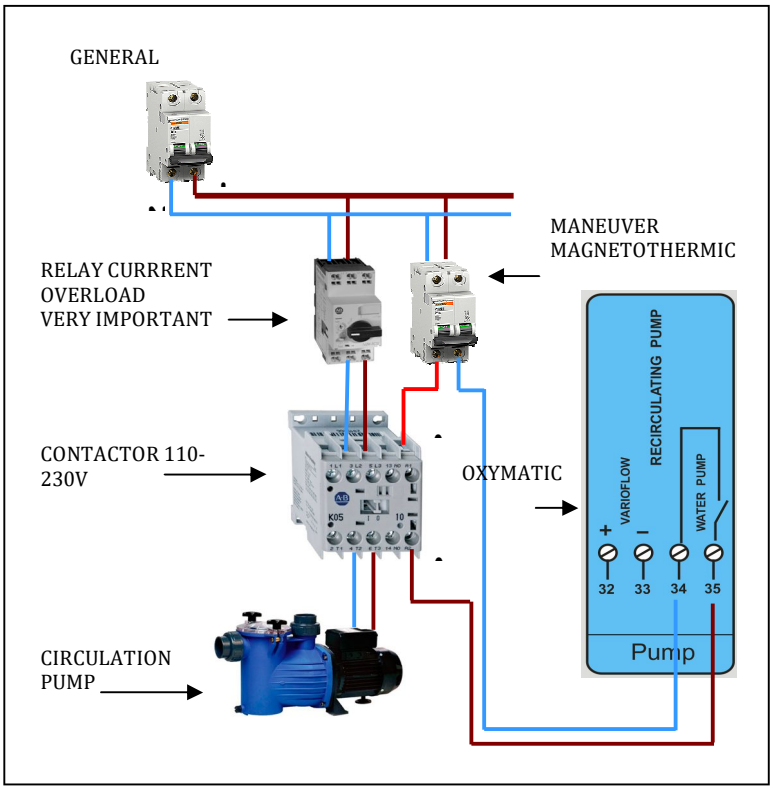
4.2.2. CONNECTING UP THE MAIN PUMP TO OXYMATIC

Oxymatic connects/disconnects the coil of the recirculation-pump contactor. For this, we create a bridge with the Oxymatic at the cable that runs from the pump's circuit-breaker to the A2 of the contactor's coil (SEE BELOW).

In the event of the fitter having an electric panel with a pump programmer, DISCONNECT IT OR SET IT TO MANUAL (24 hours' operation).



CONNECTING OF THE CIRCULATION PUMP TO ELECTRIC PANEL AND TO OXYMATIC



Oxymatic "PUMP" cable (it can be white or black with two wires one blue and one brown) Recirculation Pump Operation Terminals 34-35

If the OXYMATIC equipment ***does not control*** the recirculation pump, it is necessary to programme Oxymatic's operating schedule using the pump clock.

4.2.3. CONNECTIONS OF TITANIUM AND COPPER ELECTRODES

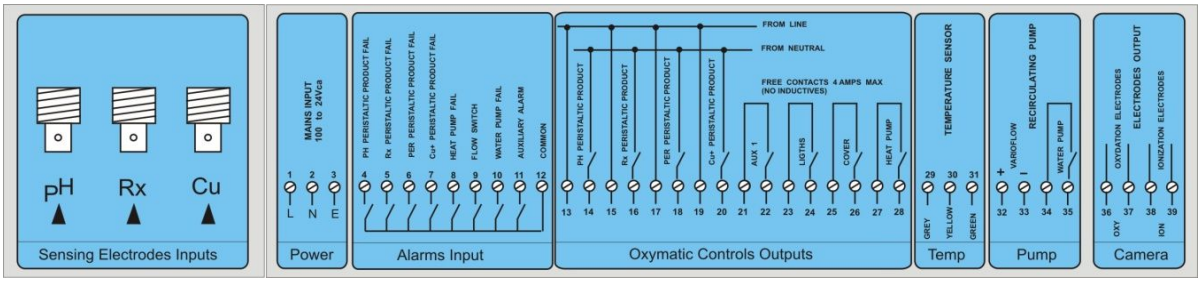
Blue: Titanium/Oxidation

Red: Copper/Ionisation

NOTE: ENSURE THAT THE CABLES ARE IN THE MATCHING TERMINALS

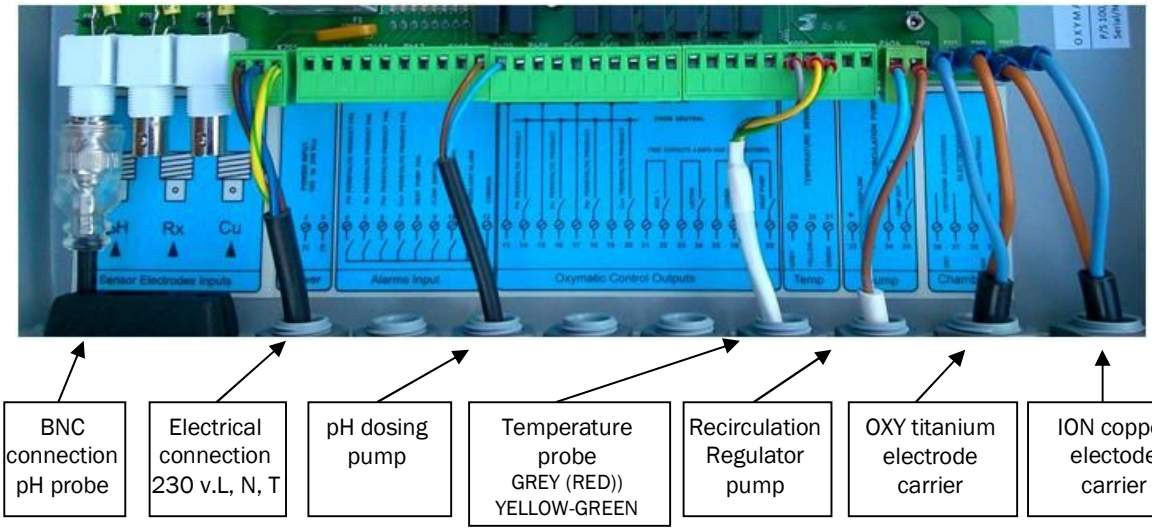
4.2.4. INTERCONNECTIONS

Below we see the connections that can be made with Oxymatic-Smart. All connections are without electric current, except the dosing pumps and mains supply, which are 230V AC.



Terminal nos.	Description
1, 2 and 3	L, N, and T Main power connection to the mains(Max 240 V)
4 al 12	Alarms and Flow Switch (9 and 12)
13 -14	Connection for pH pump (230V, 50 Hz)
15 -16	Connection for RX pump (230V, 50 Hz)
17 -18	Connection for Peroxide or Algicide pump (220V, 50 Hz)
19 -20	Connection for copper pump (230V, 50 Hz)
21 -22	Connection AUX 1 (dry contact WITHOUT ELECTRIC CURRENT N.A.)
23-24	Connection for LIGHTS (dry contact WITHOUT ELECTRIC CURRENT N.A.)
25 -26	Connection for AUX 2 (dry contact WITHOUT ELECTRIC CURRENT N.A.)
27 -28	Connection for HEAT PUMP (dry contact WITHOUT ELECTRIC CURRENT N.A.)
29 -30-31	Connection temperature probe (grey or red- yellow and green)
32 y 33	VarioFlow channel(variable speed of main pump)
34 y 35	Connection to the main pump (filtration)of the pool at a dry contact
36 y 37	Connection to the TI electrode - OXY
38 y 39	Connection to the Copper electrode - ION

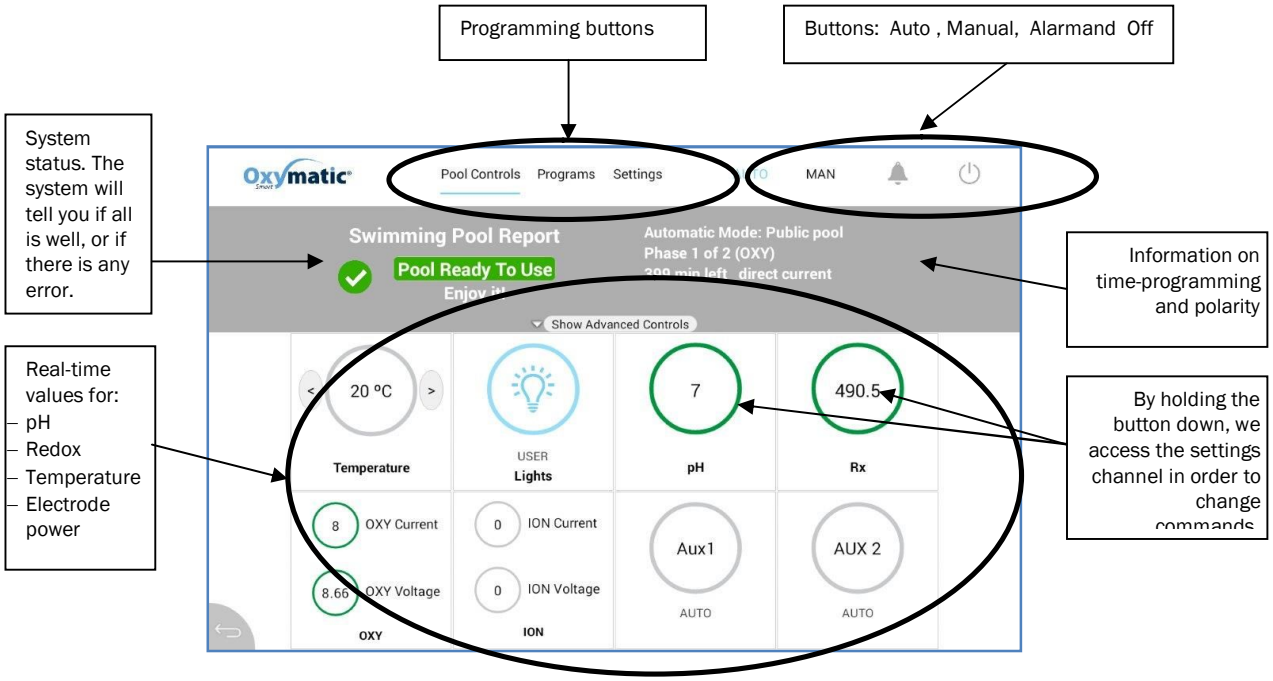
EXAMPLE OF MORE COMMON CONNECTIONS



5. PROGRAMMING THE CONTROL UNIT

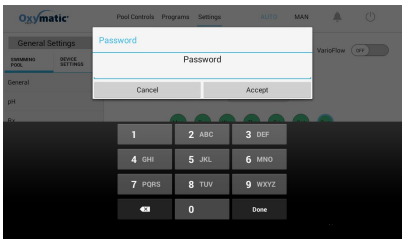
5.1. "POOL CONTROLS" MAIN SCREEN: REAL-TIME INFORMATION

Connect OXYMATIC to a mains socket (110v-230v), wait intil the screen starts up **(IT MAY SOMETIMES BE NECESSARY TO WAIT A FEW MINUTES)**. Once the system has started up, the first thing we will see is this screen, from which you can operate the **touch-screen**'s buttons**.** The system is pre-programmed at the factory. However, if we do not need to do any additional programming, we need merely to press the **AUTO** key, and Oxymatic will function using the programs as set (defaults).



