“COLIBRI / PLUMA CC”

SALT CHLORINATOR

MADE IN EUROPE

CE

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IMPORTANT WARNING

Do not use chloridric / muriatic acid to lower the pH. The ventilation system sucks air into the equipment, so it is important to keep the pH solution tank as far away from the equipment as possible, to prevent corrosion inside the machine.

1 Safety Instructions

This product is a combination of an electronic controller and the respective accessories. It has been assembled and tested according to the safety measures applied to electronic devices in the EC. It has been cleared by the quality department within the factory. To preserve status and guarantee operation safety, the following instructions must be observed.

Only licensed personnel must execute product installation.

Electrical installation must be done according to local electrical safety regulations.

Product connection to the power line must allow for total isolation (phase, neutral and earth) to ensure safe repair and maintenance operations. A differential switch with a maximal earth fault current of 30mA should shield all circuitry.

Before turning on the controller it is recommended to verify its physical conditions as well as the circuitries. In case of installation in a warmer place than origin leave the controller's door open to stabilize temperature and avoid condensation of the electronic components.

When the controller is turned on remember to let the capacitors discharge before handling them to avoid electric shock.

1.1 Warnings

Risk of Electrocution

The controller's components carrying electrical tension, which might lead to electrocution, are signalled with the following symbol:

The performance of any electrical operation by unauthorized personnel is entirely forbidden. The equipment must be turned off before any maintenance operation.

Risk of human failure

Product operation should follow adequate training to all personnel handling the equipment. Special attention must be paid to electrical and chemical safety measures before using the equipment.

2 EC Conformity

The manufacturer declares that the electronic equipment for pool water treatment of its production are in compliance with the technical requirements:

- EN 50274:2002
- IEC 60335-1:2006
- IEC 60947-1:2007
- IEC 62026-1:2007

and the EC directives:

- Low Voltage Equipment Directive 2006/95/CE
- Electromagnetic Compatibility Directive 2004/108/CE.

3 System Contents

This equipment is supplied in a box containing the electronic controller, the electrolysis cell, 2 reductions 63/50mm, 1 cover for the cell cables, 1 fixing bracket and its screws, a clamp saddle and a temperature probe.
Before any installation, make sure that all components are in the original box.

4 Installation

This controller includes a front display, a main control button and two side switches.
The controller must be set up vertically, on a plane surface, keeping at least 15cm from the wall and from other components to ensure proper ventilation.
Before beginning installation of the electrolyses cell make sure that hydraulic circuits are shut and before beginning installation the equipment make sure that the power supply is isolated.

4.1 Hydraulic Installation

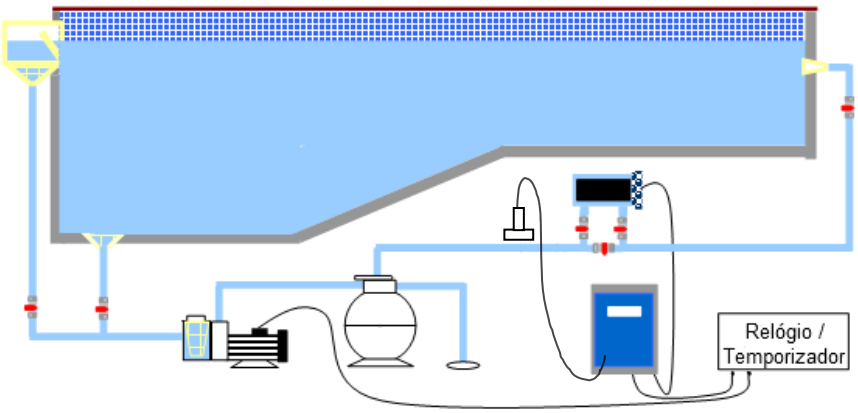

Fig 1- Hydraulic System Scheme

4.1.1 Electrolysis Cell

The electrolysis cell can be installed horizontally or vertically. In the vertical installation the electrical wires must be faced upwards, to allow for the build-up of gases originated from the electrolysis process on the top of the cell if there is a water circulation failure (Fig.3).

