Bright Blue

O TRATAMENTO INTELIGENTE DA ÁGUA


# BIRDIE

## User Manual

**Índice**

# 1 Welcome

Thank you for choosing a Bright Blue equipment. We are certain you made the right choice in purchasing a salt chlorinator of BIRDIE series, as it is one of the most advanced equipments for swimming pool water treatment available on the market. The need for a pool well treated was the motto that led us to develop these equipments in order to assure our customers a water always clean and healthy.

# 2 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.

Product installation must be executed by licensed personnel only.

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

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

Before turning on the controller it is recommended to verify its physical conditions as well as the circuitry‘s. In case of installation in a warmer facility 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.

## 2.1 Warnings

**Risk of Electrocution**

The controller's components carrying electrical tension which may lead to electrocution are signaled 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 corrosive chemical handling**

The water pH compensation liquid is a corrosive chemical. In the automatics circuits, the dosing pump works by injecting this type of liquid under extreme pressure inside the water circulation tubing. Beware the chemical circuit and handle these products with care.

**Risk of irritating chemical handling:**

Irritating chemicals are used for the calibration of pH and conductivity sensors. These chemicals can cause irritation to the skin and eyes. When applicable, use of proper protection in handling these chemicals is recommended.

**Risk of human error**

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.

# 3 EC Conformity

Bright Blue, Lda declares, that the electronic equipment for pool water treatment of its production are in compliance with the EC Mark Technical Requirements and Directives.

CE

# 4 Package Contents

Birdie model is supplied in a box containing the electronic controller, an electrolysis cell, a set of sensors and a pH compensation solution pump.

# 5 Installation

The BIRDIE installation procedures are divided in two separate steps: the hydraulics and the electrical components.

The controller must be installed vertically, on a flat surface, keeping at least a 15cm distance from the wall or any other component to ensure proper ventilation (avoid keeping the acid tank bellow any equipment since it promotes corrosion).

Make sure that all the hydraulic circuits are shut and that the power supply is isolated before starting the installation.

## 5.1 Hydraulic Installation

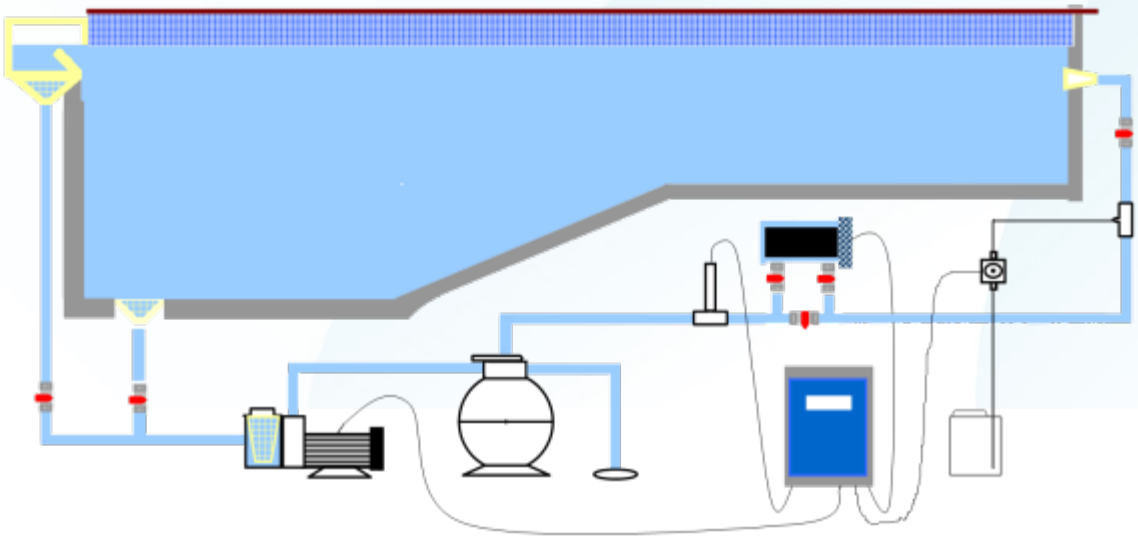


**Fig 1 – System Configuration**

### 5.1.1 Electrolysis Cell Tubing

The electrolysis cell can be installed horizontally or vertically. In the vertical installation the electrical wires must be faced upwards, to allow for the buildup of gases originated during the electrolysis process on the top of the cell in case there is a water circulation failure (**Error! Reference source not found.**).

