

SALT WATER CHLORINATOR

TOUCHEVO = SALT MODBUS

TOUCHMG

TOUCHLS

MANUAL

English

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**ATTENTION**

Before installing the salt water chlorinator, please read this manual carefully. If you need any clarification or have any questions, please contact your distributor.

1- GENERAL DESCRIPTION**1.1-TOUCHEVO salt chlorination equipment**

We thank you for your confidence in purchasing our salt chlorinator, which will allow you to enjoy water in perfect conditions in your pool without the need to add chemical disinfectants.

The salt chlorination system for swimming pools produces chlorine directly in the filter system by electrolysis of slightly salty water. Free chlorine" (hypochlorous acid, HClO) is produced, which is a strong bactericidal agent, with similar results to commonly added chemicals.

Salt electrolysis is a reversible process, i.e. once the active elements have reacted with the organisms present in the water, the result is common salt and water again.

The equipment consists of an electronic control and regulation control, a domotic controller (optional) and also an electrolysis cell through which the pool water is circulated, installed in the return of the filtering circuit and after any other element that may be in the circuit.

If you keep the salt chlorination equipment working permanently, you will not have to change the water in your pool for several years (from 8 to 15 years depending on use), thus collaborating with environmental conservation policies and water management and saving water.



1.2- Range of equipment

Within our range, you will find different models depending on your production.

1.2.1 - TOUCHEVO Chlorinator

With HClO outputs of 15, 20, 25 and 35 g/h.

Manual and automatic operating modes.

Reading and adjustment of ORP or "Free Chlorine". pH reading and adjustment using the AUTO kit. Integrated salt reading (with optional ntc kit).

Advanced functions and data display via TFT touch screen.

Optional home automation control for control via the internet.

Control of up to 4 different relays.

Radio connection between TOUCHEVO and eypools (eyp-004)

1.3- Technical characteristics

1.3.1 Team

Models	TOUCHEVO15	TOUCHEVO20	TOUCHEVO25	TOUCHEVO35
Supply voltage	230Vac 50/60Hz	230Vac 50/60Hz	230Vac 50/60Hz	230Vac 50/60Hz
Chlorine production g/hour	15	20	25	35
Max. power	112.5W	150W	187.5W	263W
Cell current	3.75A	5A	6.25A	8.75A
Measures	280x250 X135mm	280x250 X135mm	280x250 X135mm	280x250 X135mm
Weight	4Kg	4Kg	4Kg	4Kg
Protecc.Box	IP65	IP65	IP65	IP65

1.3.2 Characteristics common to all the TOUCHEVO family equipment

Chlorine production regulation by switching source

Power stage efficiency > 90% Automatic shutdown in case of lack of water flow

Automatic shutdown due to gas accumulation in the cell with automatic reset when the water flow resumes.

Automatic voltage regulation according to salt concentration and temperature, keeping chlorine production constant.

Automatic electrode cleaning cycle.

Automatic reset in case of power failure.

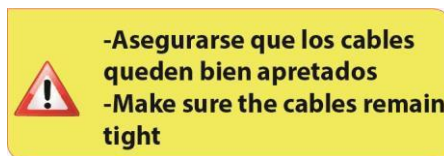
1.4- Safety recommendations and warnings

Installation of the equipment must always be carried out by qualified personnel.

Disconnect the equipment from the mains before carrying out any installation or maintenance work.

Make sure that the electrical installation has the obligatory protection elements (circuit breaker and differential) and that they work correctly.

It is very important to make sure that the power cables of the electrolysis cell are firmly connected. Otherwise the equipment may overheat and fail.



Make sure that the heat sink (at the rear of the unit) is not obstructed and that air can easily circulate through it. The BSV units have built-in short-circuit protection, low water detection and other safety systems that will display an acoustic and light signal in the event of an anomaly. However, you must ensure the correct hydraulic operation of your pool for optimum results.

The housing of the equipment is IP65 protected. However, it is highly recommended not to install the equipment outdoors or in direct sunlight. Installation in corrosive environments may decrease the life of the equipment. Be sure not to leave uncovered containers with acids near the equipment.

2- PREPARATION OF THE POOL

2.1- Incorporation of salt in water

For the chlorinator to work properly, a small amount of salt should be added and the pH level of the water should be ensured to be correct.

The recommended **salt and pH** levels are as follows:

	SALT CONCENTRATION (g/L)	Ph
TOUCHEVO	4 a 7	7,1 a 7,4

Although the equipment will operate with lower amounts of salt, it will reach optimum chlorine production from concentrations of 4Kg/m^3 . We recommend a concentration of 5Kg/m^3 to compensate for small salt losses due to filter cleaning, the effect of rain, etc.

To calculate the amount of salt to be added, multiply the total m^3 of your pool by the recommended concentration in (Kg/m^3).

Example: In a TOUCHEVO unit and a concentration of 5g/l:

Swimming pool 9m long x 4.5m wide and 1.6m deep.

$9 \times 4.5 \times 1.6 = 64.8$ cubic metres. $64.8 \times 5 = \underline{324 \text{ kg of salt to be incorporated.}}$

We advise you to use salt specially prepared for use in salt chlorination installations, as it is designed to facilitate its rapid dissolution and to obtain optimum results in your installation. You can find it in shops specialising in swimming pool products.



ATTENTION

When salt is added to the pool, the chlorinator should be switched off (**OFF** position), and the filter should be run for 3 to 4 hours so that the salt dissolves and there is no danger of overloading. Once the salt has dissolved, start the chlorinator.

It is advisable to add salt to the pool progressively, 2 or 3 times so as not to exceed the recommended amount; an excess of salt could overload the chlorinator and cause it to shut down automatically, in which case water should be added to reduce the concentration.

We also recommend not pouring salt near the sump as far as possible, in order to prevent undissolved salt from circulating in the hydraulic circuit.

2.2 Chemical equilibrium of water

It should be noted that the effectiveness of chlorination, as well as the quality of the water for healthy bathing, depends to a large extent on the pH of the water, so regular attention should be paid to its condition and it should be adjusted when necessary.

There are other parameters that must be taken into account for the correct operation of the salt chlorinator. It is advisable to carry out an in-depth analysis of the water when installing a salt chlorinator.

Parameter	Minimum Value	Maximum value
PH	7,0	7,8
FREE CHLORINE (mg/l)	0,5	2,5
COMBINED CHLORINE (mg/l)	--	0,6
TOTAL BROMINE (mg/l)	3,0	6,0
BIGUANIDE (mg/l)	25	50
ISOCyanuric acid (mg/l)	--	<75
OZONE (glass) (mg/l)	--	0
OZONE (before)	0,4	--
TURBIDITY (NTU)	--	<1
OXIDABILITY (mg/l)	--	<3
NITRATES (mg/l)	--	<20
AMMONIA (mg/l)	--	<0,3
IRON (mg/l)	--	<0,3
COPPER (mg/l)	--	<1,5
ALKALINITY (mg/l)	100	160
CONDUCTIVITY (µs/cm)	--	<1700
TDS (mg/l)	--	<1000
HARDNESS (mg/l)	150	250

3- INSTALLATION OF THE EQUIPMENT

3.1- General considerations:

Place the chlorination cell in a vertical position with the electrical connections facing upwards. If this is not possible, it can be mounted in a horizontal position, taking care that the small auxiliary electrode faces upwards.

Place the chlorination cell in the highest possible position in the purification circuit and always after the filter and any other element that the pool may have.