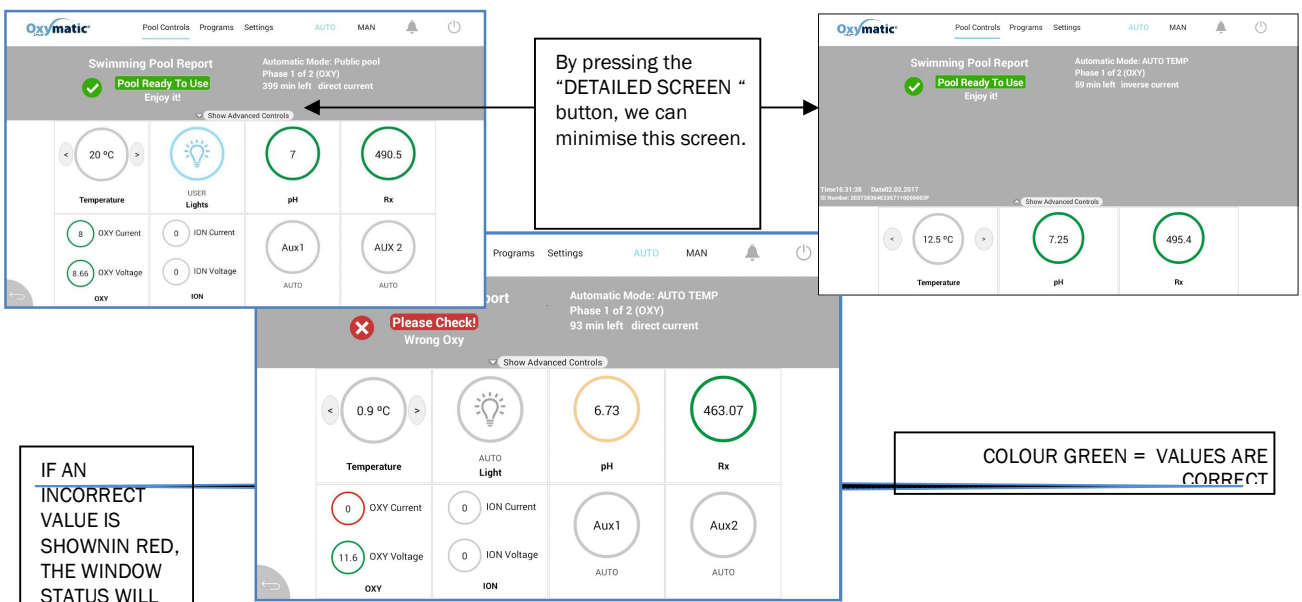
5.2. PASSWORD

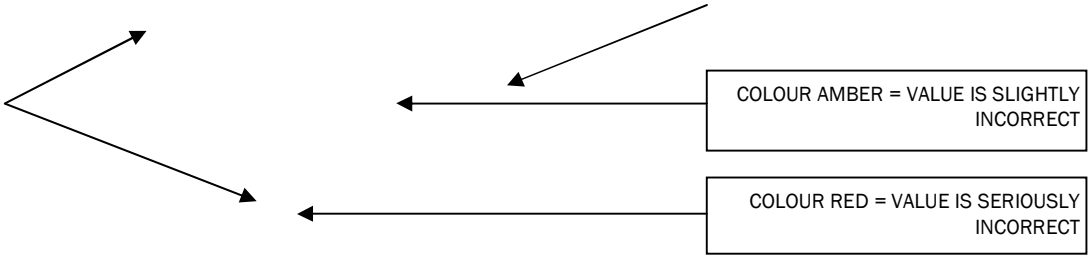
If you attempt to access programming, you normally need to enter**password 1122**when prompted by the system.



5.3. MAIN SCREEN IN DETALL/MINIMISE/COLOURS

This window indicates the system status, i.e. whether everything is in order. Ifthere is any problem, it will say so. This window can be left andmoved around at will:





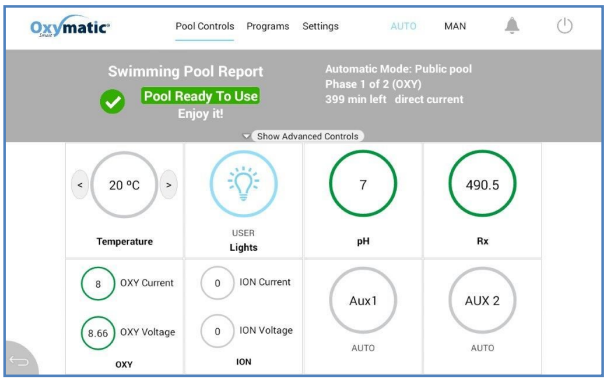
5.4. POOL CONTROLS BUTTON: RETURN TO MAIN SCREEN

By pressing the Pool Controls button FROM NAVIGATION AT ANY TIME, we will return to the first screen.

5.5. AUTO: AUTOMATIC BUTTON

By using the button AUTO, the system will workautomatically in accordance with the operating program, settings andset-points entered (default setting).

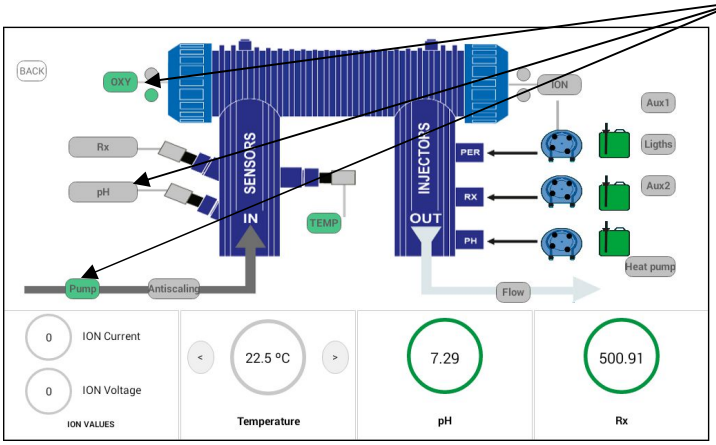
Functions activated will appear on the main screen: lighting, aux 1,etc... .If we keep the circle pressed, the system will take us to the function pressed in order to change the settings. For example, if we keep pressing onthe pHcircle, it will take us to the pH window in order to changeset-points orto calibrate the probe.



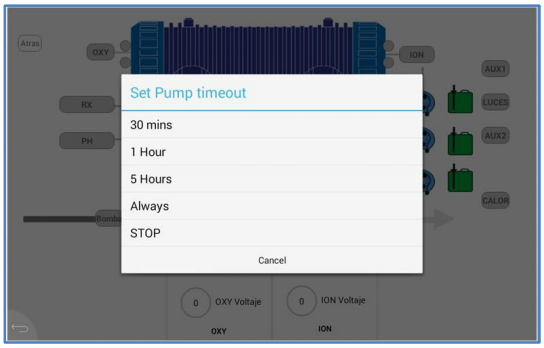
5.6. MAN: MANUAL BUTTON

By pressing this MAN button at the main screen, the following window will appear.

By pressing the buttons, wecan start up/shut downfunctions manually: OXY, PUMP, pH, etc...



If we press the BACK key, we will return to the main screen, but the system will continue operating in manual modeuntil we press the AUTO button, which restores it to operate using automatic (default) programming.



In order to start up the recirculation pump in manual mode, by pressing the button PUMP the following window, at which we can set the hours of operation, will appear.

5.7. PROGRAMS BUTTON: PROGRAMING HOURS OF OPERATION

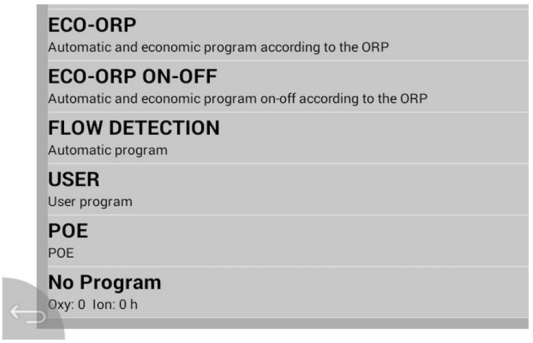
Programs

We can amend the operating schedule at any time by pressing the programming button, where up on the following window will appear.

Each program sets: the start-up time of the recirculation pump (and hence alsofiltration), duration (numberof hours) of OXY operation= recirculationpump andhours of ION/PER.