The main cell pipe must end with a transition junction of 2” on each side of the electrolysis cell to allow the separation of the cell vase from the tubing when needed. The cell entry must be connected to the exit of the sand filter.

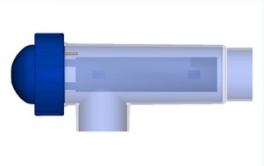


Fig 2 – Electrolysis Cell

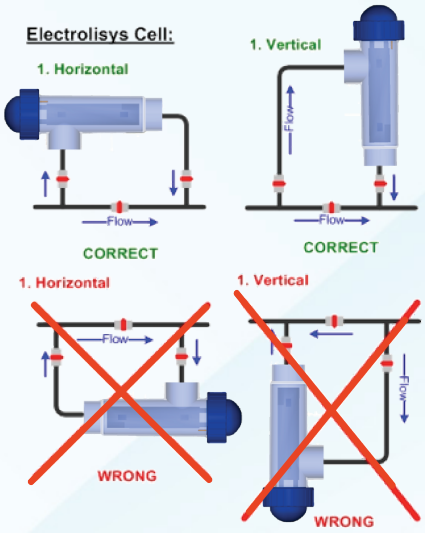



Fig 3 – Electrolytic Cell Position

When possible, it is recommended to screw the cell tubing to a wall or a strong panel to avoid any mechanical effort occurring on the cell's body.

### 5.1.2 Sensors Installation (pH, Temperature and ORP)

The supplied sensors must be connected using T with a ½" exit, or clamp saddles with a ½" exit, always between the sand filter and the electrolysis cell (**Error! Reference source not found.**). In either case, the sensors should be held with the supplied sensor holder (Fig 4).

The sensor must be installed vertically. Do not install it horizontally.

Fig 4 – Porta sondas y tomada en carga

Fig 5 – Sonda de pH e ORP

### 5.1.3 pH Dosing Pump Installation

Please follow the instructions available on the pH pump manual.

## 5.2 Electrical Installation

The model Birdie is equipped with a series of cables, all appropriately marked for connecting all the components. It is advised to use junction boxes to make the connections.

### 5.2.1 Connection to Electrical Panel

Birdie requires two connections to the electrical panel: power supply of equipment (single phase cable) and power supply to the pump contactor (three-phase cable).

Whenever possible, these should be independent and be protected by a circuit breaker with a ground fault current not exceeding 30mA. It should also ensure that the electrical panel has a good grounding.

### 5.2.2 Swimming Pool Circulation Pump Connection

The circulation pump connects directly to the BIRDIE model through a cable marked “Circulation Pump”. Comes prepared for three-phase pumps through a three conductor cable (phase 1, 2 and 3). In case of single phase pumps, use black cable for phase (L1/T1), grey cable for neutral (L3/T3) and unplug the brown cable (L2/T2).

The circulation pump “ground” connection should be made directly to the electrical panel.

### 5.2.3 Connecting pH Dosing Pump

The electrical wire of the dosing pump should be connected directly to the cable labeled "Pump pH".

### 5.2.4 Electrolysis Cell Installation

The connection to the electrolysis cell is done with two 4 to 10mm$^2$ electrical wires (depending on the cell power) and two 0,75 mm$^2$, both types supplied with the equipment. Connect the loose wire 0,75mm$^2$ to the gas detector of the cell (M3 terminal), and the other cables to the M6 terminals of the cell (Fig 6).


**Fig 6 – Cell Connection Terminals**

### 5.2.5 Probes, Lights and Optional Control Systems

For connections of the various components that comprise the model Birdie, follow the wiring diagram supplied with the unit that varies according to the hardware version provided.
The equipment was developed for 300W lights systems. In case of superior power supply, please contact Bright Blue, or its representative, for instructions.

# 6 Technical Menu / Initial Setup

ATTENTION: The equipment should not be powered until a proper ground connection is assured!

The Birdie model comes calibrated from factory and ready to go, but in the first use it is essential to configure it to the swimming pool where it's being installed and we also advise to recalibrate the probes if possible.

## 6.1 Initial Setup

To initiate setup and visualise all system parameters please activate technical menu. The present settings in this menu are reserved for authorized personnel and should be changed only by a qualified technician.