If possible, the installation of a by-pass with the electrolysis cell with its corresponding stopcocks is recommended. This will facilitate the maintenance of the cell.

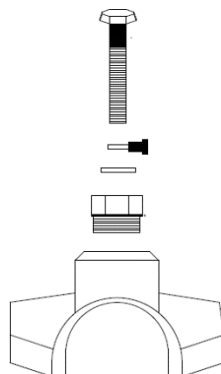
Do not place the REDOX probe (OPTIONAL) close to the chlorinator cell as it could give faulty measurements due to the proximity of the electrolysis circuit and there must be at least **half a metre of** water travel between the probe and the chlorination cell.

The REDOX probe must be installed downstream of the filter, vertically in a horizontal pipe. If with this arrangement it is not possible to maintain the minimum distance to the cell, it must be installed before the filter: in this case the probe must be serviced more frequently (see section 6.2 in "Maintenance").

It is **essential to have a good earth connection** and to use a differential relay of max. 30mA sensitivity.

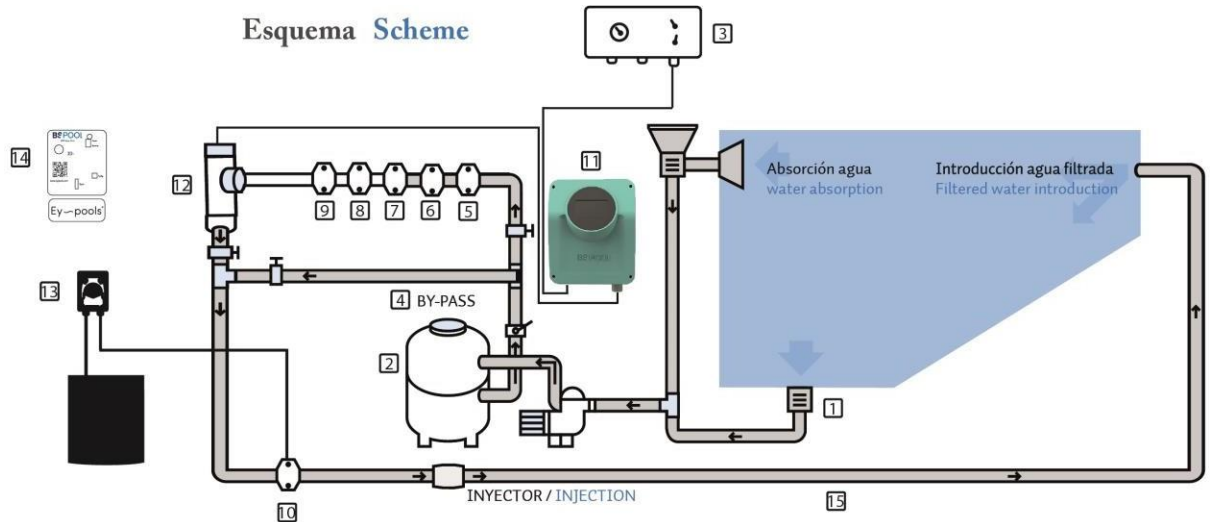
If a good quality earth connection is not available, place an earth connection between the electrolysis cell and the RedOx probe.

OPTIONAL KIT



3.2- Hydraulic connection diagram

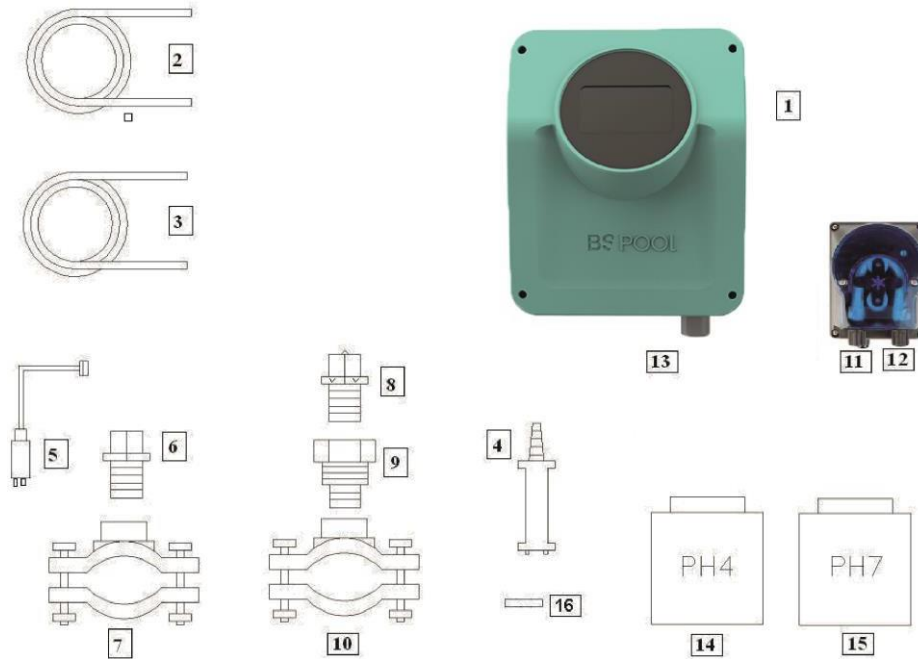
3.2.1- Equipment of the TOUCHEVO series



1. From the pool.
2. Filtration.
3. Electrical panel.
4. Bypass.
5. Flow switch (Optional).
6. Temperature probe (Optional).
7. pH probe, included in the Auto kit (Optional)
8. ORP probe, included in the ADVANCED kit (Optional).
9. Earthing kit (Optional).
10. Acid injector. Keep the acid container as far away from the equipment as possible.
11. TOUCHEVO Chlorinator
12. Electrolysis cell
13. pH pump
14. Home automation system EYP-004
15. To the swimming pool.

3.2.2- AUTO Kit

The AUTO kit (pH measurement and regulation) is available as an option for all TOUCHEVO equipment. The following figures show the exploded view of this kit, together with the installation diagram.

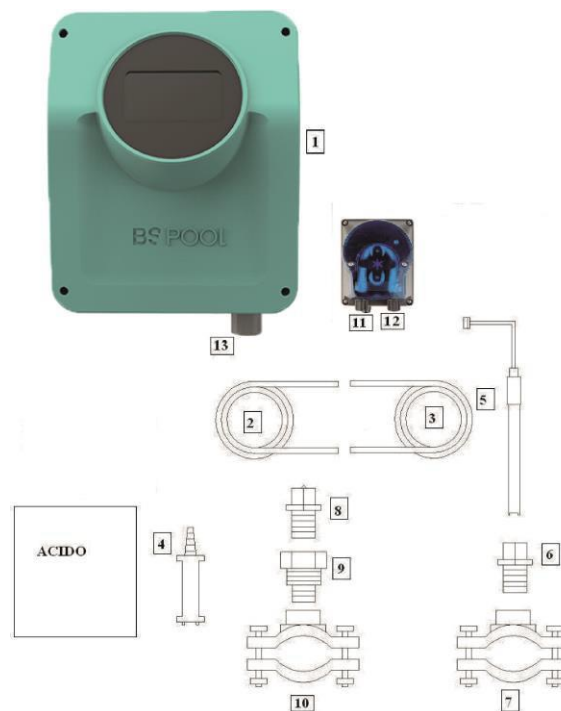


3.2.2.1- Quartering

- 1- TOUCHEVO Team
- 2- Suction tube (flexible)
- 3- Injection tube (rigid)
- 4- Suction filter (to be placed vertically in the bottom of the acid container)
- 5- pH probe
- 6- Probe Holder
- 7- Flange (not included in the kit)
- 8- Injector (place with arrow pointing downwards)
- 9- 3/8, 1/2" conversion fitting
- 10- Flange (not included in the kit)
- 11- Acid inlet (suction pipe)
- 12- Acid outlet (injection tube)
- 13- PH probe connector (BNC)
- 14- Calibration liquid pH4
- 15- Calibration liquid pH7
- 16- Rubber plug for calibration



3.2.2.2- AUTO kit connection



Once the equipment has been installed (1), the following connections must be made.