PRE-SET (DEFAULT) PROGRAMS
ALL THESE CAN BE AMENDED

Scroll down with the hand
to view programs

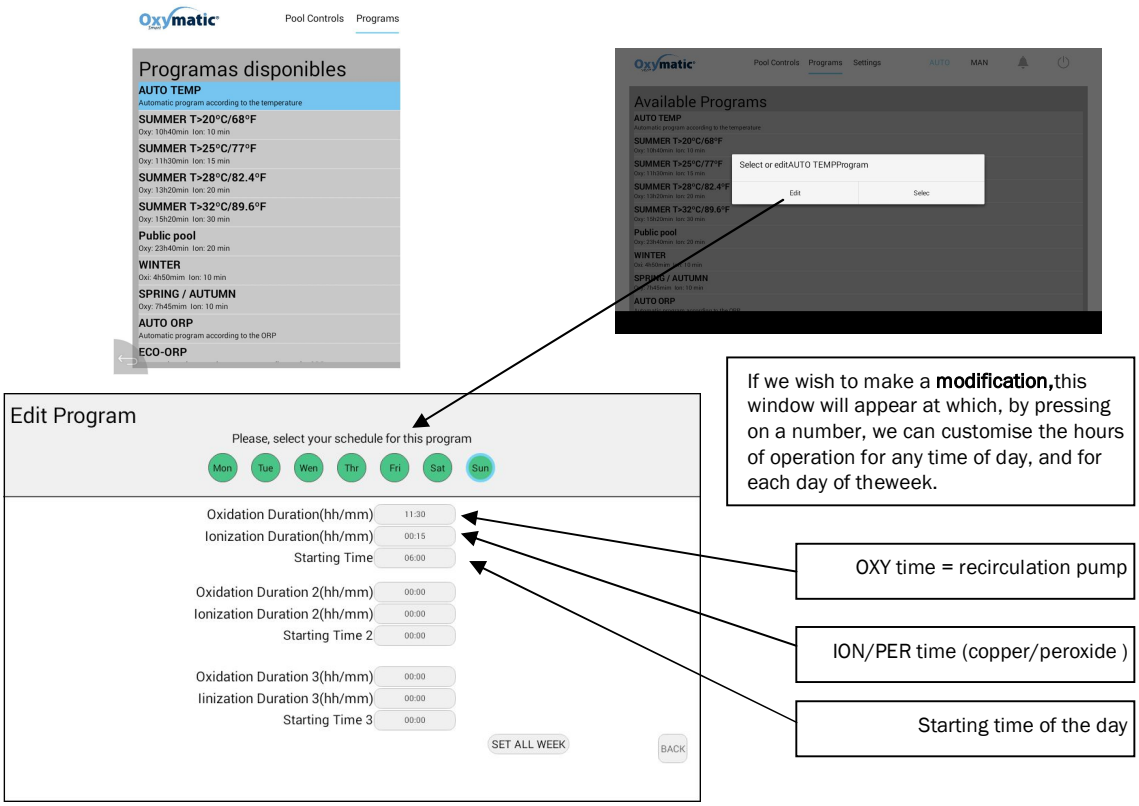


AUTO-TEMP	Operation will depend on water temperature. The system measures the temperatureat thestart-up time (pre-set at 6 a.m.) andwill calculate pumping times and OXY times automatically. Theminute parameters for ION/PER will always be fixed.
SUMMER T>20C VERANO T >20C	Operation using the recommendedset times, Oxy: 10h:40 m. - Ion/Per: 10 min.
SUMMER T>25C VERANO T >25C	Operation using the recommended set times, Oxy: 11h:30 m. - Ion/Per: 15 min.
SUMMER T>28C VERANO T >28C	Operation using the recommended set times, Oxy: 13h:20 m. - Ion/Per: 20 min.
SUMMER T>32C VERANO T >32C	Operation using the recommended set times, Oxy: 15h:20 m. - Ion/Per: 30 min.
PUBLIC POOL (PISCINA PUBLICA)	PROGRAM FOR 24- HOUR OPERATION. Oxy: 23h:40 m. - Ion/Per: 20 min.
WINTER (INVIERNO)	Operation using the recommended set times, Oxy: 4h:50 m. - Ion/Per: 10 min.
SPRING /AUTUMN (PRIMAVERA)	Operation using the recommended set times,, Oxy: 7h:45 m. - Ion/Per: 10 min.
AUTO-ORP (*)	Operation will depend on Redox Power (ORP). Hours of operation of the recirculation pump are determined by thetemperature (as also applies to the Auto Temp program), but operation of the OXY electrode and chlorine dosing pump isshown by the RX set-point (see separate SETTINGS button).Once the water reaches the set-point 0% , the electrode and liquid chlorine dosing pump will shut down; once it falls below 100 mV of set-point 0% it will start up, and so on throughout the period shown for the temperature.
ECO-ORP (*)	The same applies to AUTO- ORP, but the hours of operation of recirculation pump are set by the user, and are not contingent on temperature.
ECO-ORP ON OFF (*)	The same applies to ECO-ORP, except that the recirculation pump will also shut down.
FLOW DETECTION (DETECTOR DE FLUJO)	Operation of OXY /ION/PER depends on a flow detector. Oxymaticwill start up / shut down the system in accordance with a flow detector in the pipework which sends out a signal to the system.
USER	All programming that can be configured by the user: Starting time, OXY hours and ION/PER hours.
POE	P.O.E. mode for the treatmentof potable water.
NO PROGRAM	NOPROGRAM

(*) In order to use these programs, the system must haveaRedoxprobe (Rx) installed, and the Rx functionmust be activated.

All programs can be amended.

To select any program, press above the program, then Select



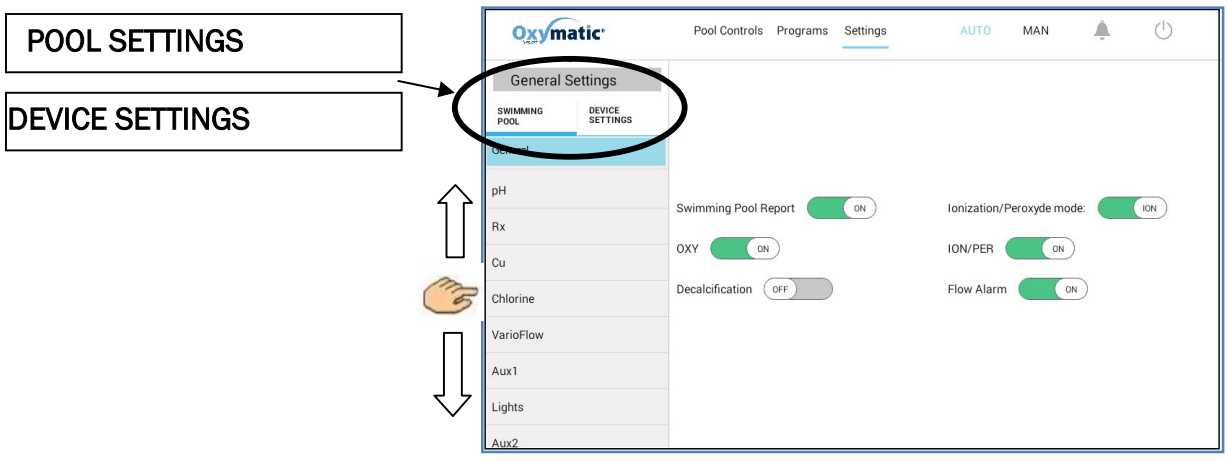
5.8. BUTTON: SHUT DOWN

The control unit has stopped working, but the screen has not closed down. In order to close the screen, you need to disconnect (unplug) the system.

5.9. BUTTON SETTINGS, GENERAL CONFIGURATION: SETTINGS, SET-POINTS, CALIBRATION, WIFI, ETC.

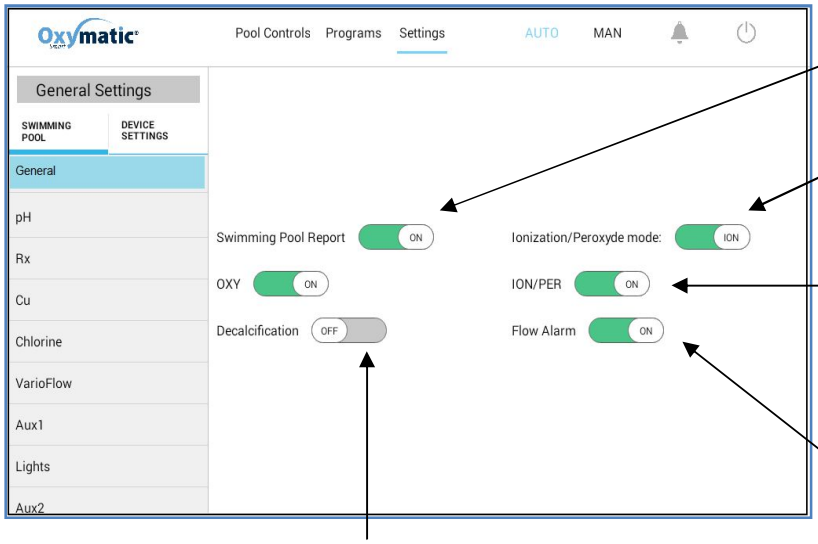
By pressing the Settings button, the following GENERAL CONFIGURATION window will appear (you need to scroll down using the hand in order to view all options).

This window has two sections:to configure“POOL SETTINGS” with operation functions (pH, Rx, Lighting, etc.),and “DEVICE SETTINGS” with all functions for updates, wifi ,serial number, etc.We can move between them at will by pressing



POOL SETTINGS

5.9.1. GENERAL: REPORT WINDOW / ION-PER MODE ACTIVATE/DEACTIVATE OXYFUNCTIONAND ION/PER FUNCTION –ECOLOGICAL ANTI-SCALE– FLOW ALARM



Pressing ON/OFF activates/ deactivates the report window

Change of mode: ION (Copper) to PER (Peroxide). **This optionrequires a special key. Consult your technician.**

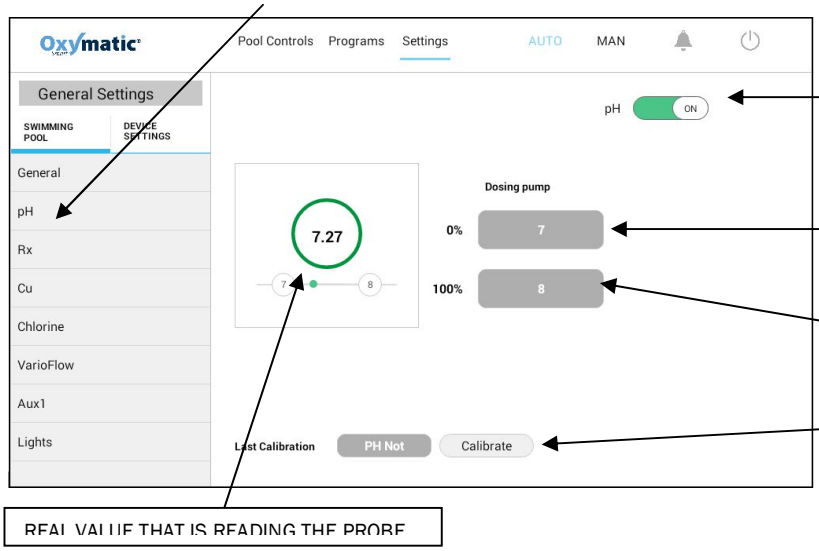
ACTIVATE/DEACTIVATE OXY AND ION/PER CHANNELS

Circulation alarm: to activate this option, you need to instal a flow-detector in the pipe and connect it to internal terminals 8 and 12 of the control unit. In this situation, if the system fails to detect any water movement it will shut down after 2 minutes. **This option requires a special key. Consult your technician.**

ECOLOGICAL ANTI-SCALE. If we have purchased an ecological anti-scale, it is activated/deactivated using the ON/OFF button. This optionrequires aspecialkey.

5.9.2. PH FUNCTION, CHANGE SET-POINTS AND CALIBRATE PH PROBE

By pressing the pH button, this window willappear:



Press START UP/SHUT DOWN the channel.**Activation and deactivation of this function requiresaspecialkey. Consult your technician**

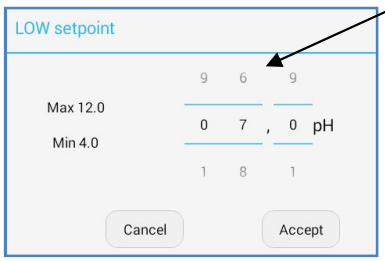
Set point button 0% (the dosing pump will shutdown at thisvalue).

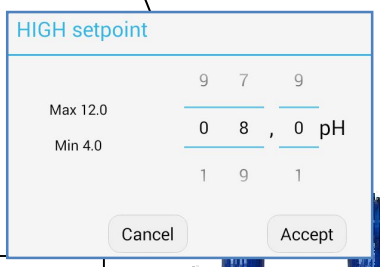
Set point button100% (the dosing pump will operate at maximum capacity).

Button t ocalibrate test-probe and date of the last calibration.