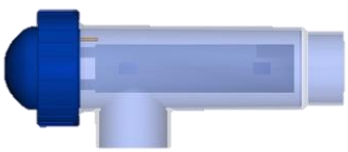

Fig 2 - Electrolysis Cell

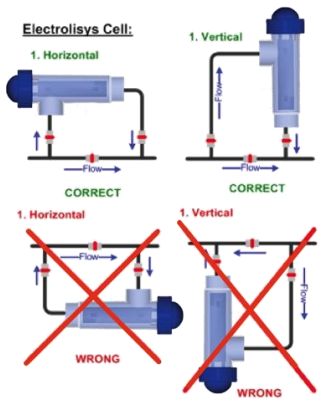

Fig 3- Electrolysis Cell Position

The cell entry must be connected after the sand filter as shown in Fig 1. When possible, it is recommended to screw the cell tubing to a wall or a strong panel to prevent it from disruption due to the mechanical effort caused by the cell's body.

4.1.2 Temperature probe installation

The installation of the temperature probe should be performed with a clamp saddle with ½" output, always between the sand filter and the electrolysis cell.

Fig 4 – Clamp Saddle

4.2 Electrical Installation

4.2.1 Installation of Electrolysis Cell

The connection to the electrolysis cell is done through two conductors of 2.5 to 6mm2 (depending on the cell power) and two conductors of 0.75mm2, both supplied with the system. One of the 0.75mm2 conductors has one tined terminal, the remaining conductors have M6 terminals which must be connected to the corresponding terminals in the cell (see Figure 5).

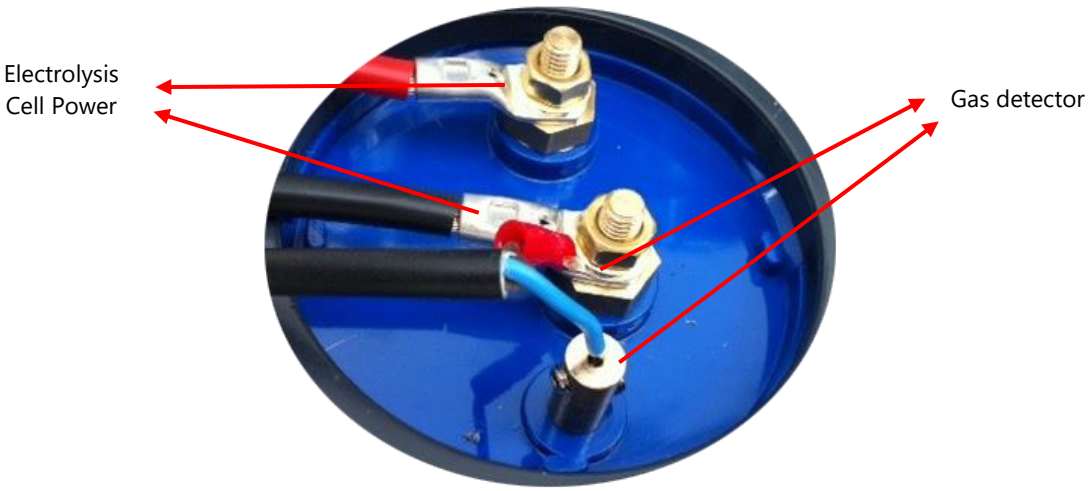

Fig 5 – Electrolysis Cell Connection Terminals

4.2.2 Installation of Temperature Probe

The temperature probe comes from factory connected to the equipment as shown in figure 6.