To activate technical menu go to Main Menu, press the following keys ↑↑↑↓↓↑ and the equipment automatically switches to system settings (pH Menu).

When the settings are completed, go back to Main Menu, press the following keys ↑↑↑↓↓↑ to exit from technical menu. The technical menu turns off automatically when you restart your device or 2 hours after its activation.

### 6.1.1 pH Setup

This module is responsible for pH compensation and works only when the circulation pump is turned on.

In the "pH" menu, you can set the following options:

VALUE: pH set-point set by default to 7.1 ± 0.1
ON/OFF: turn pH control to on or off
Prime pH Pump: it starts circulation and pH dosing pump
TIME OUT pH: definition of the maximum pH compensation time to avoid over dosage (120min by default)

After configuring and before starting the equipment the pH pump must be primed. The dosing pump switch (some models) must be "on" and the dosage regulation switch should be adjusted according to the pool volume and swimming pool type. By default, we advise to adjust the switch to 50% dosage capacity. For more information, please check pH pump manual.

### 6.1.2 Electrolysis Cell

The equipment is configured for the cell that is provided. In case of changing the initial cell capacity or add additional cells to the system, the value should be adjusted using the keys ↑↓ and ↵ to confirm.

### 6.1.3 Adjust Current

During the setup it is convenient to confirm the current at the cell. The adjust current process allows you to tune the power supply to adjust the machine to the desired salinity. According to water conductivity (salinity) this value undergoes deviations that may require adjustment.

Necessary tools:

- Small screw driver

When starting the current adjustment, the equipment will start the circulation pump and initiate the electrolysis production. It is very important to assure that all valves are in the right position and that there are no open points on the hydraulic system

1. Press to ↵ start the process and the circulation pump starts
2. Press ↑ to check the current (DCA) of polarity A
3. Press ↓ to check the current (DCA) of polarity B
4. The values measured in polarity A and B can be slightly different
5. The current value presented should be 10A, 15A, 20A, 30A or 40A, according to the cell installed (10g/h, 15g/h, 20g/h, 30g/h or 40g/h respectively). If necessary, use the potentiometer at the power supply to adjust the values
6. Revert the polarity again to confirm if the adjustment is correct
7. Press ↵ and the adjustment is done

### 6.1.4 Reverse Polarity

The model Birdie is equipped with a device for self-cleaning of the electrolysis cell through the reverse polarity, which can be set to a time interval between 3 hours and 8 hours (3h default) depending on water hardness.

For very hard water keep an interval of 3h. For less hard water, the inversion time can increase up to a maximum of 8 h. The higher the polarity reversal interval greater longevity for the electrolysis cell. However, the time interval chosen should not allow the accumulation of limestone in the cell plates (white coating that accumulates on the titanium plates) in order to avoid the need for manual cleaning.

If the cell begin to show signs of accumulation of limestone, reduce the inversion time selected.

### 6.1.5 Production With Pool Covered

When a swimming pool is closed with a cover (bubbles, canvas, foil, etc. ..), it should reduce the production of electrolysis to prevent the concentration of chlorine in the water rise excessively.

The model Birdie is ready to automatically detect if the cover is open or closed via a potential-free connection (see wiring diagram) and automatically change the production of electrolysis.

This menu lets you set the % of electrolysis production, in a range of 0% to 100% of the total daily working time, leaving the factory with a default setting of 10%.

### 6.1.6 Volume

In this menu you should indicate the pool water volume (m3) using the keys ↑↓. It is important that this value is well indicated, because it will influence the calculation of the number of hours of operation of the equipment, when placed in auto mode.

### 6.1.7 Flow

In this menu you should indicate the filtration flow (m3/h) using the keys ↑↓. Check the flow rate of the filter and the pump and choose the lowest of the two. It is important that this value is well indicated, because it will influence the calculation of the number of hours of operation of the equipment, when placed in auto mode.

### 6.1.8 REDOX (ORP)

This menu allows you to enable or disable the chlorine control by ORP. If you have installed the ORP optional, you should choose the option "On". By enabling this control will arise a new menu available to the user, where you can set the reference values (see section 7.4).

### 6.1.9 Heat Pump

This menu allows you to enable or disable the control of water temperature. If you have installed a heating system, you should choose the option "On". By enabling this control will arise a new menu available to the user, where you can set the reference values (see section 7.5).