REAL VALUE THAT IS READING THE PROBE

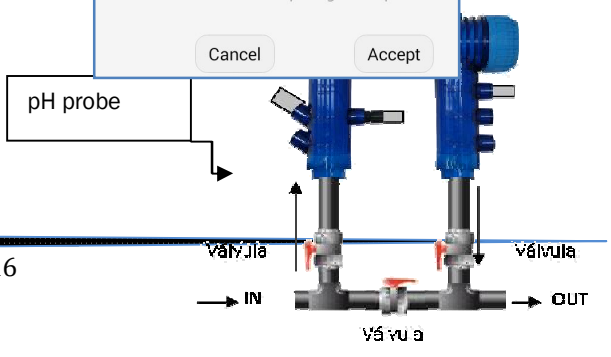
To **amend set points** 0% and 100%,presson the number and amend using the wheel.



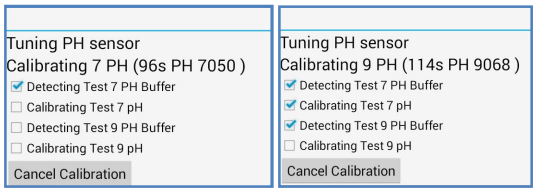


CALIBRATING THE pH PROBE

1. Press the OFF button. Open up the by-pass valve and shut off both valves to the chamber.

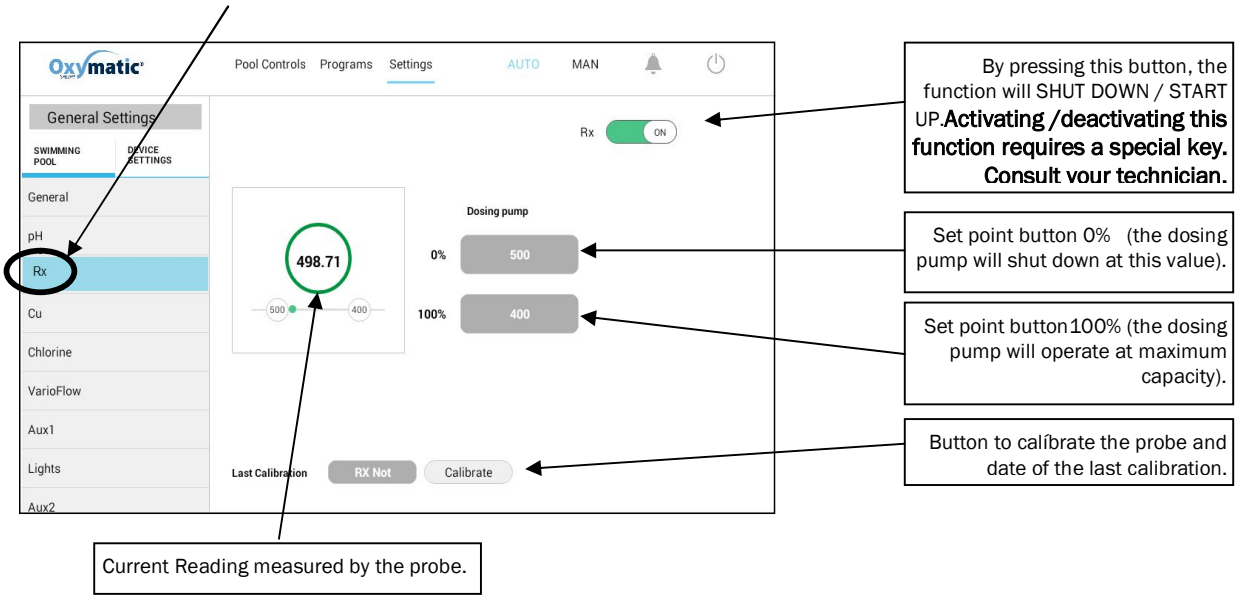


2. Unscrew the probe base, take out the pH probe and insert it into buffer solution 7 (Supplied with the system).
3. Activate the "calibration" button and begin the count down from120 to 0 seconds.
4. Wait 120 seconds. We will hear a beep: "detecting test 9 pH solution" is displayed.
5. Remove the buffer solution 7 probe, clean it with a little water, and insert it in the buffer solution pH9 (supplied with the system). (DO NOT PRESS ANYTHING: THE SYSTEM WILL AUTOMATICALLY DETECT BUFFER 9).
6. Wait120 seconds; we will hear two beeps: the probe is now calibrated.
7. Insert the probe into the chamber again, and adjust the probe base manually. Open up the valves to the chamber and shut off the by-pass valve.
8. Once calibration is complete, activate the POOL CONTROL button to return to the original screen,andpress theAUTObutton so that our system will now operate applying the new calibration.

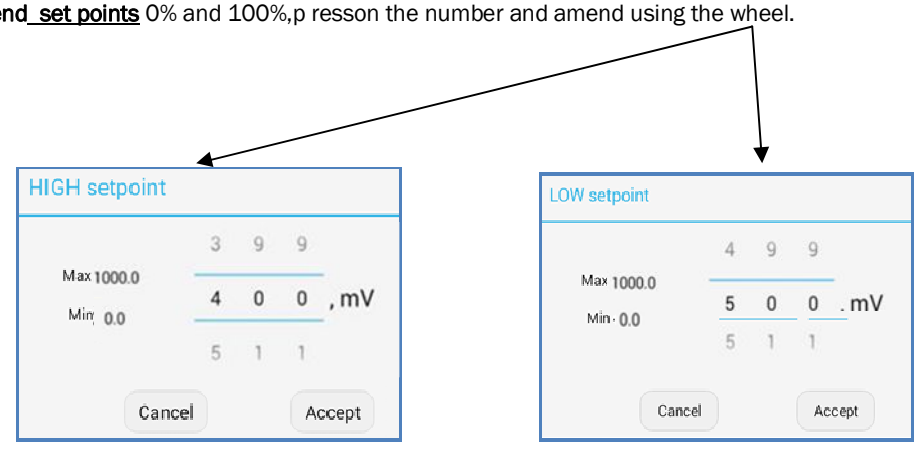


5.9.3. REDOX FUNCTION, CHANGE SET-POINTS AND CALIBRATE RX PROBE

By pressing the RX button, the following window will appear:

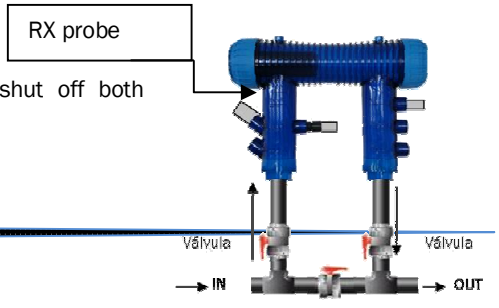


To **amend set points** 0% and 100%,p resson the number and amend using the wheel.



CALIBRATE THE RX PROBE

1. Set the button to OFF.Open up the by-pass valve and shut off both chamber valves.



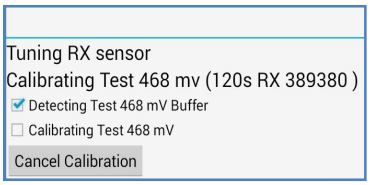
2. Unscrew the probe base, take out the Rx probe and insert it into buffer solution Rx 468 mV (supplied with the system).

3. Activate the "calibration" button and begin a countdown from 120 to 0 seconds.

4. Wait 120 seconds. We will hear two beeps; the probe is calibrated.

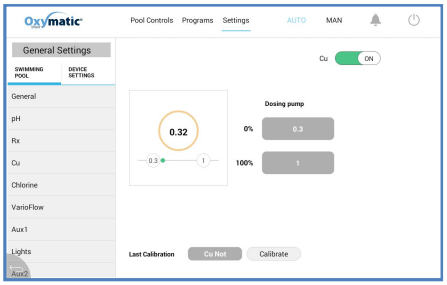
5. Insert the probe into the chamber again, and adjust the probe base manually. Open up the valves to the chamber and shut off the by-pass.

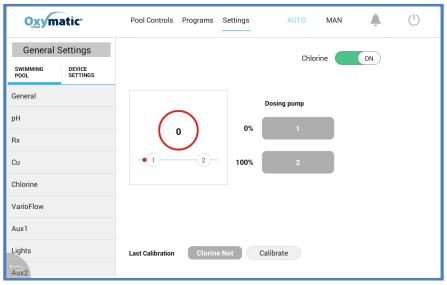
6. Once calibration is complete, activate the POOL CONTROL button to return to the original screen, and press the **AUTO** button so that our system will now operate applying the new calibration.



5.9.4. COPPER PROBE FUNCTION AND FREE CHLORINE

- **COPPER**: system to adjust COPPER in the water automatically by means of the copper probe and set-point.
- **FREE CHLORINE**: system to set FREE CHLORINE in the water automatically by means of the amperometric probe and set-point.





These are special functions. If you are interested in any of these, please consult your technician.

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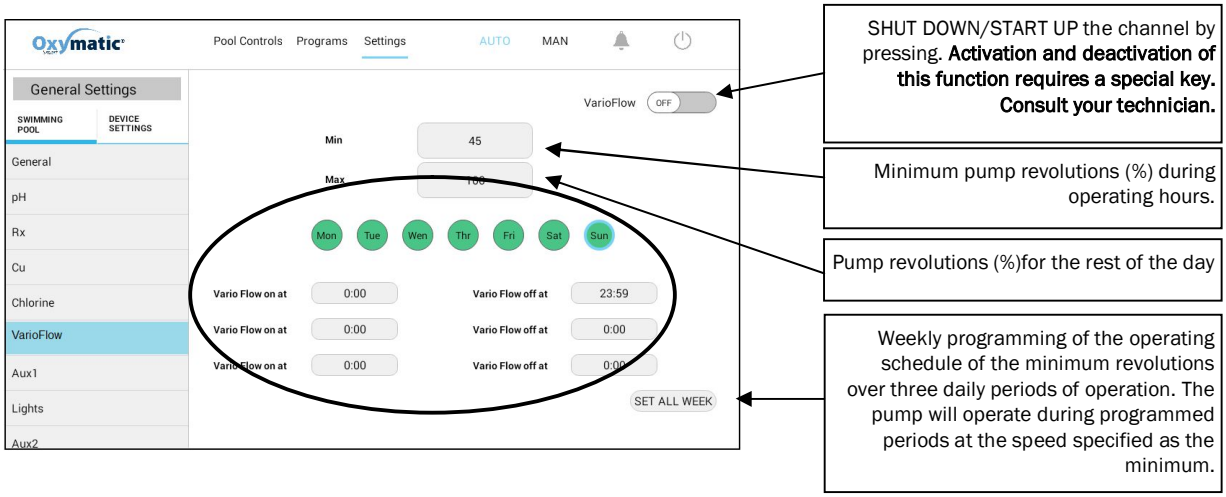
5.9.5. VARIABLE SPEED FUNCTION

If we wish to purchase a speed-changer in order to reduce consumption of the recirculation pump (which already exists), we can actívate this function using a special key.**Consult your usual technician on how to connect the Oxymatic variable pump system.**

By pressing on the VARIOFLOW BUTTON, the following window will appear:



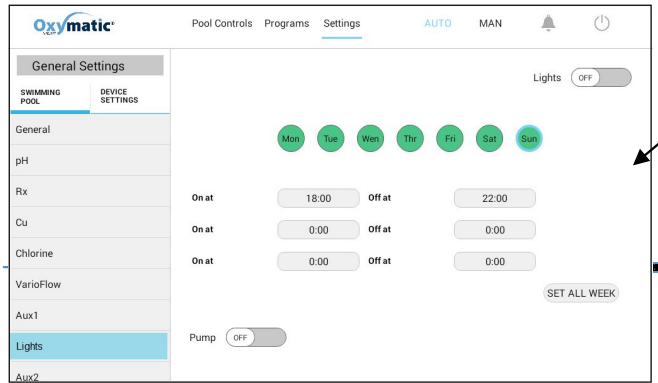
SHUT DOWN/START UP the channel by pressing. **Activation and deactivation of this function requires a special key. Consult your technician.**

Minimum pump revolutions (%) during operating hours.