4.2.3 External Controller Installation (Optional)

If you choose to connect an external controller, it must emit a potential-free signal which must be transmitted to the equipment via specific cable (consult the manufacturer). That cable i connected inside the equipment (view Fig. 6), removing the cables cover, with help of a phillips screwdriver, existent on the lower left part of the equipment

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4.2.4 Automatic Coverage Detector Installation (optional)

If the pool has an automatic cover system, it can be connected to the equipment, so it detects if the cover is open or closed. The automatic Cover must emit a potential-free signal that must be transmitted to the equipment via specific cable (consult the manufacturer), which is connected to the inside the equipment (view Fig. 6), removing the cables cover, with help of a phillips screwdriver, existent on the lower left part of the equipment

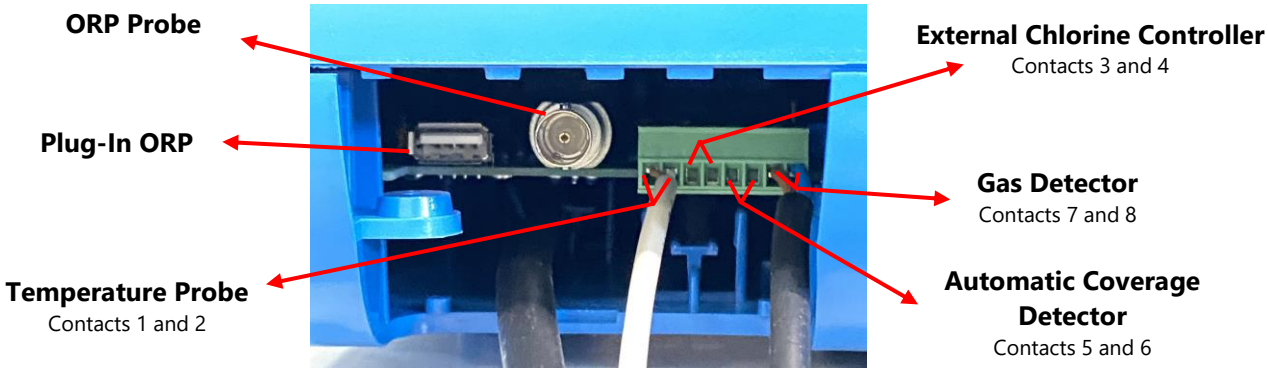

Figure 6 – Internal Connections

5 Operation

IMPORTANT NOTICE: The equipment should only be connected in conjunction with the circulation pump or when the circulation pump is already switched on.