- 1- Place the flange (10) on the pipe as shown in the hydraulic connection drawing. The flange (10) corresponds to the injector and must be connected after the electrolysis cell.
- 2- Place the flange (7) on the horizontal pipe so that the probe is in a vertical position, as shown in the hydraulic connection drawing. The flange (7) corresponds to the flange of the PH probe and must be connect, before the electrolysis cell and after the filter.
- 3- Connect one end of the suction tube (2) to the inlet of the PH control (11).
- 4- Connect the other end of the suction tube (2) to the suction filter (4).
- 5- Place the suction filter (4) inside the ACID canister.
- 6- Connect one end of the injection tube (3) to the outlet of the PH control (12).
- 7 -Place the fitting (9) inside the flange (10).
- 8- Place the injector (8) into the fitting (9).
- 9- Connect the other end of the injection tube (3) to the injector (8).
- 10- Place the probe holder (6) inside the flange (7).
- 11- Place the PH probe (5) into the probe holder (6).
- 12- Connect the PH probe connector (5) to the BNC connector (13) of the instrument.

3.2.3- ADVANCED Kit (Redox)

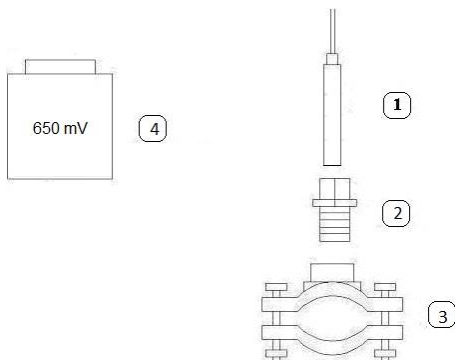
By means of this probe, the equipment continuously measures the bactericidal level of the water by means of a "Redox" probe. It is only necessary to adjust the required level and the equipment automatically maintains the disinfection level, adjusting the chlorine production to the real needs of the pool.

The display shows the "Redox" level (bactericidal capacity) that is present in the pool.

The ORP (Oxidation Reduction Potential) is the electrical voltage that indicates the oxidation or reduction capacity of a solution. In the case of swimming pools, the oxidation capacity is directly related to the bactericidal power of the water, which is directly related to the concentration of free chlorine in your pool.

This probe allows you to set the equipment in AUTOMATIC operation mode.

3.2.3.1- Quartering



- 1-REDOX Probe
- 2-Porta-Sonda
- 3-Brida (not included in the kit)
- 4- Standard liquid 650mV



3.2.3.2- ORP probe calibration

The ORP probe allows calibration by OFFSET adjustment, which allows you to verify its correct operation against the standard liquid, while at the same time adjusting the reading to the exact reference value of 650mV.

To do this, immerse the probe in the standard liquid supplied and press CAL.

If the difference between the actual and target reading is less than +/- 50mV, the instrument will automatically adjust to the reference value and display the message "Calibration OK".

If this difference is higher, the message "Calibration NOT OK" will be displayed and you will keep the calibration you have had so far.

In the event that a successful calibration is not achieved, check the condition of your ORP probe. You can try to clean and/or recover it, or you will need to replace it if it is depleted. More details on how to do this can be found in section 6.2 of this manual.

3.2.4- PRO/2 Kit (Amperometric probe for the measurement of Free Chlorine)

The amperometric kit measuring system allows you to obtain a reading in ppm of the concentration of free chlorine in your pool. This probe is based on an amperometric head with 3 electrodes, separated from the medium by a membrane. It offers a low dependence on pH and isocyanuric acid concentration, as well as the possibility of installation in seawater pools (option to be ordered in advance from BSV Electronic). Please follow the installation, calibration and maintenance instructions carefully to ensure perfect operation of the kit.

Please follow the instructions in the manual supplied with the kit. It details how to perform the following operations:

- Hydraulic installation
- Electrical connection to your equipment
- Probe calibration
- Maintenance

3.2.5- NTC/1 probe kit for measuring the water temperature in TOUCHEVO equipment.

The NTC/1 probe kit allows you to read the water temperature. Once the probe is connected, the temperature will be shown on the main display.



3.2.6- Salt concentration readings on TOUCHEVO equipment

If you have installed an NTC/1 probe kit in your unit, the salt concentration reading function in the water will be enabled.

This reading is calculated from the current - voltage ratio in the electrolysis cell, together with the water temperature.

The concentration value will be automatically updated at the bottom of the display.



The following considerations should be taken into account when calculating the salt in the pool:

The salt display will only appear if you have an NTC/1 kit that reads the water temperature.

The reading is updated only when the equipment reaches 100% production.

When production is below 100%, the equipment displays the last salt reading, until production is reached again.

If a setpoint lower than 100% is configured, the equipment will update the readings during the automatic cleaning cycles, where this production is reached.

The salt value is reset if the unit is switched off, so that when the unit is switched on, the value "-" will be displayed until 100% is reached for the first time.

Important: The readings will be correct as long as the cell is in good condition. If the cell is worn or fouled, the displayed value may differ from the actual salt concentration.

3.2.7- TOUCHEVO equipment status colour display

Your TOUCHEVO equipment has a colour-coded warning system to help you identify its current status.

You will notice that the "BSPOOL" logo on the TFT screen changes colour, according to the following relationship:

White: The equipment is in "Stand-By" (idle) mode.

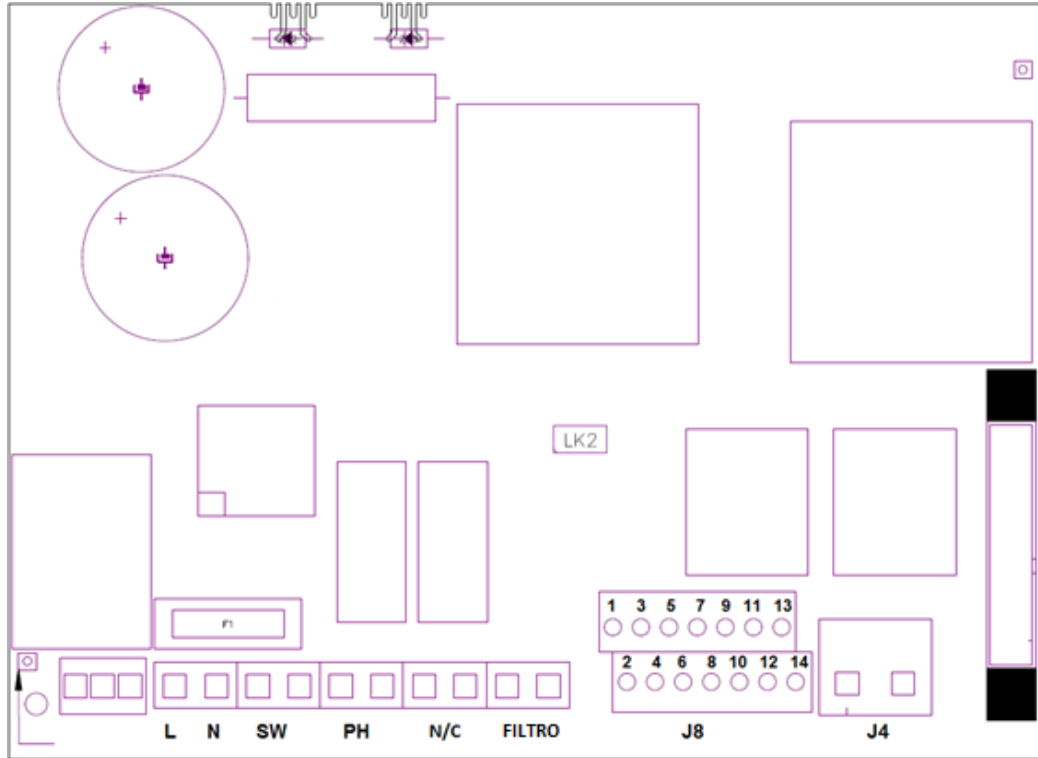
Green: Team active and without any incident