Pump revolutions (%)for the rest of the day

Weekly programming of the operating schedule of the minimum revolutions over three daily periods of operation. The pump will operate during programmed periods at the speed specified as the minimum.

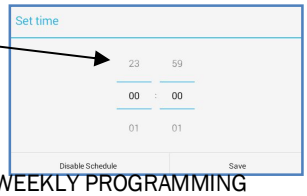
If you are interested in this system, please consult your technician.



5.9.6. AUXILIARY FUNCTION 1, LIGHTING FUNCTION and AUXILIARY 2

These functions can be activated and deactivated by a press of a button by the user: they do not require a password, and all work in the same way:

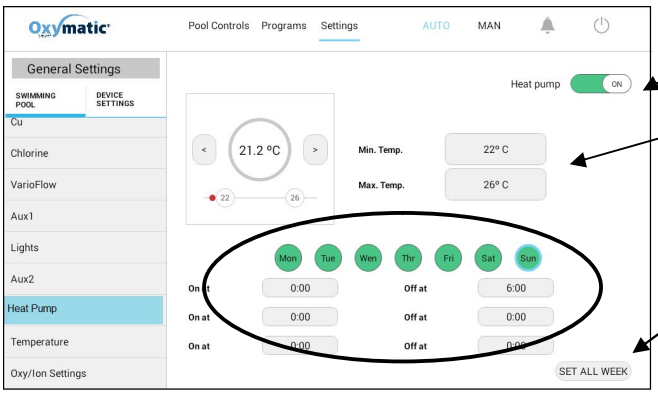
If we activate the PUMP button, once the function is activated we shall also get the recirculation pump, even if this is outside its normal hours of operation.



WEEKLY PROGRAMMING

1. Connect up the component to be controlled at the terminals provided: any auxiliary electrical component, pool lighting, auxiliary item, etc. (See section 4.2.4 INTERNAL INTERCONNECTIONS).
2. Activate the function.
3. Weekly programming of hours of operation of start-up and shutdown in three daily operating periods, by pressing on the appropriate times.
4. If we wish to use the daily programming already set, copy it for the entire week by pressing SET ALL WEEK.

5.9.7. HEAT-PUMP FUNCTION



SHUT DOWN/START UP the function by pressing.

Start-up and shut-down temperature of the heat pump during its hours of operation.

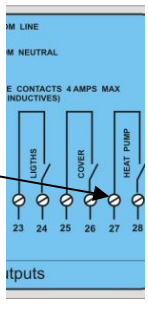
Weekly programming of hours of operation for the heat pump, in three daily periods of operation, by pressing on the appropriate times.If we wish to use the daily programming already set, copy it for the entire week by pressing SET ALL WEEK.

Enter the readings of the temperature Set-Point required to start up and shut down the heater pump. Once the temperature reaches the maximum the pump will shut down, and when it falls to the minimum, it will start up again.

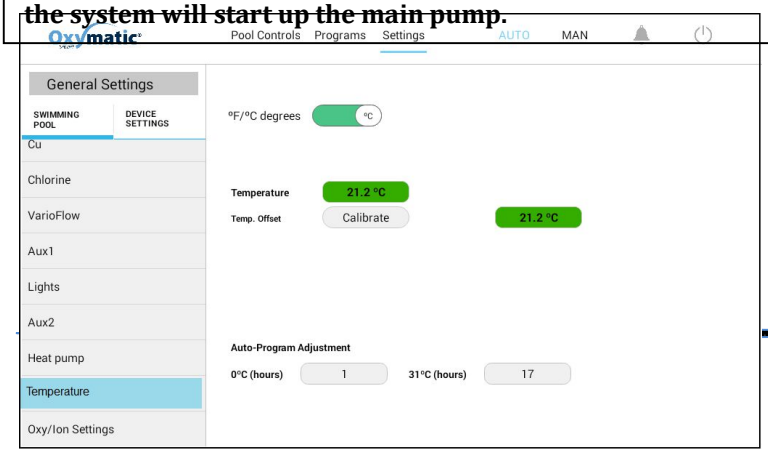
CONNECTIONS

It is necessary to create a bridge/connect up a wire from the pump contactor to the terminals provided for this purpose. We can use the example of the connection from the recirculation pump (see section 4.2.4 INTERNAL INTERCONNECTIONS and 4.2.2 CONNECTION FROM THE MAIN PUMP CONTROLLER TO OXYMATIC)

Connection inputs 27 and 28 withoutvoltage



(*) The heat pump has priority over recirculation. If this schedule is greater than that of recirculation, and if the temperature so requires, the system will start up the main pump.



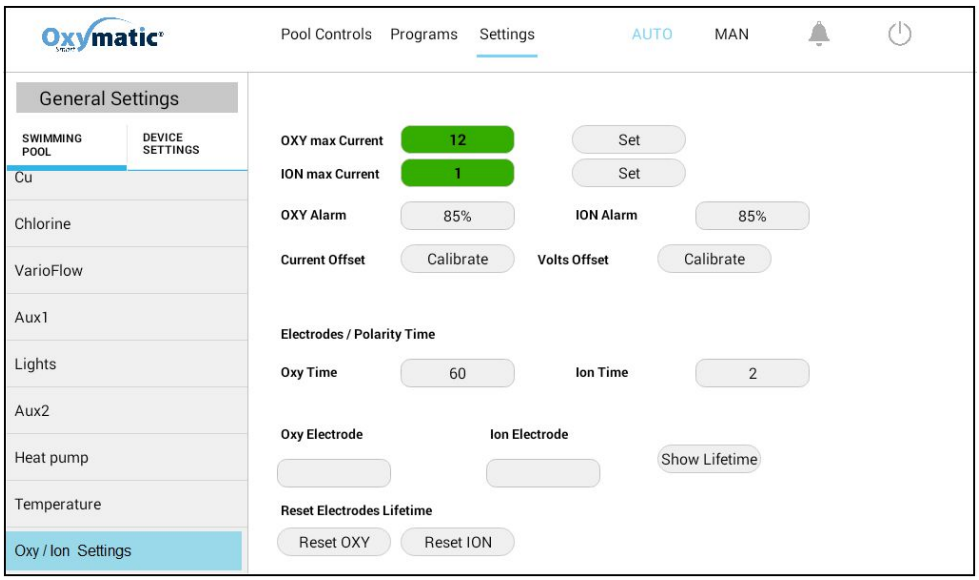
5.9.8. TEMPERATURE OPTIONS

Calibration of the temperature probe

By pressing this button, we can set the minimum and maximum hours of operation of the AUTO – TEMP automatic program. The control unit performs a calculation between the current water temperature reading and that of the two

5.9.9. OXY/ION SETTINGS (POWER, POLARITY, HOURS OF OPERATION, ETC.)

Using this function, we can view information on the Titanium and Copper electrodes. Modifications to any of these parameters require a special code.

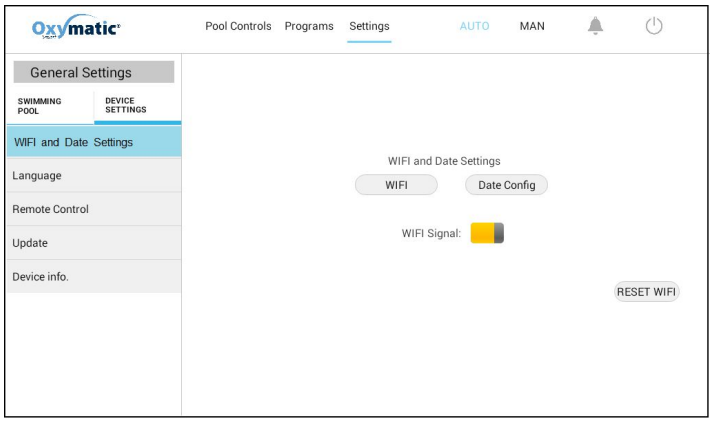


- **OXY MAX CURRENT** is the maximum power reaching the titanium electrodes, which may be 6– 8–10 or 12 Amps, depending on the model.
- **ION MAX CURRENT** is the maximum power reaching the copper electrodes, which may be 1 or 2 Amp, at the main screen.
- **OXY ALARM / ION ALARM:** Level of discrepancy at maximum amps, so that the system will generate an alarm at the main screen.
- **CHANGE OF ELECTRODE POLARITY:** The electrodes are **self-cleaning** and change polarity every X minutes. Here you can customise that number of minutes.
- **HOURS OF OPERATION (WEAR-AND-TEAR):** The control unit counts and records the electrodes' hours of operation in order to make a scheduled change. The electrodes have an approximate working life of 10,000 hours.
- **RESET OXY and RESET ION:** Buttons to reset the time-meter to zero whenever a worn-out electrode is replaced.

DEVICE SETTINGS

5.9.10. SET WIFI AND DATEWIFI/INTERNETCONNECTION WITH WIFI ROUTER

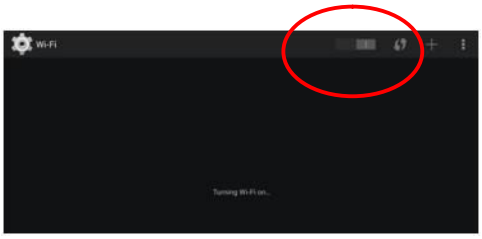
It is advisable to have access to Internet service, since the Oxymatic system undergoes constantly further development, and in some circumstances it is essential to update the software to ensure correct operation of our system, also in order to be able to manipulate, maintain and have full information on our system through our computer or mobile phone system, whether the Android or Iphone version. To do this, we must take the following steps:



1.- PRESS **DEVICE SETTINGS BUTTON**

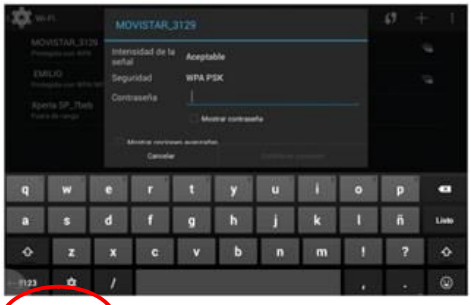
2.-PRESS **WIFI** BUTTON

3.-You must actívate the WIFI option at the following screen.