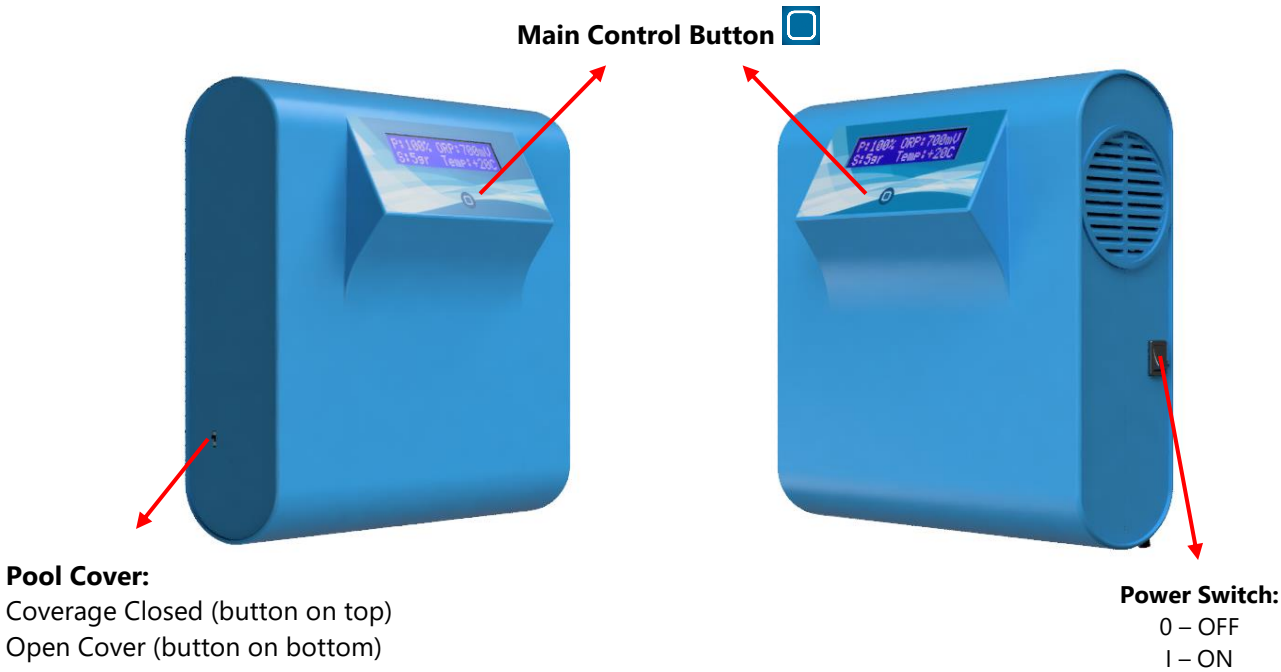

Figure 7 – Command Buttons

This device only has tree buttons: Main Control Button, the Side Cover Switch and the Side Power Switch (see figure 7).

The display allows you to view the system status and obtain information about the active alarms.

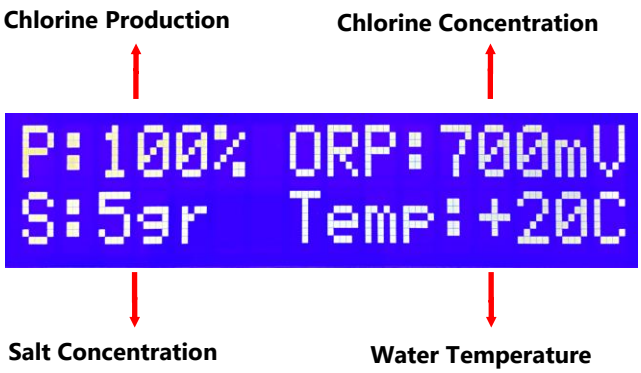

Figure 8 – Display Information

5.1 Control of Chlorine Production

Pressing the control button selects the period of electrolysis (as a percentage of filtering time) in order to increase or decrease production, and always choose the best reality of the swimming pool in which the equipment is installed.

Pressing the control button the percentage ("P: __%") is changed and can be set to between 0% and 100% in intervals of 5%. or "EXT" mode, when the equipment is to be controlled by an external control unit.

You should use the cover mode when the pool is closed, and choose the % required between 0% and 50%, with intervals of 5% (see chapter 5.4).