Orange: Warning notification. Look at the top bar of your screen to see the reason for the warning.

Red: Alarm notification: Look at the top bar of the screen to see the reason for the alarm.

3.3- Electrical wiring diagram

3.3.1- TOUCHEVO series devices



Grounding

L, N:220v power supply

SW:On/Off Switch

PH:pH pump connection (only for models with AUTO kit) FILTER: Filter connection for Stop / Run mode

J4:Cell connection strip J8:

1-(yellow) NO USE8-(

blue) Temperature probe

2-(yellow) UN-USED9-

(brown) ORP-

3-(purple) Cover10-(

orange) ORP+

4-(purple) Cover11-

(red) UNUSED

5-(white) Water sensor12-(

grey) NO USE

6-(white) External flow switch (5-6)*13-

(green) NOT USED

7-(blue) Temperature sensor14-

(red) NOT USED

***Activate the function INT. FLOW in configuration menu**

K1: Relay PH

LK2: Stop/Start (see section 3.3.2.1)

F1:Fuse

3.3.2- Advanced Functions

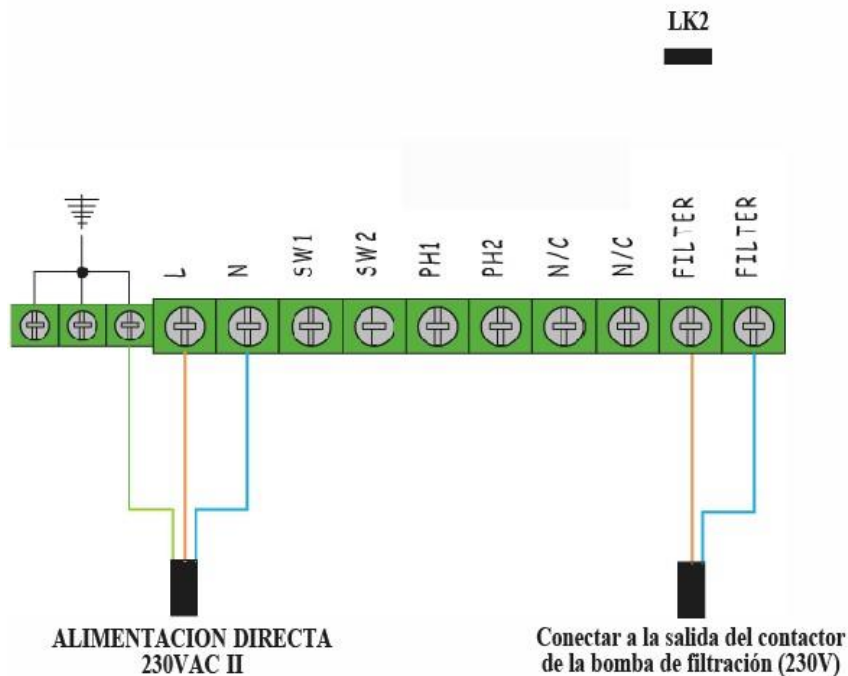
TOUCHEVO also has 4 potential-free relays, to which various devices can be connected.

To manually control ON/OFF operation or an automatic programming mode, access the Relay menu on the right hand side of the main menu. These relays each have 4 settings during the day. An AUTO operating mode will be set, in which the relays will switch on when the set start time is reached and will stop when your set stop time is reached.

3.3.2.1- Stop-run control

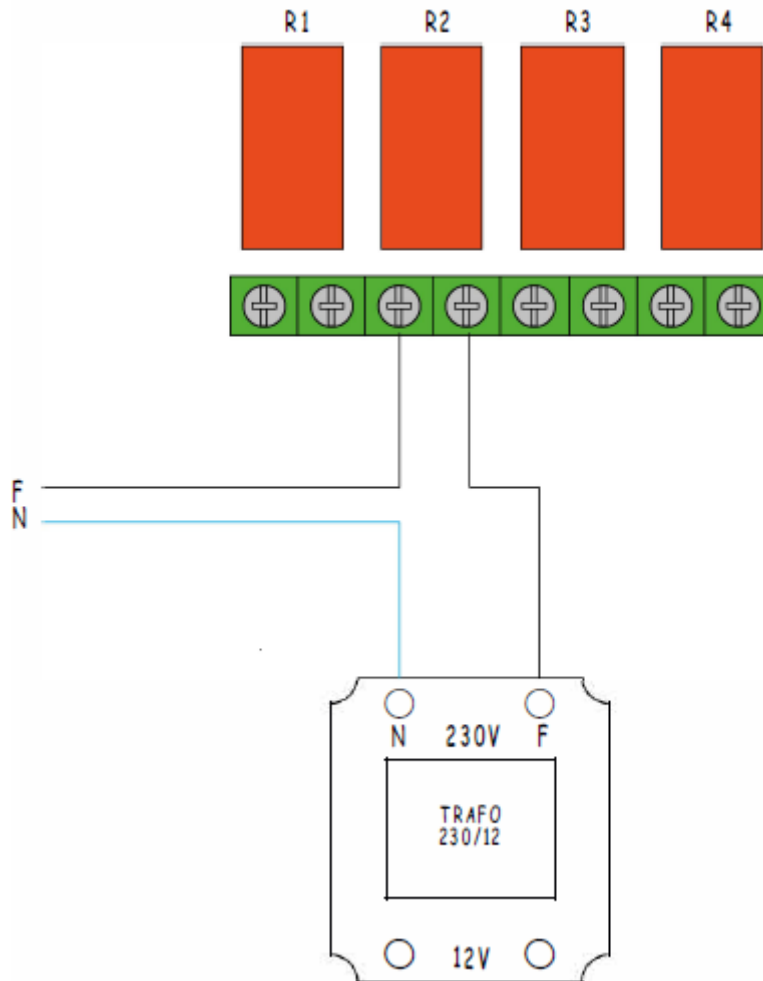
This operating mode allows the equipment to be left on permanently, so that when the filtration pump is started, it will give the chlorinator the start command. When the pump stops, the chlorinator will display the message "stop" on the screen.

To activate this operating mode you must remove jumper "LK2" from the power board, power the chlorinator directly (L and N) at 230V, and connect the "filter" inputs in parallel to the power supply of the filtration pump, so that when the filtration pump is switched on, there is a voltage of 230V at the "filter" terminals, and when the pump stops, the voltage at the "filter" is 0V.



3.3.2.2- Programming of the pool floodlights through the programmable relays.