### 6.1.10 Hours of Electrolysis

This menu displays the total number of hours of electrolysis carried out since the start of the equipment. This totalizer counts only the hours of electrolysis, regardless of total time of water circulation.

### 6.1.11 Password

This menu allows you to change the initial password (0001) and or to reset the existing password in case you forget it. To change the password, press the key ↵ insert password 9999, insert the new password XXXX (4 digits) and press ↵.

Completed the steps above, go to the MODE menu and choose AUTO or MANUAL to set the daily working time of the machine (see Chapter 7).

Completed all settings, calibration and adjustments of the AUTO or MANUAL mode, enable the BOOST mode (see chapter 7.1.3). The machine starts a continuous period of 24 hours disinfection so that the pool water becomes crystal clear. After this 24 hours period the device automatically switches to the mode that was before starting BOOST, ie Auto, Manual or Off.

## 6.2 Calibration Process

The calibration menu allows you to individually calibrate each probe. The device comes pre-calibrated from the factory, and this process should only be performed by qualified personnel and/or in case you need technical assistance.

The software is programmed to ensure efficient calibration, for which reason the calibration process is not fast.

The equipment must be calibrated every 6 months after the first operation, or, exceptionally when there is abnormal readings.

The calibration menu must only be used by those who have technical training required for a proper procedure of calibrating the various sensors in the system.

**The calibration should not be started until all the necessary equipment for this purpose is prepared and reachable by the technician.**

Upon entering the calibration process, the equipment automatically changes to “OFF” mode, so at the end of the process reactivate the previously set mode (AUTO or MANUAL) (see chapter 7).

### 6.2.1 pH Calibration

Equipment needed:

- Buffer solutions pH 4 and 7
- Wrench for probe holders
- Drinking water
- Absorbent paper

1. Cut the water circuit where the probes are placed
2. Remove probe from the probe holder

3. Pass the probe in a glass of water, stir well and remove
4. Follow the instructions in the screen of the equipment
5. To cancel the operation power down the equipment before the calibration is finished

Washing the probe is essential to improve the reliability of the calibration process! Before placing the probe in a buffer solution, make sure it is washed and dry. Use absorbent paper to dry the probe but without rubbing to avoid static electricity.

### 6.2.2 ORP Calibration (Optional)

Equipment needed:

- Buffer solutions 220mv and 468mv
- Wrench for probe holders
- Drinking water
- Absorbent paper

1. Cut the water circuit where the probes are placed
2. Remove probe from the probe holder
3. Pass the probe in a glass of water, stir well and remove
4. Follow the instructions in the screen of the equipment
5. To cancel the operation power down the equipment before the calibration is finished

Washing the probe is essential to improve the reliability of the calibration process! Before placing the probe in a buffer solution, make sure it is washed and dry. Use absorbent paper to dry the probe but without rubbing to avoid static electricity.

### 6.2.3 Temperature Calibration

Equipment needed:

- Thermometer
- Wrench for probe holders
- Glass of water

1. Cut the water circuit where the probes are placed
2. Remove probe
3. Place the probe in a glass with water and the thermometer
4. Follow the instructions in the screen of the equipment
5. To cancel the operation power down the equipment before the calibration is finished

# 7 Daily Functioning

## 7.1 Functioning Modes

In the "Mode" menu the user can choose one of the 4 modes available: Auto, Manual, Boost or Off.

### 7.1.1 Automatic Mode

The automatic mode is the most recommended since it allows an operation without the user intervention while assuring a good status of the water throughout the whole year. In this mode the user only indicates the starting time and the system automatically calculates the running period based on the following variables: Water Volume, Flow Rate, Electrolysis Cell Production and Water Temperature.

The working time is calculated considering the total time needed to assure a proper filtration of the water, as well as the time needed to produce the right concentration of chlorine based on the production capacity of the cell. All calculations are automatic.

The total time displayed corresponds to the period when the circulation pump is running and can be higher than the total period of electrolysis. In such cases, the electrolysis automatically terminates before the end of filtering.