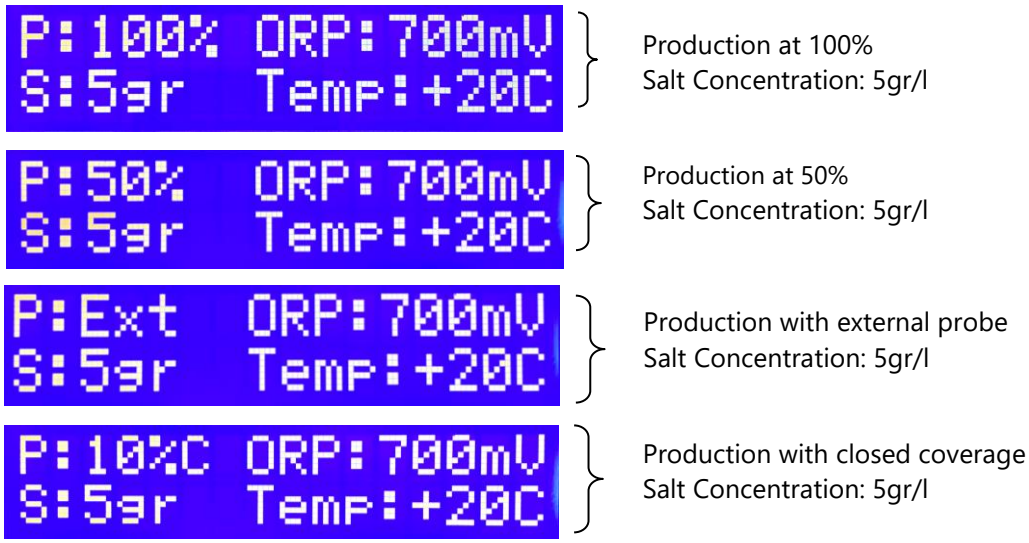

Figure 9 – Menus Indicating Chlorine Production

5.2 Operation with Temperature Probe

The variation of the water temperature has a direct influence on the need to increase or decrease the electrolysis production time. When the temperature probe is installed, the production cycles are automatically increased when the temperature rises, or decreases when it goes down, in order to ensure a more accurate and more effective treatment.

When the water temperature is below 12 ° C, the production has to be turned off to not affect the operation and durability of the electrolysis cell. When a temperature bellow 12ºC is detected the

temperature indication and **STBY** starts to flash on the equipment screen. The manufacturer shall not be liable for any equipment or cell that proves that this protection procedure has been breached.

5.3 Operation with Chlorine Probe (ORP)

The ORP probe allows you to measure the concentration of chlorine in the pool in order to avoid excesses or deficiencies of disinfectant in the water. When the ORP module (optional) and ORP probe (optional) are connected, the real time chlorine readout (**ORP: _____ mV**) is displayed on the machine's display.

In this mode, chlorine production should be set to (P100%) and ORP limits for the range that best fits the pool reality where the equipment is installed (see Chapter 6 for setting ORP limits).

When the real time chlorine value is greater than the memorized maximum setpoint, the ORP indication (**ORP:____mV**) and the **STBY** indication starts to flash, informing the user that equipment is in standby because the chlorine production as reached the desired setpoint.

5.4 Operation with External Probe

The equipment has a potential-free input for the connection of an external controller (see section 4.2.3) which will act on the system by switching the electrolysis on or off depending on the concentrations that are programmed in the system. In this case, the device must be set to "EXT" mode.

It is recommended that electrolysis is not frequently activated and deactivated because it reduces cell life. Bright Blue is not responsible for errors or faults of the external equipment that have a direct effect on the quality and disinfection of the pool water.

5.5 Operation with Pool Coverage

The production of chlorine when the pool is covered must be lower than that of the uncovered pool. When the cover mode is activated, production is automatically reduced (see chapter 5.1).

In electrical coverings the process can be automatic if the cover is connected to the equipment (see chapter 4.2.4).

In case the cover is manual, the user must set in the equipment the cover side switch to the closed position whenever the pool is covered.

5.6 Low Salt Indication

This indication shows that the salt concentration is below the minimum recommended.
The system will keep running but the electrolyses production is reduced and cannot be enough for a good water disinfection. On screen (figure 10) shows the quantity of Salt (in kgs) that should be added to the swimming pool for the concentration to reach the recommended value of 5gr/l.

Before adding Salt to the swimming pool, should be checked:

- The salt in the water is completely diluted
- All valves are correctly positioned
- Cell is in good condition and inside its lifespan
- If cell electrodes have a “whitish” colour, i.e., if have mineral deposits*
- The equipment is correctly regulated

(*) - In this case a cell cleaning may be needed. To clean it, insert the electrodes into a 10% hydrochloric acid solution until it stops reacting, typically no more than 10 minutes. This operation reduces the life expectancy of the electrolyses cell, it should only be performed if it has visible mineral accumulation.

Once the problem has been corrected this indication will automatically disappear and the swimming pool salt concentration will be showed.