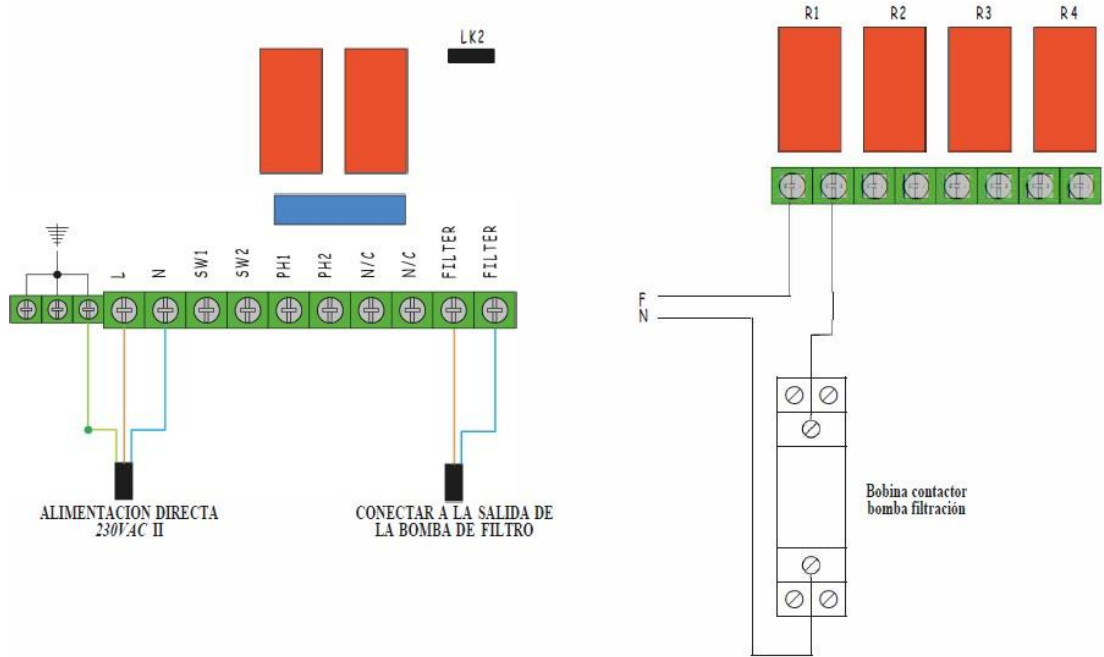
The following figure shows an example of the use of the programmable relays incorporated in the TOUCHEVO series equipment. You can program the switching on and off of your pool lighting based on the following diagram:



Caution: Never exceed 5A when using programmable relays. For higher currents, supplement the circuit with a contactor.
 Note that the relays are potential free, so you must supply the circuit externally.

3.3.2.3- Filtration control through programmable relays

You can control the filtration pump via the programmable relays. Two types of connections must be made. The first is to connect Live and Neutral to the FILTER input of the terminal strip as shown in the following figure.



This type of connection must include 3 extra elements: differential, motor protection and contactor. They are used to protect the equipment and the filtration pump. In the following wiring diagram you can see the connections

Note: It should be noted that the equipment must be configured in the "stop-start", as detailed in section 3.3.2.1.

4- COMMISSIONING AND ADJUSTMENTS

Once you have installed the device, you can start it up. Carefully follow the instructions, which detail its operation.

4.1- TOUCHEVO USER MENUS

4.1.1- Operation

The TOUCHEVO series units are equipped with a TFT touch screen which can be used to display and configure all the unit's functions. The following table shows how the different configuration menus of the equipment are organised:

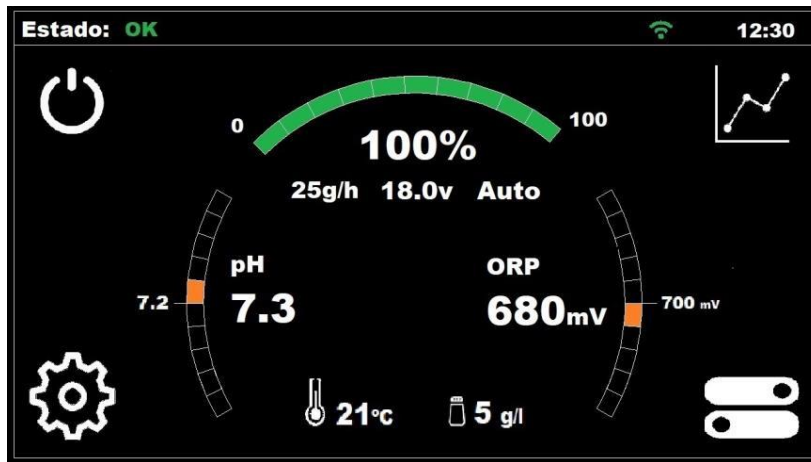
Main screen	Configuration Menu
Status bar display	Language
Production Menu	Time
ORP or Free chlorine menu (PPM)	Date
pH menu	Alarm sound
Temp / Salt value display	Cleaning (hours)
Stand-by mode selector	Team info
	Advanced configuration
	Menu Advanced configuration
Relays menu	
	Flow detection
Relay selection (1-4)	Cover
Programme 1 (24h)	pH alarm
Programme 2 (24h)	pH mode
Programme 3 (24h)	ORP/PPM alarm
Programme 4 (24h)	Communications (Radio/Modbus)
Mode of operation	
ON, OFF, AUTO	
Data Logging Menu	
Selection from parameter to be displayed	
Selection of date to display	

To access the different equipment menus, click on the parameter you wish to modify.
 You will notice that a submenu is displayed where you can make the desired settings.

To return to the main screen, press **Exit**.

4.1.2- Main screen

On start-up, the unit displays a screen with the main parameters



The top line shows a display of the status of the device. On the right side of this line you can see the current time, once it has been configured. Connectivity can also be checked with EYPOOLS (EYP-004).

The upper arc, shows a status bar indicating the current chlorine production of the equipment. This production is shown in percentage, in grams/hour, as well as the cell voltage and the selected mode (manual or automatic).

In the left arc, we can see the current pH probe reading (larger number) and the pH setpoint (smaller number).

In the right arc, the current ORP (Redox) value (larger number) and its setpoint (smaller number) are shown. In the case of a device that measures free chlorine instead of ORP, the values are shown in PPM.

At the bottom centre of the screen, the values of temperature and salt concentration in the water are displayed. See section 3.2.6 for more details.

In the corners of the display, there are shortcuts to the following functions: Stand-by, Data Logging, Configuration and Relays. Their operation is described in detail in later sections.

4.1.2.1- Status Bar Display

Corresponds to the first line of the **Main Screen**. It shows the current status of the equipment, the time clock and the status of the connection to the EYPOOLS system.

The states are as follows:

Wait (yellow): Waiting time of 5 minutes for the probes to stabilise, after start-up of the equipment.

OK (green): In this state the equipment is working correctly. In green.

Cleaning (yellow): An automatic cleaning of the cell is in progress.

Stop (red): The equipment detects that the filtration pump is stopped, when the equipment is set to "stop-start".

Warning (orange): The equipment requires some operation by the user. Example: Salt is missing.

Alarm (red): An alarm situation has occurred and the equipment stops. Example: No water flow.

The clock can be set manually in the **Configuration Menu**, for more information see section 4.1.4.2.

If in the advanced configuration menu, communications in "radio" mode has been selected:

Connectivity to EYPOOLS is defined with a WiFi connectivity symbol. This symbol will appear white when the connection has not yet been made. Once the application has been opened and the chlorinator can be controlled remotely, the symbol will be green to confirm that communication has been established.