The total time displayed is directly related to the water temperature and may vary depending on the daily reading, increasing when the water heats up and decreasing when it cools down according to the following tables:

| | |
|---|---|
| Filtering Time | Automatic |
| Electrolysis Time | Automatic |
| pH Control | Automatic |

**Table 1 – Automatic Mode**

| Temperature | Circulation Pump and Electrolysis |
|---|---|
| T> 25 ºC | Enhanced filtering; enhanced electrolysis |
| 15ºC < T < 25ºC | Standard filtering; standard electrolysis |
| 12ºC < T < 15ºC | Filtering every 2 days; reduced electrolysis |
| 10ºC < T < 12ºC | Filtering every 2 days; no electrolysis |
| 5ºC < T < 10ºC | Filtering every 3 days; no electrolysis |
| T< 5ºC | Filtering and electrolysis off |
| T < 1ºC | Filtering 10min/hour (anti freezing) |

**Table 2 – Filtering period and electrolysis according to water temperature**

It is advised that disinfection is carried out overnight. Indeed, the ultraviolet radiation acts on the chlorine produced by the electrolysis cell to catalyze the regeneration of salt (which is why the salt consumption is insignificant). If disinfection is carried out during the night, the chlorine concentration rises quickly and the disinfectant effect is more effective.

For a good disinfection practice it is advisable to also maintain a concentration of 35ppm of chlorine stabilizer (isocyanuric acid), e.g. 35 g/m3 of water. This concentration, although very small, allows to reduce losses of chlorine by the effect of ultraviolet radiation.

### 7.1.2 Manual Mode

The manual mode allows the user to control the system to its description. In this mode, the user indicates the daily period of treatment (start time and end time) being suggested by the equipment the minimum filtering period that may or may not be changed.

In this mode, the user still needs to set the desired production of chlorine, defined by a range of 0% to 100% of the total period chosen.

In manual mode, the water temperature does not change the operation period set by the user. However, once the water temperature is below 12 ºC electrolysis is disabled to prevent improper use of the cell.

The programming and use of this mode should be monitored by a specialist in order to ensure proper disinfection of water, for which reason it is password protected.

| | |
|---|---|
| Filtering Time | Defined by user |
| Electrolysis Time | % of filtering time |
| pH Control | Automatic |

**Table 3 – Manual Mode**

### 7.1.3 Boost Mode

The "Boost" mode activates the disinfection for a continuous period of 24 hours, after which the device returns to its previous state (Auto, Manual or Off). This can be used whenever it is intended to perform a shock treatment and can be activated as many times as necessary until the water is fully crystalline. Every time you activate / reactivate this mode Boost, begins a new period of 24h and a countdown timer is displays on the screen.

Before activating the Boost mode, make sure that the equipment is set up for the daily mode of operation desired (Auto or Manual)

### 7.1.4 Off Mode

In Off mode the system has all the control functions and menus inactive. In this mode, only the Home and Mode menus are visible so the user knows that system is turned off. This mode should only be used if you want to disconnect the equipment.

In Off mode the system is completely inhibited with no right to any filtering, disinfection or additional control, so leave the device in this mode for a long period of time may affect the quality of the pool water.

## 7.2 Additional Filtering Periods

Filtering menu is used to optionally set two additional periods of filtering (Filtering 1 and Filtering 2) that only act on the circulation pump. During these periods there are no electrolysis or pH compensation, only water circulation.

The purpose of this additional filtering periods is to have water circulation at different times of the day if its necessary for reasons of oxygenation, or for mere interest of the user.

Such filtering is optional and when scheduled it works daily during the period set.

## 7.3 Lights Control

Lights menu is used to control pool lights through the equipment. This lighting control can be configured for manual or automatic actuation.

The Manual function works as a manual switch that turns on / off the pool lights. The automatic function is used to set the time at which the system turns on and off the lights on a daily basis.

This lighting control is a 220V signal and does not exempt the use of a light transformer up to a maximum of 300 Kva.