Figure 10 – Indication of quantity of salt to add

5.7 Disinfection Recommendations

It is advisable to disinfect it overnight. In fact, ultraviolet radiation acts on the chlorine produced by the electrolysis cell, catalysing salt regeneration (which is why salt consumption is insignificant). If disinfection is carried out overnight, the chlorine concentration rises rapidly, and the disinfecting effect is much more effective.

For good disinfection practice it is also advisable to maintain a concentration of chlorine stabilizer (isocyanuric acid) of 35 ppm, i.e., 35 g/m^3 of water. This concentration, although reduced, allows to diminish the diurnal losses of chlorine by the effect of ultraviolet radiation.

6 Configuration and Calibration

All equipment's are supplied properly configured and calibrated at the factory so that it is not necessary to use these operations at the time of installation.

If you wish to change the factory settings or need to calibrate the ORP probe, change ORP limits or change the polarity inversion time, proceed as described in the following chapters.

To enter the Setup/Calibration menu, move the cover side switch to pool covered and press the Command Button for 5 seconds until the display shows:

Figure 11 – Calibration/Configuration Menu

Select what you want to configure/calibrate by briefly pressing the Command Button until the desired option appears on the bottom line: **CAL. ORP.** - for ORP calibration; **LIM. ORP** – for setting the ORP limits; **INV.POL** - for setting the polarity reversal time; **VOL** – for setting the pool volume; **CEL** – for setting the electrolyses cell type installed on the equipment; **BACK** – back to the main screen.

Once the desired option has been selected press the Command for 5 seconds to enter the

6.1 ORP Calibration

The calibration of the ORP probe is done with 2 buffers (240mV and 470mV). Before proceeding, confirm that you have all the necessary material including a glass of water and absorbent paper in order to clean the probe before introducing the buffers.

To enter the ORP calibration, select the **CAL.ORP** option in the Calibration / Configuration menu (see chapter 6).

When entering calibration, the following information will appear on the screen:

Figure 12 - Inserting the ORP probe into the standard 240mV

Insert the probe into the 240mV buffer, wait 10 seconds, and briefly press the Command Button . The first line of the display indicates the default value, and the second line shows the actual reading and a dashed line indicating that the system is calibrating (Fig. 13).

Figure 13 - Standard ORP Calibration 240mV

When the calibration is completed at 240mV, "OK" appears on the display and the buffer 470mV is requested. Repeat the entire process with the 470mV buffer until the calibration is complete.

6.2 Setting ORP Limits

This menu allows you to configure the ORP (HIGH) and minimum (LOW) limits to determine the correct concentration of chlorine in the water. The value of ORP is not the same from pool to pool being dependent on factors external to the equipment, so the correct limits should be checked case by case in the pool where the equipment is installed. To set the ORP limits, choose **LIM.ORP** in the Calibration / Configuration menu (see Chapter 6).

When you enter the menu, the following screen appears:

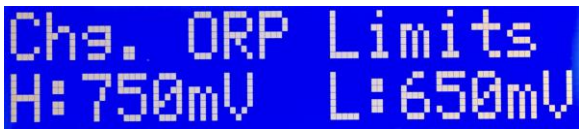

Figure 14 - Change in ORP Limits

To set the limits, briefly press the Command Button and appears:

Figure 15 - Definition of Upper Limits

To change the saved ORP limit, first, check if the digit you want to change is flashing. When the digit to change is flashing, briefly press the Main Command Button and the digit will be increased till 9 and going back to 0 for every brief press on the Main Control Button
To move to the next digit, do not press any buttons and wait for 5 seconds, next digit will start flashing. Repeat these steps until the correct value is written on the screen.
To save the new ORP limit press the Main Command Button for 5 seconds.

To save the desired value, press the Command Button for 5 seconds and move to the lower limit setting.