If in the advanced configuration menu, communications in "Modbus" mode has been selected:

In the top bar you will see the text "MB". This text is displayed in blue when a Master device is communicating with

our chlorinator, and blank when there is no communication with another device.

4.1.2.2- Production menu

Access the chlorine production menu by clicking on the value in the upper arc on the main screen.

Production setpoint setting: From 0% to 100%. Use + or - to change the value.

Note: Chlorine production can be limited regardless of the operating mode (manual, automatic...) selected.



☉ Manual

The unit produces chlorine continuously, depending on the % of production that has been set. If a KIT ADVANCED or PRO probe is installed, it will ignore the value of the probe and will not stop chlorination, even if the setpoint value is exceeded.

Select this mode if you do not have an ADVANCED probe kit, adjusting the production and filtration hours according to the nature of your pool, volume, number of bathers and season of the year.

☉ Automatic

Important: Select this mode only if you have an ADVANCED (Redox) or PRO (Amperometric) probe kit or both. If you do not have any probe, the equipment will behave randomly and will eventually stop and display an error.

This mode allows you to automatically adjust the chlorine level in your pool. From the setpoint adjusted in the "chlorine" menu, the device will automatically adjust the level of chlorine in your pool.

will stop when the chlorine demand is reached and will start again automatically when there is a chlorine demand.

Next, at the bottom of the Production Menu screen there is a CL+ORP button, by default it will be set to ON.

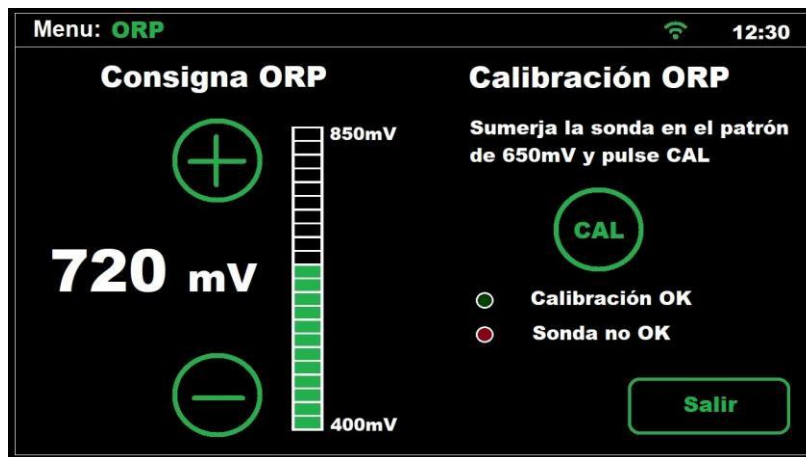
This indicates that both measurements will be displayed on the screen if each of the probes is available. If only one of the probes is available, turning this option off will display only the chlorine measurement probe that has been selected as the master in automatic mode.

Ⓞ **Super chlorination**

By selecting this option, the equipment will remain at 100% production regardless of the value of the ORP or PPM probe, and will then return to the setpoint and mode (manual or automatic) that it had previously.

It is useful if you want to perform a shock chlorination without having to reconfigure the equipment at the end.

4.1.2.3- ORP menu



To access the **ORP menu**, tap on the ORP reading value on the main screen.

The **ORP menu** will be used when an ORP probe is installed (OPTIONAL).

In this case, we will adjust the oxidation potential to the desired level. A sufficient value, for private pools with little use, is 650 mV. 700 mV is the appropriate value for most pools.

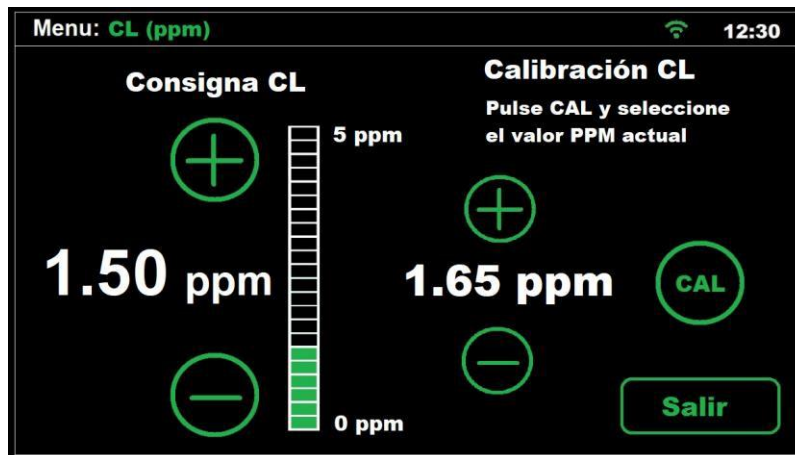
Press the "OK" button to confirm the setting. However, it is recommended to determine the most suitable setpoint for your pool by analysing the correspondence between the ORP value and the chlorine concentration, as there may be differences in reading between different types of water for the same chlorine concentration.

If you wish to **calibrate** the ORP probe, you must immerse the probe in the 650mV standard liquid and press "CAL".

If the probe is in good condition, the instrument will adjust the reading to the 650mV standard and display the message "calibration OK".

On the other hand, if the probe is in bad condition due to wear or dirt, the calibration will be out of range and the message "Probe not OK" will be displayed. Please consider cleaning or replacing it, as appropriate.

4.1.2.4- Free chlorine menu

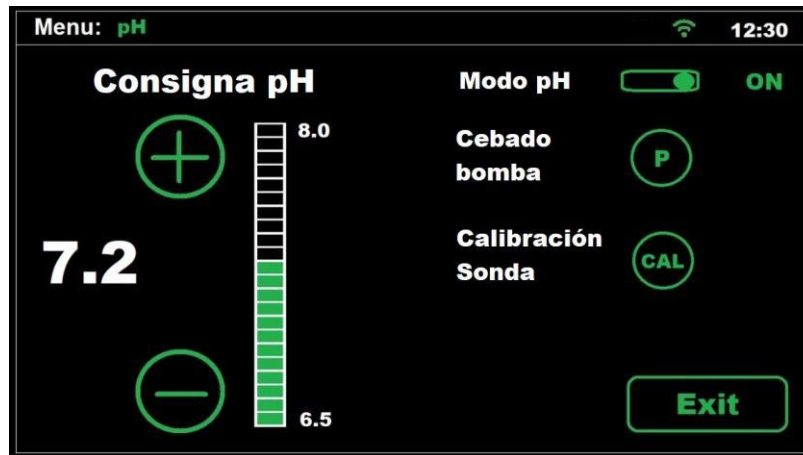


Within the Free Chlorine Menu, the Free Chlorine setpoint can be changed when using an automatic mode of operation and if a Pro Kit (OPTIONAL) is available. Calibration of this type of probe is also available as discussed in the previous chapter.

In this case, we will set the ppm value we want to obtain between a range of 0-10ppm. A value between 1ppm and 2ppm is the most common.

NOTE: When working in automatic mode, we can also regulate the production percentage from 0% to 100%.

4.1.2.5- pH menu



4.1.2.5.1- Setpoint adjustment

Adjust the desired pH setpoint value via the + / - buttons. The upper and lower adjustment limits are 8.0 and 6.5 respectively.

However, the optimum recommended value is 7.2 or 7.3.

4.1.2.5.2- Activating - deactivating pH regulation

The **pH Mode** option allows you to turn the pH control function of your device ON or OFF.