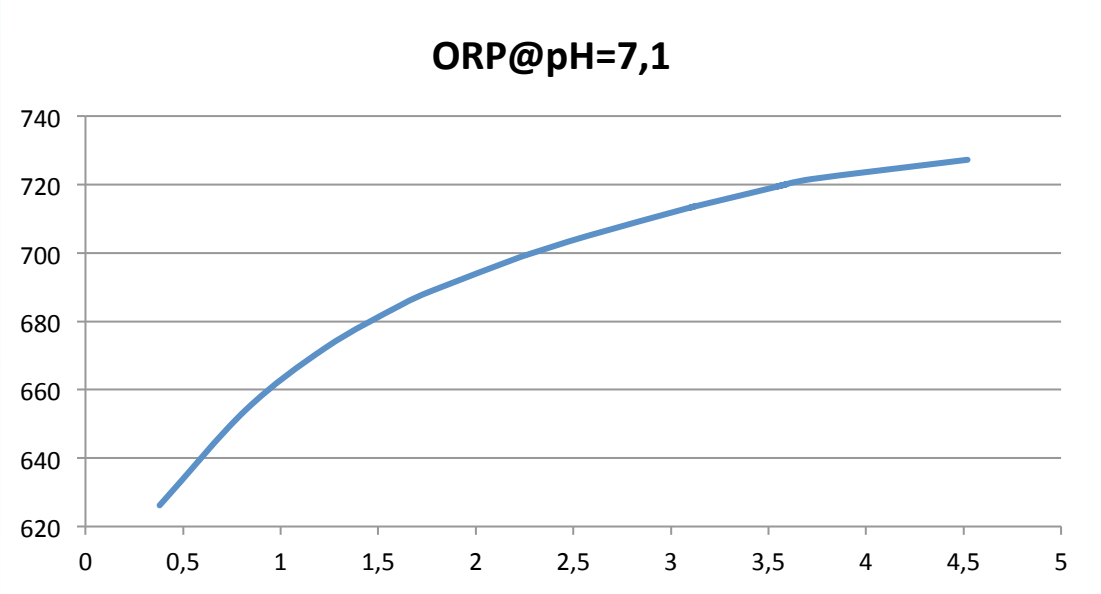
## 7.4 Control by ORP/Redox

The control of chlorine by ORP / Redox (optional in the Birdie model) defines minimum and maximum values for the concentration of free chlorine in the water, to ensure that the production of chlorine does not exceed the user defined limits.

On models with ORP/Redox control, electrolysis will work within the limits of concentration programmed by the user (min 400mV – max 900mv). During the period of disinfection defined by the user (Auto or Manual) the electrolysis starts when the minimum value is reached and stops when it reaches the maximum or at the end of the disinfection cycle.

The ratio of the actual concentration of chlorine in water and the value of measured ORP depends upon various features such as temperature, pH value, alkalinity, among others. For this reason, the user should perform various analyzes to water during the first few days of operation until you find the most suitable limits for the pool concerned.

In the imposibility to make the initial measurements, you must configure the minimum and maximum ORP according to the curves defined in the chart below:




**Graph 1 – Variation of ORP and free chlorine as a function of pH ***

Whenever wanted, you can turn off this control in the "ORP" menu by putting state "Off".

## 7.5 Heat Pump Control

In the Birdie model you can control the water temperature directly on the screen of the device if the pool have a Heat Pump installed.

In this menu the user can set the minimum and maximum temperature of the water, and the system will turns on and off the circulation pump to maintain it within the set interval.

The heat pump must have a flow switch to enable the heating only when there is water flow and must be programmed for a range of temperatures larger than programmed in the equipment.

Example: setting the Birdie for a water temperature between 32°C-34°C, the heat pump should be set to 30°C-36°C.

Whenever wanted, you can turn off this control in the "Heat Pump" menu by putting state "Off".

To prevent improper operation of the circulation pump, this check should only be activated if the pool has heat pump installed and working.

## 7.6 Levels Control

Birdie model allows the automatic control of water level (optional). When active, the system manages water levels through a set of probes and a solenoid valve, allowing avoid any problems resulting from excess or deficit of water in the system. The management of the water level is fully automatic and does not require any action by the user.

To force the filling press key ↵ , choose "On" with keys ↑↓ and press again ↵. The system opens the solenoid valve and the pool is filled to the level medium high. When this level is reached, the solenoid valve is closed and the system goes back to Auto mode.

This Birdie optional is essential for swimming pools with balance tank as it allows the detection of eventual failures on the retention valve and thus avoid the loss of water through the balance tank.

# 8 Language / Units / Date and Time

In this menu you can change the Language, Media Units and set the Date and Time.

## 8.1 Language

To change press ↵, choose the language desired and press ↵.

## 8.2 Units

Units are presented in the International system by defaut, but can be changed to Imperial system. To change it press the key ↵, choose Imperial and press ↵.

## 8.3 Date and Time

To change the Date, press the key ↵, choose Date, press ↵, set the Date with the keys ↑↓←→ and press ↵.