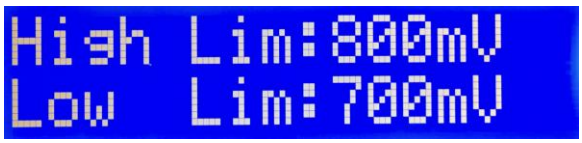

Figure 16 - Definition of Lower Limits

Repeat the previous steps and record. After the operation is completed, the following screen appears:

Figure 17 - New Limits of ORP

6.3 Polarity Inversion Setting

The polarity inversion process is responsible for the self-cleaning of the electrolysis cell in order to ensure that it does not accumulate limestone, consequently losing its production capacity.

The correct time interval between each inversion of polarity depends on the chemical characteristics of the water, namely its calcium hardness. The higher the water hardness, the lower the defined range should be, to ensure that no encrustation occurs on the titanium plates. The equipment is factory set at 6H and can be changed to a range between 3H and 8H. IMPORTANT: the shorter the inversion time the shorter the lifetime of the electrolysis cell. To change the polarity inversion, select the INV option in the Calibration / Configuration menu (see chapter 6).

When you enter the menu, the following screen appears:

Figure 18 - Polarity Inversion Time

To change the value, briefly press the Command Button to set the desired time. To record press the Command Button for 5 seconds.

The "**Test Inv**" option is used to run a diagnostic test to verify that both polarities work. When you choose this option, the system will start one of the polarities for a few seconds, then stop to reverse and starts again on the other polarity.

6.4 Swimming pool volume configuration

This menu allows to save the swimming pool volume (in m^3). This volume is used to calculate the quantity of salt to add into the swimming pool, in case of a low salt concentration is detected.

To change the saved volume value, first, check if the digit you want to change is flashing. When the digit to change is flashing, briefly press the Main Command Button and the digit will be increased till 9 and going back to 0 for every brief press on the Main Control Button
To move to the next digit, do not press any buttons and wait for 5 seconds, next digit will start flashing. Repeat these steps until the correct value is written on the screen.
To save the new volume value press the Main Command Button for 5 seconds.

Figure 19 - Define pool volume

If you do not wish to save the new swimming pool Volume, restart the equipment, using the side power switch. The equipment will keep the last saved swimming pool Volume value.

6.5 Cell type setup

IMPORTANT NOTICE: This function should only be carried out by trained and qualified personnel.

This function allows the configuration of the cell connected to the equipment.

7 Alarms

7.1 Alarm 1 - Low Flow

This alarm (ALARM 1) is released if there is not sufficient water flow in the electrolysis cell. When the alarm is triggered, the system goes into standby to safeguard the integrity of the equipment. It should be verified that:

- All valves are correctly positioned
- There are no hydraulic leaks
- The filter is in the filtering position

Once the problem has been corrected the alarm will be automatically deactivated.

7.2 Alarm 2A - High Salt

This alarm (ALARM 2A) indicates that the salt concentration on the swimming pool is to high (* to use sea water, please contact manufacturer).

It should be verified that:

- The salt concentration in the water is below 9g/l
- The salt in the water is completely diluted

- The equipment is correctly regulated

Once the problem has been corrected, you must restart the machine to disable the alarm.

7.3 Alarm 4 – Relay

This alarm (ALARM 4) turns on when the mainboard fails.
Contact technical service.

7.4 Alarm 5 – Source

This alarm (ALARM 5) turns on when the power supply fails.
Contact technical service.

8 Electrolysis Hour Totalizer

This equipment has an electrolysis hour counter to monitor the use and the life of the electrolysis cell. The device counts the time when it is actually in production, not considering the when it is connected, but in standby mode. To view the total number of hours already used, with the side cover switch to Open press the control key for 5 sec. until the information appears on the screen.

9 Terms and Conditions

9.1 Copyright

This User Manual contains information secured by copyright. All rights are reserved to Bright Blue, Lda.

This User Manual has been written for personal use. The copy, reproduction or translation of the present document, as a whole or partially, requires prior written consent from Bright Blue, Lda.