4.1.2.5.3- Pump priming

By pressing the "priming" pump option, the dosing pump will remain on for 30 seconds continuously. This is useful if you want to prime the pH corrector circuit quickly.

4.1.2.5.4- Calibration of the pH probe

To calibrate the probe, it is necessary to remove it from the probe holder of the installation, and to have the following material at hand:

Standard liquid
 pH7.0 Standard
 liquid pH4.0
 Absorbent paper

To proceed with the calibration, press the "CAL" button. You will immediately be prompted to immerse the probe in the pH7 solution.

When the countdown is finished, remove the probe from the pH7 solution, and dry it with absorbent paper. Immerse it in the pH4 solution and press OK to continue.

After a new countdown, the equipment may display the following messages:

Calibration OK: The calibration was successful and you can continue to use your probe normally.

Note: The pH regulation does not start until 5 minutes after the equipment is switched on.

Calibration not OK: Calibration was not successful, so the previous calibration parameters are retained.

It is possible that the probe is dirty, or that it has been out of water for a long period of time. You can try to restore it to proper operation. See section 6.2 of this manual for details on how to do this.

Another possible cause of a failed calibration may be that the standard liquids are not in good condition. Be sure to use new liquids when performing a calibration, as these liquids do not keep well for many days after opening.

It may also happen that the sensor has reached the end of its service life and needs to be replaced. In this case, consult your installer so that it can be replaced.



CAUTION: It is recommended that an initial calibration of the pH probe be performed when installing your equipment. A calibration should also be performed each time the probe is replaced or cleaned.

4.1.3- Relays menu

The device has 4 **potential-free** relays, which can be programmed independently. You can select each of them individually by pressing the R1, R2 R3 or R4 buttons at the top of the screen.



The individual relays can be configured according to the following states:

OFF: The relay will always remain off. ON: The relay will always remain on.

AUTO: The relay will switch on (start) and off (stop) based on the programming entered by the user. It is possible to set from 1 to 4 daily start and stop cycles.

4.1.4- Configuration Menu



4.1.4.1- Language

From the setup menu select "LANGUAGE", a list of available languages will be displayed for selection. For navigation, use the arrows **↑↓** , then the **OK** button and **EXIT**.

4.1.4.2 - Time

Set the current time, which will be used for the time programming of the relays. Please note that the clock is in 24h format.

Note: If the equipment is left without power supply for a prolonged period of time, the clock will keep the time for approximately one month.

4.1.4.3 - Date

The equipment has an automatic cleaning system, based on the inversion of polarity in the electrolysis cell. These cleaning cycles are carried out periodically. You can adjust the time between cleanings (in hours) according to the hardness of your pool water.

4.1.4.4- Sound Alarm

Allows you to set the acoustic alarm warning. There are 3 possible configurations:

On -> In the event of an alarm, the acoustic signal will always remain active.

Off -> The audible alarm will always be deactivated.

--/-- -> Allows you to set in which time slot you want the acoustic warning to be activated.

Note: Regardless of the option selected, the equipment will not alter its behaviour in the event of an alarm, stopping its production and displaying the cause on the screen in the event of an alarm.

4.1.4.5 - Cleaning (hours)

The equipment has an automatic cleaning system, based on the inversion of polarity in the electrolysis cell. These cleaning cycles are carried out periodically. You can adjust the time between cleanings (in hours) according to the hardness of your pool water.

The default value is 4 hours, a setting of 1 to 8 hours is possible.

4.1.4.6 - Equipment Info

This option shows you some of the characteristics of your equipment, such as software version, hours of operation, hours worked in salt-free conditions, among others.

4.1.5- Advanced configuration

You can access this menu from the **configuration** menu.

Note that the advanced settings allow you to make settings related to the installation of the equipment, which normally only need to be configured at the time of installation of the equipment.

Please note that misconfiguration may result in incorrect operation of the equipment. Consult your installer before changing it.



4.1.5.1 - Flow detection

Gas sensor ON -> sensor included in the cell (default option) Flow switch -> external flow sensor (optional).



4.1.5.2 - Cover:

This equipment has a system for detecting motorised covers. By activating this option, the equipment will detect if your pool has a cover on, and will limit chlorine production to 20% of the set production setpoint.

To activate the automatic detection, you must connect the limit switch on the cover itself, so that the contact is closed when the cover is in place. Select the option Cover = ON to make the detection effective.



If chlorination is carried out with the cover on, do not bathe immediately when the cover is collected. It is advisable to wait 1/2 hour for any vapours that may be present between the water and the cover to dissipate.

4.1.5.3 - pH alarm

The pH control system will display an alarm and stop the dosing pump when the dosing pump has been running for more than 2 hours without interruption.

This may occur for the following reasons:

The acid tank is empty and therefore no pH corrector is being injected into the pool.

The pH probe is dirty or depleted, and does not read the actual value correctly. Confirm this scenario when performing a calibration.

However, it may happen, mainly at the first start-up of the system, that the actual pH of the water is far away from the setpoint. You can disable the alarm if it is estimated that the pump will need to run for several hours at a time to correct the pH, but it is recommended to enable the alarm again when values close to the desired setpoint are reached.

To enable this function, select **pH ALARM = ON**.

4.1.5.4 - pH mode (Acid / Alkaline)

This option allows you to select the type of pH corrector to be used in your pool.



Caution: You must select it correctly, otherwise the dosing system will work in the opposite way to what is expected.

Acidic: Select this mode if you are going to inject pH reducer into your pool to maintain the pH at the desired set point (default mode) Alkaline: Select this mode if you need to inject pH increaser into your pool to maintain the pH at the desired set point.

Note: In the vast majority of cases, the pH of the pool tends to rise during chlorination, therefore, you will need to inject a reducing agent (acid) and keep the default mode (Acid) selected. Always consult your professional before changing this parameter.

4.1.5.5- ORP and Free Chlorine Alarm

By activating this option, the equipment will stop chlorine production if the ORP or PPM value has not changed in 2 hours of operation.

It only has an effect when the equipment is working in automatic mode, and therefore, with ORP or PPM probe installed.

4.1.5.6- Information Menu

The information menu shows you relevant information about the device model, the software version and the operating hours of the chlorinator.

Pressing the RESET button will reset the device to factory settings. This will result in the loss of setpoints, calibrations and user modbus configuration.

In addition, it is possible to force a cleaning of the cell, as long as the equipment is in operation. It is not recommended to force a cell cleaning without prior notice to the technician or installer of the equipment.

To return to the configuration menu, press OK.

4.2- Warning messages and alarms

There are two types of messages through which the equipment will notify you of any incidents that may occur:

Warnings: The equipment informs you of an incident that needs to be corrected as soon as possible, but does not prevent further chlorine production.

You will be shown the reason for the alert in the top bar, with orange text, and the BSPOOL logo will be illuminated in orange.

Example: lack of salt in the water.

Alarms: In the event of a problem that prevents the equipment from operating correctly, it will stop production and display the cause of the alarm in the top bar. The text will appear in red, while the BSPOOL logo will also be illuminated in red.

If activated, an acoustic alarm will also be triggered.

Note: Once the reason for the alarm has been resolved, you can click on the top bar to resume operation of the equipment.