To change the Time, press the key ↵, choose Time, press ↵, set the Time with the keys ↑↓←→ and press ↵.

# 9 Alarms

The system communicates abnormal situations in the form of alarms. The system maintains locally a record of all messages. While the situation persists, are displayed in the alarm menu, the description and time of occurrence of all messages in force.

## 9.1 Low Temperature

This alarm is triggered if the water temperature is below 5°C, because of the danger of freezing. When the device is in Auto mode the circulation pump is stopped and turned off until the temperature recorded overcome 5°C again.

If the water temperature continues to fall, by reaching 1C the system activates the anti-freeze mode and starts circulating water for 10 min per hour to avoid freezing.

The user can always start treatment manually by changing the system to Manual mode (see chapter 7).

ATTENTION: Manual mode does not monitor the temperature. The user is advised to make sure that there is no ice formation in the pool, to protect the pump and filter, as well as the state of the rest of the hydraulic system.

## 9.2 High Salt

This alarm is triggered when the electrolysis reaches the maximum threshold of 130%. This is indicative that current in the cell is greater than the maximum allowed, so the equipment automatically cuts the electrolysis. This alarm may arise due to error in setting the electrolysis cell, or a salt concentration in the water extremely excessive. If you see this alarm, please contact Bright Blue or a technical expert.

## 9.3 Low Salt

This alarm is triggered when the electrolysis reaches the maximum threshold of 69%. This is indicative that the salt concentration in the pool is below the minimum acceptable. The amount of salt to add to the pool should be inferred by the percentage indicated in the system and confirmed whenever possible by an external measurement. The alarm remains until it is resumed the normal percentage of electrolysis.

## 9.4 Aged Cell

This alarm is triggered if the electrolysis cell is producing below 30% of its nominal value. It means that the current is too low and may be motivated by some faulty connection, or because the cell is approaching the end of its useful life and should be replaced, or simply because the salt concentration has fallen too much. The production of chlorine is reduced or near zero and it is not possible to achieve the required level of chlorine disinfection. The alarm remains until it is resumed the normal percentage of electrolysis.

## 9.5 pH High

This alarm is triggered if the pH of water differs by +0.5 of pre-set value. This may mean that the compensation acid ended, is inappropriate, or that the dosing pump is not well regulated, or is not well primed, or has no ability to respond to the volume of water in the pool.

When this alarm is triggered electrolysis is disabled until the pH lower this threshold.

Should check whether:

- There is compensation liquid (acid) in the pH tank;
- Dosing pump is switch on (some models);
- Circuit breakers in the electrical panel are all on;
- Injection pump is primed;
- Injection pump flow is well adjusted;
- The characteristics of the compensation liquid are the recommended ones (acid).

## 9.6 pH Low

This alarm is triggered if the pH of water differs by -0.6 of pre-set value. The pH dosing pump is immediately deactivated to avoid errors of overdose.

In this situation, the pH can be manually adjusted or the user can wait for the electrolyse to raise it up again.

## 9.7 pH Time Out

This alarm is triggered if once begun pH compensation, the value of reading does not change after a preprogrammed time period (120 minutes by default - see section 6.1.1). This alarm is indicative of a failure of the pH probe or a preprogrammed time insufficient for the pool in question. If you see this alarm, please contact Bright Blue or a technical expert.

## 9.8 Low Flow

This alarm is triggered if there is insufficient water flow in the electrolysis cell. When the alarm is triggered it stops the electrolysis to safeguard the integrity of the system.

Should check whether:

- All valves are positioned correctly
- There are no leaks in the hydraulic
- Pool filter is in filtering position
- Circulation pump has no failures
- Gas detector cable is well connected in the cell

## 9.9 pH Empty Tank

This alarm is triggered if the level of pH compensation liquid is below the minimum detected by the buoy. When the alarm is triggered the dosing pump is deactivated. It is necessary to replace the fluid and possibly prime the dosing pump. The alarm is disabled after replacing fluid in the pH tank. To avoid false alarms is necessary to ensure that the float inside the canister is in the upright position.

## 9.10 Expansion Module

An equipment that incorporates extension modules have an alarm that is activated when the system detects an error in the operation of any of these modules. When the alarm is activated the unit remains its normal operation, in the module in question is triggered LED signaling indicating the error and the main unit tells you that the alarm is active.