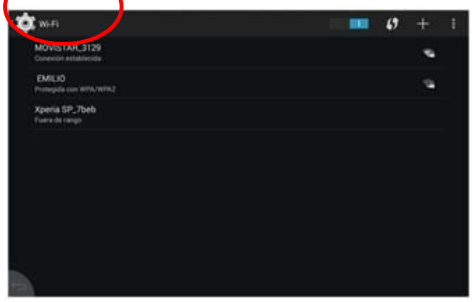
IMPORTANT: ONCE ACTIVATED, DISCONNECT OXYMATIC SMART FROM THE POWER SUPPLY

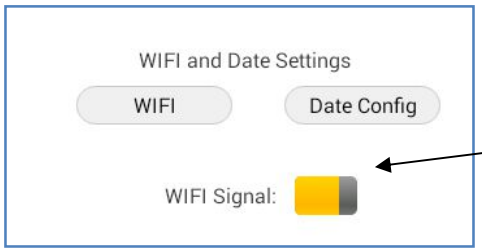
Select the Internet provider; enter the Internet password.



Once the Internet connection has been made,

RECONNECT THE POWER TO THE CONTROL UNIT AND WAIT TILL SYSTEM IS RESTORED AT THE MAIN SCREEN





When we return to the main screen, once you are connected to the Internet by WiFi, you can see the strength of the signal.

5.9.11. WIFI/INTERNET CONNECTION SHARED WITH TELEPHONE

Even if you are not within range of any Wi-Fi network, you can connect to the Internet by sharing your data connection from the phone or Ipad.

IOS OPERATING SYSTEM (IPHONE):

CONFIGURE ON THE TELEPHONE SHARED WITH INTERNET

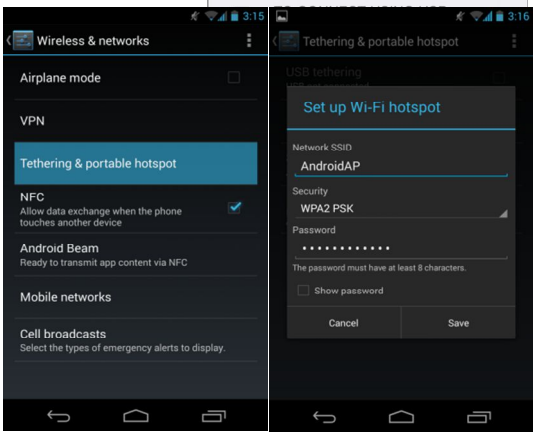
Follow these steps to configure your shared Internet function:
1.- Press Settings
2.- Press Share Internet;actívate it.

Set or change your Wi-Fi password

You need to know the Wi-Fi password in order to configure Share Internet. You can register or change the Wi-Fi password.

Register this password and then **PROCEED TO CONNECT THE SYSTEM TO WIFI AS IN THE PREVIOUS SECTION, BUT WE NEED TOSEARCH FOR OUR PHONE'S WIFI NETWORK AND ENTER THE KEY PREVIOUSLY REGISTERED.**

ANDROID OPERATING SYSTEM (Smartphones):



It is very easy to share **our Internet connection** with other devices. Just go to **Settings >Wireless Connections and networks >network anchor-point and Wi-Fi area**.

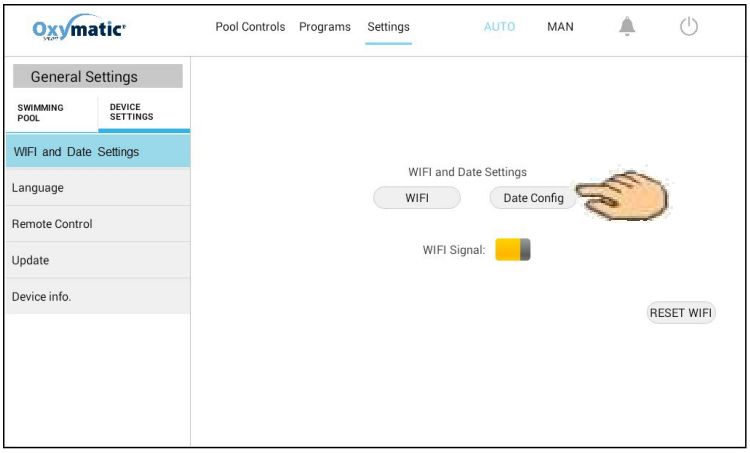
Depending on the device, we will see **USB port** options to share our connection over a USB cable that will connect up to with the portable computer's **Wi-Fi area** to create a Wi-Fi Access point.

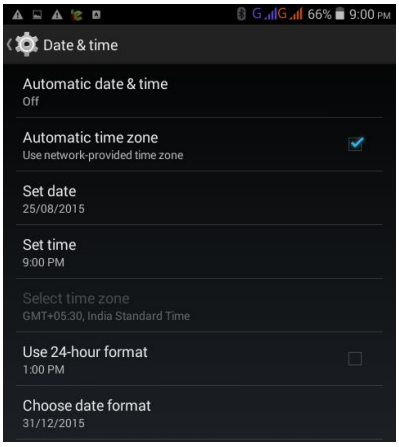
The portable **Wi-Fi zone** enables us to configure this Wi-Fi area in order to add a network name and password, and to select the type of security.

Register the password and then **PROCEED TO CONNECT THE SYSTEM TO WIFI AS IN THE PREVIOUS SECTION, BUT WE NEED TO SEARCH FOR OUR PHONE'S WIFI NETWORK AND ENTER THE KEY PREVIOUSLY REGISTERED.**

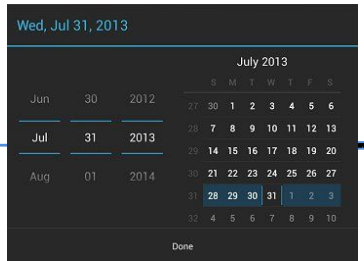
5.9.12. CONFIGURE DATE AND TIME

PRESS BUTTON: Date and Time will appear at this window:



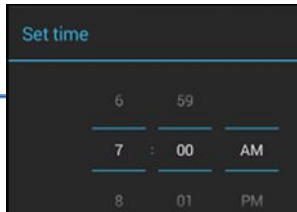


IMPORTANT: NOW DISCONNECT OXYMATIC SMART FROM THE POWER SUPPLY



Change the date using the wheel

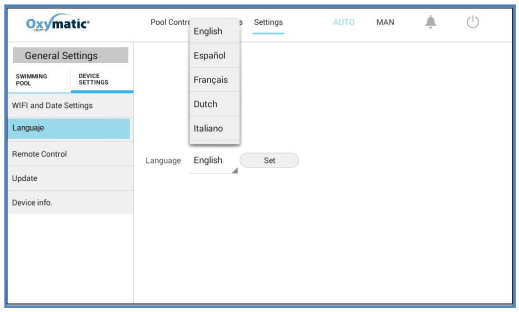
Change the time using the wheel



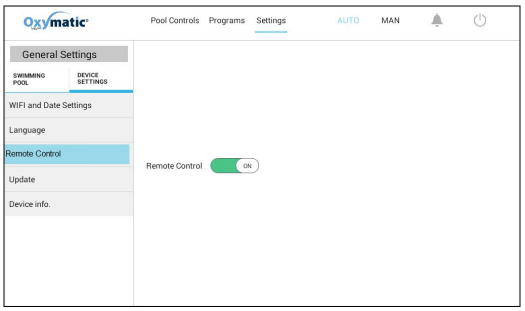
Once the date and time are configured, RECONNECT THE CONTROL UNIT'S POWER SUPPLY and wait till the main screen appears.

5.9.13. CHANGING THE LANGUAGE AND ACTIVATING/DEACTIVATING REMOTE CONTROL

To change the language, open the display; select A language and press set.



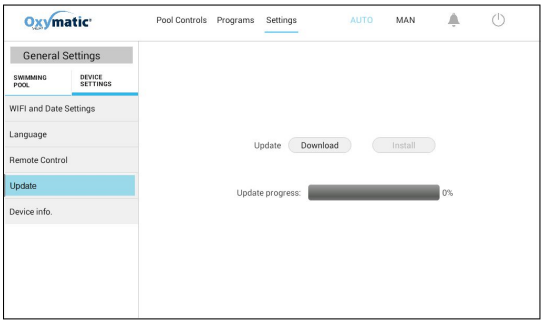
To activate/deactivate remote control and enable remote/Internet system access, you need to set this option to YES.



5.9.14. UPDATE SOFTWARE (DOWNLOAD)

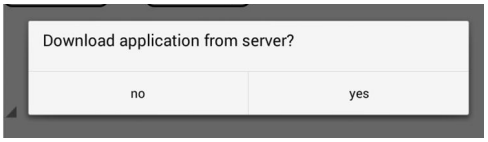
In order to update the system software, we need to have a live Internet connection.

Set the system to the OFF position
(most important)



Press the UPDATE button; the following window will appear.

Press DOWNLOAD; THERE NOW APPEARS

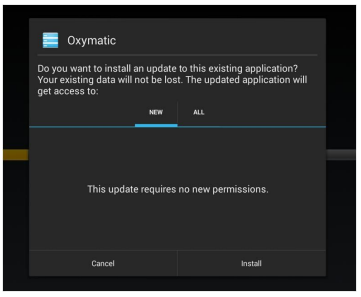


Press YES; you will then be able to view the state of the update at the YELLOW bar. Once the download is complete, the **INSTALL** button will appear, HIGHLIGHTED IN BLACK.

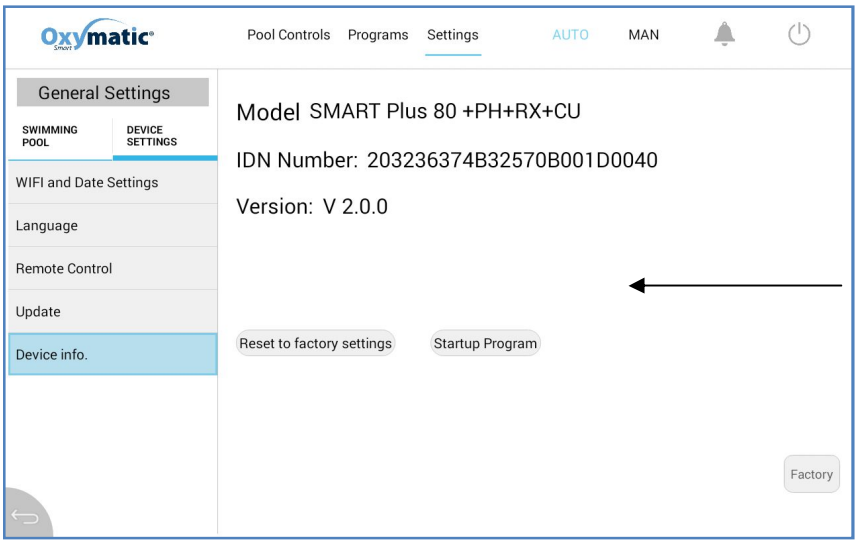
Press **INSTALL**

Press **INSTALL** and WAIT

The sytem will take you to the main screen, at which the updated version will be available. You must now set the system to AUTO for the new software to work.