Example: No flow

4.2.1- TOUCHEVO notices

Message:	Causes:	Action to be taken:
"NO ORP PROBE".	Probe not connected.	Check if the probe is connected correctly
"LACK OF SALT"	Lack of salt in the water.	Add salt to the pool.
	fouling or objects in the electrolysis cell, causing lack of current in the electrolysis cell. the cell.	Clean the cell.
	The electrolysis cell is exhausted.	Replace the electrolysis cell with a new one.
"TOO MUCH SALT".	Too much salt in the water.	None if the excess is not too great.
	fouling or objects in the electrolysis cell, which cause excess current	Clean the cell.

4.2.2- TOUCHEVO Alarms

<p>In the following cases the chlorinator stops and will switch to alarm status, a red colouring on the main display and an acoustic alarm. *Except for pH error</p>		
"NO FLOW".	Excess gas in the electrolytic cell. It may be caused by the pump having stopped. The gas is hydrogen, very flammable.	Flush the piping to remove accumulated gas or air. Check pump.
	Cell sensor cable incorrectly connected or broken	Check the sensor cable (white wire).
	Cell sensor dirty.	Clean. See Maintenance.
	No water flow	Check the hydraulic system
"ORP ALARM"	Probe from chlorine probe dirty, deteriorated or simply not connected	Check the condition of the probe controlling the chlorine production in automatic ORP mode.
"ALARM CL"	Probe from chlorine probe dirty, damaged or simply not connected	Check the condition of the probe that controls chlorine production in automatic mode Free chlorine.

"INTERNAL TEMPERATURE".	Excess of the internal temperature of the chlorinator.	Check the installation site of the chlorinator. Inspect for good ventilation through the heatsink on the side of the chlorinator. back of it.
"ALARM pH" * "ALARM pH" * "ALARM pH" "ALARM pH	Dirt embedded in the probe or probe deteriorated.	Check the condition of the probe by calibration.
	Empty pH dosing tank.	Check the pH dosing tank status.
	Configuration incorrect setting in dosing mode	Review the setup menu and select the appropriate dosing mode. pH minus corresponds to the option "ACID". pH increaser is equivalent to choosing the "ALC" option.
"SHORT-CIRCUIT".	Wrong cell from the connection.	Check wiring.
	Body metallic cell. at the	Switch off the equipment and remove the metal body of the blades
"OPEN CIRCUIT".	Misconnected cell	Check the connection of the cell, and that the wires and terminals of the connection to can be found at in perfect condition
	Cell damaged or completely exhausted	Check the condition of the cell electrodes, and replace the cell if any damage to the electrodes is observed. themselves.
	Pool water with very low salt concentration.	Make sure the water is salted and dissolved.

4.3- Electrolysis cell life

The electrolysis cells of BSPOOL equipment are designed to achieve a service life of 10,000 hours (10K models) and 5,000 hours (5K models). However, this lifetime is directly related to the quality of the water, and especially to the proper use of the equipment. Listed below are a number of tips you should follow to ensure that your cell achieves the specified operating hours:

Salt concentration: It is very important that your pool water has the right salt concentration, as the cell wears out prematurely in low salt conditions. You should therefore add salt to your pool when the equipment instructs you to do so.

Operation at low water temperature: Another factor that reduces the lifetime of the cell is the fact that it remains permanently operating at low temperature. The use of hibernator products is recommended when the water temperature is below 15°C. If you still wish to continue using your equipment in winter, consider adjusting the chlorine production to low power.

Automatic cleaning cycles: The equipment allows you to adjust the period between automatic cleanings according to the hardness of your pool water. If your pool water is very hard, you should lower the number of hours between cleanings, but bear in mind that the life of the cell will be reduced. On the other hand, if your pool water is soft, you can increase this value and thus increase the life of the cell.

Poor cleaning: If, due to a bad adjustment of the automatic cleanings, the electrodes show calcium deposits, they shall be cleaned as detailed in section 6.1. Do not allow the cell to operate permanently under these conditions.

5- MAINTENANCE

Carefully follow the safety recommendations and warnings detailed in section 1.4 of this manual.

The chlorinator has a self-cleaning system for the chlorination cell that considerably reduces maintenance. In any case, it is advisable, at the beginning of each season, to clean the cell and check the chlorine probe (Redox), free chlorine or pH if it has them.

It must be taken into account that both the electrolysis cell and the REDOX probe are subject to ageing due to use. If, after cleaning, the equipment does not work normally, the probe or cell must be replaced. In any case, your distributor can advise you on the need to change these elements.

5.1- Cleaning of the electrolysis cell

The electrolysis cell must be cleaned under the following circumstances:

If the low salt indication is activated and the concentration is correct.

If the overload indicator is activated and the salt level is correct.

If you notice limescale deposits on the electrode surfaces. In this case, you can also adjust the equipment so that the period between automatic cleanings is shorter. This frequency will depend on the hardness of the water in your area.

Immerse the cell in a solution of hydrochloric acid or a commercial electrolysis cell cleaner (CELLCLEAN). Do not use sharp objects that will damage the titanium layer of the electrodes.

5.2- Checking and maintenance of the REDOX probe ADVANCED Kit (OPTIONAL)

Select Production Menu, and manual operation mode. Set chlorine to 0%. Return to the display screen.

Rinse the probe thoroughly in clean water.

Insert the probe into a 465mV standard solution while stirring gently. Note on the label the voltage that corresponds to the current ambient temperature. Wait for the ORP reading on the display to stabilise.

Check that the value does not differ by about 10 mV from the value indicated on the label. If the value is incorrect, you can try to regenerate the probe by cleaning it. In any case an annual cleaning is always recommended.

Shake the probe in a glass of water in which a tablespoon of dishwashing liquid has been mixed. Rinse well in clean water.

In a beaker, mix 23% commercial hydrochloric acid with four times its volume of water. Leave the probe in the solution for a few minutes, stirring occasionally.

Clean the probe very thoroughly with pure water, preferably distilled water. Shake the probe to remove water.

Recheck the probe value. A probe that gives an error of less than about 30 mV can continue to be used provisionally until it can be replaced.

Never leave the probe in the air. If the probe has been dry for some time, it can be regenerated with the hydrochloric acid solution.

5.3- Checking and maintenance of the pH probe Kit AUTO (OPTIONAL)

At least once a year it is recommended to clean and check the probe. Shake it in a glass of water in which a teaspoon of detergent has been dissolved. Then clean it under running water and leave it for a few hours in a glass of water.

of water to which 1 cm³ of hydrochloric acid has been added.
Recalibrate the probe again.

A well-maintained probe can last two to three years.

The probe must never be left to dry out. If it is stored outside the installation, the original cap must be put on the probe, or it must be immersed in a glass of water. If a probe has been left to dry out, it can be regenerated by leaving it in a glass of water for about 12 hours, preferably with a few drops of hydrochloric acid added.

6- WARRANTY AND SERVICE

This equipment has a 3-year guarantee on its control units.

For electrolysis cells, the warranty shall be two years provided that the cells have not exceeded 10,000 hours of use (10K models) or 5,000 hours (5K models).

This warranty is given to the owner of the equipment and is not transferable. All chlorinators are factory tested before packing. If, within 36 months of purchase, electrical or mechanical problems occur, due to improbable malfunction or defective components, parts will be repaired or replaced. No parts will be exchanged unless the defective components are returned.

This warranty does not cover damage caused by corrosion, excessive humidity, current, temperature or vibration, poor installation, improper handling, overvoltage, accident or any other cause unrelated to the operation of the equipment.

In the event of equipment failure, the equipment must be returned to the manufacturer or distributor. Shipping costs shall be borne by the owner of the equipment.

Please note that all warranty repairs will be carried out at the factory or by a service technician authorised by BSV Electronic.