9.2 Warranty

This product, composed by the electronic controller and accessories, was constructed and tested in accordance with the security measures applicable to electronic devices and has undergone the most rigorous quality controls, leaving the factory in perfect condition.

This warranty applies to products manufactured by Bright Blue Ltd, in accordance with the terms and conditions of the company.

The Bright Blue Ltd guarantees the product manufactured in accordance with the conditions and responsibilities of these terms for a period of:

- COLIBRI: 4 years or 12.500h of operation for the electrolysis cell; 5 years for the electronic equipment; Twelve months for temperature probes, except ware out.
- PLUMA: 2 years or 10.500h of operation for the electrolysis cell; 2 years for the electronic equipment; Twelve months for temperature probes, except ware out.

The Bright Blue Ltd reserves the right to change the terms and conditions of this warranty, without notice, even after the invoice date of purchase, applying the terms and conditions in force.

9.3 Warranty Exclusions

Warranty and Responsibility does not apply to:

- accessories, consumables and peripherals that are not included in the original product package and/or that have been purchased to other companies;
- original identification marks that have been torn, changed or removed from the equipment or product;
- S/N that have been torn, changed or removed from the equipment and/or from its components;
- flaws and defects due to accidents, negligence or improper use of the equipment and its components; flaws and defects from improper electrical installation; unusual physical or electrical stress; disrespect for environmental rules, abnormal conditions of temperature, moisture, corrosive matters or other climate conditions that spread beyond the predefined limits;
- operation beyond capacity, failure to report to Bright Blue within the warranty period, substitution of parts not approved by Bright Blue, failure or damage due to misapplication, lack of proper maintenance, abuse or improper installation;
- use and operation of the equipment, or product, in contradiction to the system's documentation written by Bright Blue;
- system failure that according to Bright Blue is not due to raw material defect or fabrication deficiency;
- system failure caused by inadequate supervision of the components that are subject to wear down or breakdown;
- product alteration and/or repair by unauthorized personnel and/or unapproved by Bright Blue;
- customers that did not follow the procedures described in this specified warranty;

This warranty substitutes all others, explicit or implicit, including, but not limiting itself to implicit commercial warranties and adequacy to a predetermined objective of the equipment and corresponding documentation.

Bright Blue's responsibility is limited to repair and/or substitution of product components as long as none of the warranty exclusion conditions is met.

Under any circumstance is Bright Blue responsible for any cost, tax, expense, loss or damage of any kind, directly or indirectly, consequential or accidental, including, but not limited to ceasing profits.

The present limited responsibility represents the overall responsibility assumed by Bright Blue concerning its products, articles, goods, and provided services. Bright Blue will not have an further obligation or responsibility, moral or otherwise. Nevertheless, its responsibility limitation does not affect or limit the customer's legal rights in any way in regard to the sale of consumer goods and investment in its country.

Bright Blue does not take responsibility for any delay or fault caused by circumstances outside its control. Possible situation include, but are not limited to, interrupted communications services, carrier delays, errors or interruptions that impede the delivery of goods, unexpected situations, climatic conditions, strikes, inability to establish contact the customer or any responsible entity to report and/or confirm the situation.

Any technical assistance necessary will be provided within Bright Blue's factory and never on site of installation. The freight cost from the site to the factory will is the responsibility of the client.

If Bright Blue, or its representative, determines that the equipment repair is covered by the warranty period and conditions, the costs of analysis, repair and transportation back to the site will be the responsibility of Bright Blue, or its representative.

If Bright Blue, or its representative, determines that the repair is not covered by the warranty clauses, for the reasons explained above, it will not be concluded until integral payment of the invoice issued. In this case, Bright Blue or its representative will send the customer an estimate of the diagnosis, repair and transportation costs. The customer can order the return of the goods, without repair, in which case Bright Blue will issue an invoice of the diagnosis fee and dispatch costs. If the customer requires the repair, Bright Blue will charge the repair and transportation costs. The goods will be returned after full payment.

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