5.9.15. DEVICE INFO: SYSTEM MODEL AND SERIAL NUMBER: SOFTWARE VERSION



System model

Serial number

Software version installed

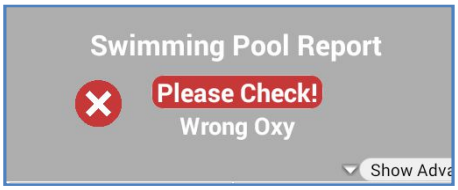
To use the START-UP program, consult your technician.

5.10. BUTTON: ALARM

If there is a fault of any kind, visual and audible alarms will be activated. To stop the alarm or to silence the audible alarm, press the alarm button at the main screen.

ON

OFF



The STATE OF THE SYSTEMwindow will show where the fault lies.

6. STARTING UP

6.1. RECOMMENDED TIME SCHEDULE FOR PRIVATE POOLS/ PUBLIC POOLS

For theOxymatic system to be efficient, we need to remember that the hours of daily operation depend directly on the water temperature. The higher the temperature, the greater the number of hours of operation required.
For this, we recommend:
Private pools: we recommend the AUTO-TEMP program.
Public pools: we recommend the SUMMER T <32°C or PUBLIC POOL program (24 hours continuously)

6.2. PROGRAMMINGTHE RECOMMENDED PH AND RX SET-POINTS: CHLORINE SETTINGS

To change the set-points, refer to sections 5.9.2 and 5.9.3

Private pools: Redox power between 600 mV and 400 mV (where an RX probe is available).
and a pH bettween 7.1 and 7.6.

pH ⇨ For this, we will place the**set-point 0% pH to 7.1, and set-point 100% pH to 8.5.**

Rx ⇨ Place the **set-point 0% to 600 mV, and set-point 100% to 400 mV.**

Public pools: The regulations specify a pH between 7.2 and 8 pH, and free chlorine 0.5 - 2 mg/l

pH ⇨ For this, place the **set-point 0% pH to 7.3, and set-point 100% pH to 8.5**

Rx ⇨ Place **set-point 0% to 700 mV, and set-point 100% to 500 Mv.**

6.3. PUTTING INTO OPERATION, STEP BY STEP

6.3.1. START UP THE HIGH-SPEED PUMP AND TEST COMPONENTS

Open up the three by-pass valves and set Oxymaticto AUTO mode, then shut off the by-pass valve to make the water pass through the chamber.

Water runs through the chamber. Purge all air from the chamber if necessary, by slightly unscrewing the upper caps with a flat-blade screwdriver.

Verify that all components are operating correctly (pumps, probes, lighting, etc.)

6.3.2. CONDITIONING OF THE WATER:

The water must be properly balanced in order to ensure correct disinfection of the water,to prevent any metal precipitation, limescale, staining of any kind, cloudy or green water, etc,in the pool, irrespective of the method used (Chlorine, Bromine, Oxygen, Peroxide; Ozone, etc.) To this end, you need to check the parameters shown below:

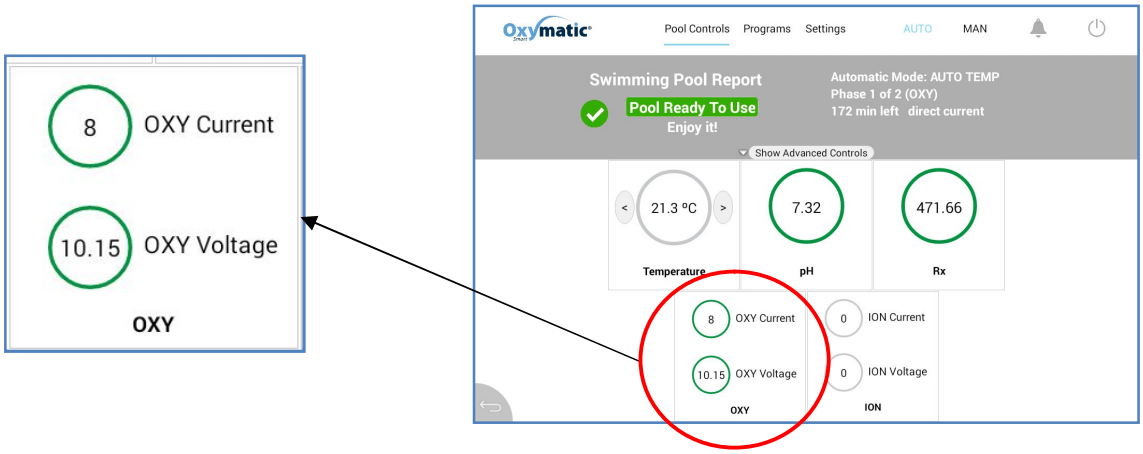
TABLE OFRECOMMENDED POOL PARAMETERS

PARAMETER	RECOMMENDED VALUE	INCREASE	DECREASE
Total alkalinity (ppm)	80 - 175	Alkalinity increaser Calcium carbonate ($CaCO_3$): 1kg/50m³ increase 10 ppm.	Alkalinity reducer Hydrochloric acid (HCl) or sodium bisulphite ($NaHSO_3$).
TDS (Total dissolved solids) (ppm)	+600	Salt (NaCl): 25-50 Kg per 50m³	Not necessary
pH	6.8 – 7.6	pH increaser Sodium carbonate ($NaCO_3$) or bicarbonate ($Na(HCO_3)_2$)	pH reducer Sulphuric acid (H_2SO_4) is better than hydrochloric acid (HCl)

6.3.3. TEST OF WATER CONDUCTIVITY AND ELECTRODES' ELECTRIC POWER

For the titanium electrodes to function 100%, disinfect thoroughly and suffer minimal wear-and-tear, it is essential that they operate at a voltage of less than or equal to 10v, otherwise their working life will fall to just a few months. We can see this at the lower portion of the initial screen.

Test the amps and voltage of the titanium electrodes **IN REAL TIME**, with the system in operation. It is necesary to wait a few minutes to obtain a reading.



OXY CURRENT MUST BE 8, 10 or 12 AMPS (DEPENDING ON MODEL)
OXY VOLTAGE MUST ALWAYS BE LESS THAN OR EQUAL TO 10V, IRRESPECTIVE OF AMPS.

If the voltage is ≥ 10V, top up with sea salt (NaCl) directly into thevessel (25-50 Kg for each 50m³water by volume).

This adjustment is to be carried out only whilst operating and when salinity falls owing to many water replacements, etc... It is important to emphasise that the higher the water's electric conductivity or TDS the better, since in this way the voltage at the titanium electrodes will be lower, and consequently wear-and-tear inuse will also be lower. In general, for correct operation of the system, TDSs must be greater than 600 ppm or, which amounts to the same thing, the water'selectric conductivity must be greater than 1200 µS/cm.

The GUARANTEE does not cover wear-and-tear to electrodes. It is advisable to measure the voltage weekly (20 seconds). To do this in situations where the voltage at electrodes is greater than 10v, all we need to do is top

our sea salt (NaCl) into the water.EXPLANATION: In order to reduce the voltage at the titanium electrodes, it is necessary to increase the water'selectric conductivity (TDS). This can be done using many mineral salts, but we recommend salt (NaCl) as it is very economical and readily obtainable, will not alter the water's pH, and dissolves quickly without turning the water cloudy.

If the **power is excessive** for the pool's conditions (temperature, water volume, or if there is a change in the conditions of use), it can happen that the pool acquires an unusual odour (odour of disinfectant). In this situation, shut down the system and consult your technician or the manufacturers.

6.3.4. SHOCK CHLORINATION

Always carry out shock chlorination before. We recommend granulated dichlorine in order to obtain a level of 10-15 mg/l Cl quickly (48 hours) if it falls to< 2 mg/l.

Steps to follow:

1. Top up using a sufficient amount in accordance with the instructions on the jar in order to bring the chlorine up to 10 mg/l (ppm). In practice, and purely as a guide, pour 2-3 kg dichlorine for each 50 m^3 water.
2. With recirculation in operation, pour half into the skimmers with the remainder distributed in the vessel. It is not necessary to dilute it.
3. Leave filtration running during a full replacement of the water. This will depend on the flow from the pump, but is normally 4-5 hours.
4. Shut down the pump and wait 8 hours (till the next day).
5. If there are algae, rub the walls and floor down with a brush. Place the cleaner and pour away the algae residues and dirt away from the pool (must not pass through the filter, nor run back into the pool).
6. Carry out cleaning of the filter and rinse.

Once chlorine in the pool has fallen to < 2 mg/l, the pool is ready foruse.

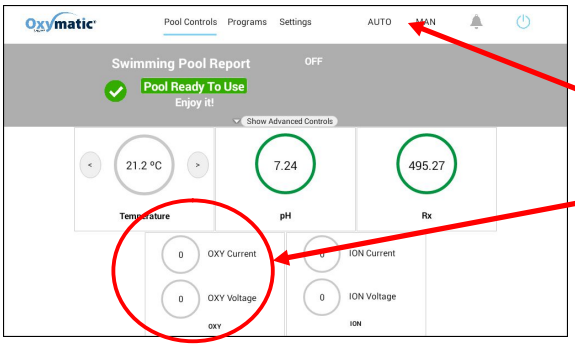
6.3.5. ADJUST RESIDUAL COPPER (CU^{++})

Measure the dissolved copper in the water using the colour-graded gauge,

- If we have a copper level between 0.2 and 0.5 ppm, we can start up the OXYMATIC system with the programs already set.
- If we have a copper level above 0.7 ppm, we must attempt to reduce it. To do this, we can replace some of the water in the pool without copper, or use a metal-removing agent.

IMPORTANT: This adjustment is to be performed only when starting up and we are going to perform a weekly check at the start, since Oxymatic takes care of maintaining the water's copper level. The recommended dose (0.2 and 0.5 ppm) does not affect the health since, according to the WHO (World Health Organization), water is potable with up to 2 mg/l copper.

6.4. PARAMETERS TO BE CHECKED FOR CORRECT OPERATION

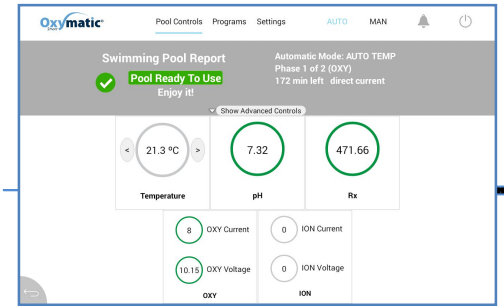


Auto window waiting: outside programmed hours of operation

AUTO button marked blue

OXY CURRENT and OXY VOLTAGE at zero.

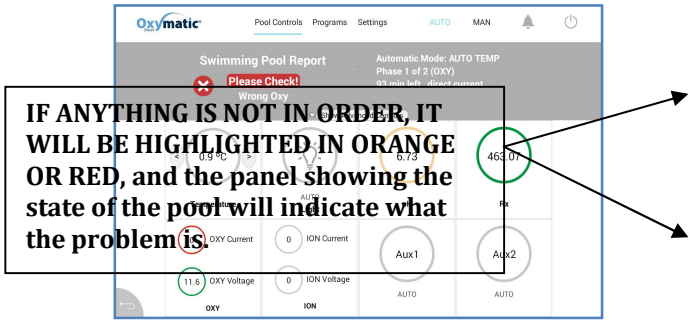
WHEN THE PUMP STARTS OPERATING AND THE SYSTEM IS STARTED UP MANUALLY OR AUTOMATICALLY, WE MUST VERIFY THE SCREEN'S PARAMETERS.



When all windows are **in green, everything is in order** under the programming and set-points we have customised.

ALL GREEN ⇨ **ALL CORRECT**

Parameters to be checked:
pH
Rx
Temperature
OxyCurrent



IF ANYTHING IS NOT IN ORDER, IT WILL BE HIGHLIGHTED IN ORANGE OR RED, and the panel showing the state of the pool will indicate what the problem is.

7. MAINTENANCE OF THE OXYMATIC

7.1. MAINTENANCE AND CONTROL PANEL

From now on, the only thing we need to do is to maintain the system, checking the parameters detailed below:

GENERAL MAINTENANCE
- Replenish/ replace the tanks for products used. You must never allow these to get low.
- Change the electrodes when they exhausted, approximately every 10,000 – 15,000 hours.
- Change the measurement probes for pH and Rx as soon as the calibration frequency increases, or they fail to calibrate (Approximately 2 years under normal conditionsof use). Never allow a probe to have no water.

DAILY MAINTENANCE
- Ensure that the pump is working, and that no alarms have been triggered (visually in red).
- Ensure that the water is clean andclear (visually).

WEEKLY MAINTENANCE
- Measure the copper using the drip-measurement kit (Copper kit – not included) during the first month of operation, and once a month there after.

MONTHLY MAINTENANCE
- Check the voltage and amps of the electrodes (Initial Oxymatic screen; ≤10V).
- Check the pH in the vessel at least once a month (using colour-graded or digital gauges).
- If the water is hard, check that titanium electrodes have no white lime incrustations. Clean if need be, but without removing the coating that covers the electrodes.
- Measure the copper.

BI-MONTHLY MAINTENANCE
- Calibrate the pH and Rx probes, or whenever the vessel measurement does not agree with what is indicated on the control unit by ± 0.2 pH.
- Check the silicon injection pipe, product pipes and injectors of the dosing pump(s).

7.2. CLEANING THE ELECTRODES AND DURATION

Although the titanium electrodes are self-cleaning and will change their polarity automatically, the titanium electrodes change every 60 MINUTES and the copper electrodes every 2 MINUTES, nonetheless there are types of water that have a high lime content and may show incrustations. If we discover a crust or many white blotches on the titanium electrodes, we need to clean them.

We must disconnect the cables as soon as we discover any dirt. Unscrew the electrodes from their chambers, immerse for 30 minutes in a solution of 50% vinegar – 50% water (or using a special anti-limescale product) and wipe gently with a toothbrush, so as not to damage the patented alloy (paint) the electrodes have.
Never use a metal brush nor scrape with anything hard, as this would seriously damage the electrodes, rendering them useless.

When restoring them to their position in the chamber, leave the separating comb in place. The average frequency of cleaning will depend on water quality. Check the electrodes visually approximately every month, and clean them whenever dirt is discovered, or there are numerous white blotches between them.

18. INCOMPATIBILITIES AND POSSIBLE FAULTS

OXYMATIC is fully compatible with any other treatment apart from chlorine, bromine, active oxygen, etc...

WARNING: In the case of pools with a liner covering, special care must be taken to ensure pH does not exceed 7.6 since, above that level, copper will begin to precipitate and, given the properties of the liner, the pool may stain blue: such stains are diffícult to eliminate. There will be no problem maintaining pH below 7.6 with any other covering material.

19. PROBLEMS AND SOLUTIONS

9.1. VOLTAGE HAS RISEN>10V AND THE TITANIUM ELECTRODES HAVE WHITE LIMESCALE STAINS

Disconnect the cables, unscrew the electrode base from the chamber and clean it

9.2. VOLTAGE HAS RISEN> 10V, BUT THE TITANIUM ELECTRODES ARE CLEAN

Add salt.

9.3 SCREEN DOES NOT START UP

Check the electric connection to the mains (220v) and wait a few minutes while the internal battery is charged.

9.4 OXY CURRENT IS 0AMP AND THE PUMP HAS STARTED ITS HOURS OF OPERATION

There is a loose cable, which is failing to supply power to the electrodes. Check the cables and electrode plugs.

9.5 BLUE OR BLUEY-GREEN STAINS IN THE POOL

There is too much copper. With our technology this can happen only as a result of faulty installation, programming or control. If we notice blue or bluey-green stains on the ceramic tiles or liner, there may be too much copper in the water, or an increase in pH and temperature that has not been monitored.The solution:

1.- Measure the copper in the water several times and at various locations. If there is> 0.7 copper, we need to identify and remedy the problem, which may be caused by:
- Poor installation: Cables changed (OXY - ION)
- Faulty programming: Too many minutes each day
- Lack of proper maintenance

2.- Switch off the copper function by the program.
3.- Lower the level of copper in the pool. This can be done in two ways:
- Replace some or all of the water in the pool, carry out cleaning, etc. Check and take daily measurement readings.
- Empty out the pool and clean ceramic tiles with acid.
- Use a metal flocculant or a special copper remover.

A copper level of up to 2 ppm is not harmful to the health, but can cause staining.

9.6 POOL IS CLOUDY / GREEN, OR ALGAE APPEAR.

This is brought about through a lack of disinfection, which can occur from various causes. We need to perform a check of the system, electrodes, voltage, etc. To verify that everything is in order.

If the system itself is in order, there may be one or more causes:

- Hours of treatment are insufficient for the water temperature. The hours of treatment must be continuous.
- Alkalinity is low: correctparamers are between 80 and 175 mg/l.
- Poor recirculation by the pump and 'dead' areas
- Lack of copper
- Water is stale and/or out of balance.
- In the event that algae prove to be copper-resistant, we advise using a chlorine-free algicide for pools that is based on polymers (in Spain we recommendanalgicide made by QPProductos, which is based on polymers).
- Once the problem has been identified, carry out rapid chlorination and remedy the problem.

20. TECHNICAL SPECIFICATIONS

OXYMATIC - SMART	STANDAR EQUIPMENT	02 February 2015 PLUS EQUIPMENT (Available March 2015)
* **WORKING PARAMETERS**		
Mains supply	100 to 250 Vca 50/60 Hz	Yes
Max temp working	Range +5 to +55 ºC (Avoid direct sunligth)	Yes
Max Humidity Working	Maximum 95% (Non condensed)	Yes
Increase internal temperature due to working use	Increased in 12ºC	Yes
* **READOUT PARAMETERS**		
pH readout	Range 5 to 10 pH units, two decimals	Yes
Rx readout	Range +/- 2.000 mV	Yes
Cu++ readout	No	Yes (3 concentrations decades)
Residual Chlorine readout	No	Yes
Conductivity readout	No	Yes
Biocide readout	No	Yes
Water Temperature	Range +5 to +55 ºC (temperature sensor included)	Yes
* **SCREEN PARAMETERS**		
Screen type	High Resolution Graphics	Yes
Screen Color	Full Color	Yes
Screen Size	10"	Yes
Parameters Programation	Touch screen patterns	Yes
Type of programation	Friendly Intuitive	Yes
Numbers of parameters in the screen	Full parameters shown at time	Yes
* **INPUTS & OUTPUT's**		
Oxydation Current Out	Adjustable from 6 to 12 amps	Yes
Ionization Current Out	Adjustable from 1 to 4 amps (Under order 0 to 12 amps)	Yes
Peroxide Peristaltic Out	Yes (230 Vca peristaltic)	Yes
pH Peristaltic Pump Control	Yes (230 Vca peristaltic)	Yes
Rx Peristaltic Pump Control	Yes (230 Vca peristaltic)	Yes
Cu++ Peristaltic Pump Control	No	Yes (230 Vca peristaltic)
Residual Chlorine control	No	ON/OFF free contacts Out
Conductivity control	No	ON/OFF free contacts Out
Recirculating Pump out ON/OFF	Yes	Yes
Recirculating Pump out proportional (Varioflow)	No	0/10 vcc PWM
ECO Discaling Output	No	Yes by means PWM & magnets
ECO Discaling Chamber	No	PWM
Swimming Pool Level Control	No	Up 3 levels detections
Domotics Control (Presence detector)	No	Yes
Domotics Control (TV Camera)	No	Yes
Cover Out	Free Contacts Continuous or Pulse Out	Yes
Ligths Out	Free Contacts Time Adjustable	Yes
Heat Pump Out	Adjustable Temp &Timming.	Yes
Heat Pump Control ModBus	No	RS485 with ModBus Protocol
* **ALARMS**		
Level Control in pH Reactive Container	Minimum Level	Yes
Level Control in Rx Reactive Container	Minimum Level	Yes
Level Control in Cu++ Reactive Container	Minimum Level	Yes
Water temperature	High & Low	Yes
pH values	100%&0&	Yes
Rx values	High & Low	Yes
Cu++ values	No	High & Low
Oxydation Current Out	High & Low	Yes
Ionization Current Out	High & Low	Yes
Residual Chlorine	No	High & Low
Conductivity	No	High & Low
Recirculating Pump	Damaged	Yes
Swimming Pool Level Control	No	Minimum Level
Domotics Control (Presence detector)	No	Yes
Heat Pump Out	Adjustable Temp &Timming	Yes
* **WIRELESS COMUNICATIONS**		
WiFi	Yes	Yes
3G communications	No	Yes
SmartPhone capabilities	Yes	Yes
iCloudHydrover Server	No	Yes
iCloud Local Server (for local maintenance purposes)	No	Yes
* **WORKING PROGRAMS**		
Manual Mode	Every	Yes
Fully Automatic	Basic Automatic Program & Six Pre-programed modes (Winter & Summer) & USER	Yes
Off Mode	Yes	Yes
* **NORMATIVE & SECURITY**	According to Low Voltage Normative ITC-BT 031 (2002) According to Electrical Security & Electromagnetic 7323/ECC/EN61010-1 (93)	
* **SICE**	275x345x110	
* **WEIGHT**	4,5 Kg	

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