## 9.11 Readings Error

This alarm is triggered if there is a general failure in the acquisition of measurements from sensors (pH, temperature, etc ...). If you see this alarm, please contact Bright Blue or a technical expert.

## 9.12 Low Level

This alarm is triggered when the water level in the pool falls below the minimum level probe. The system cuts off the circulation pump and opens the solenoid valve for water replacement. Once reached the normal level the alarm disappears and the system returns to its normal operating state.

## 9.13 High Level

This alarm applies only to pools with balance tank and is released when the water level in the balance tank is above the maximum level probe. The system forces the circulation pump to replenish the water level in the main pool. Once reached the normal level the alarm disappears and the system returns to its normal operating state.

## 9.14 Check Valve Fault

This alarm is triggered if in a 24h period is activated the high level alarm 3 times in a row. If so, it indicates that there may be a malfunction of the check valve on the balance tank, and the system activates the circulation pump continuously to avoid losing the water of the pool. If you see this alarm, check the valve of the balance tank, or contact a qualified technician.

# 10 Terms and Conditions

## 10.1Copyright

The present User Manual contains information secured by copyright. Every right is 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**.

## 10.2Responsibilities

This User Manual has been written to be read, understood and followed by the people responsible for the installation, operation and maintenance of **BIRDIE** models.

Knowledge of this Manual's contents is vital to prevent damage and for correct system operation. It is intended to familiarize the user with the equipment and illustrate its mode of operation in order to obtain the maximum system profitability possible.

This User Manual contains important security information. Following the given instructions will contribute to:

- prevent possible hazards
- reduce equipment failure
- reduce repair costs
- increase reliability and life span of the equipment and accessories

This User Manual contains the necessary instructions to prevent environmental hazards and rules to sustain environmental protection. It should be kept close to the equipment and be read and known by all the people with access to the equipment, be it installation, operation, maintenance or repair technicians and/or end users.

As a complement to this User Manual, the technical knowledge of the rules and norms applicable to electronic equipment handling is required.

## 10.3Warranty

This product, comprising the electronic controller and accessories, was built and tested in accordance with the security measures applicable to electronic devices and was subjected to the most rigorous quality controls, leaving the factory in perfect condition.
This warranty applies to the products manufactured by **Bright Blue, Lda**, according to the terms and conditions imposed by the company.

**Bright Blue, Lda** guarantees the manufactured product in accordance with the conditions and responsibilities of the present terms for a period of:

- Five years for the electronic water quality management equipment.
- Three years or seven thousand five hundred hours of operation for the electrolysis cell.
- Two years on the pH dosing pump
- One year for the probes (pH, ORP, Free Chlorine and Temperature) excluding wear out

**Bright Blue, Lda** reserves the right to change the following warranty terms and conditions, without further notice, even after the date of purchase, applying the warranty terms and conditions in effect.

### 10.3.1Warranty 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, accessories or products;
- 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 exposure and/or other climate conditions that spread beyond the predefined limits;
- operation beyond capacity, failure to report to Bright Blue, Lda within the warranty period, substitution of parts not previously approved by Bright Blue, Lda, failure or damage due to misapplication, lack of proper maintenance, abuse and/or improper installation;
- use and operation of the equipment, or product, in contradiction to the system's documentation written and/or indications by Bright Blue, Lda;
- system failure that according to Bright Blue, Lda is not due to raw material defect or fabrication deficiency;
- system failure caused by inadequate supervision of the components that are subject to wear-out or breakdown;
- product alteration and/or repair by unauthorized personnel and/or unapproved by Bright Blue, Lda;
- customers, technicians and/or end users that did not follow the procedures specified in this 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 parts as long as none of the warranty exclusion conditions is met.

Under any circumstance is Bright Blue, Lda responsible for any other 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,

Lda will not have any further obligation or responsibility, moral or otherwise. Nevertheless, this responsibility limitation does not affect or limit the customer's legal rights in any way in regards to the sale of consumer goods and investment in this country.

Bright Blue, Lda does not assume the responsibility for any delay or fault caused by circumstances outside its own control. Possible situations 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 with the customer or any responsible entity to report and/or confirm the situation.

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

If Bright Blue, Lda, 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, Lda or its representative.

If Bright Blue, Lda, or its representative, determines that the repair is not covered by the warranty clauses, for the reasons explained above, the repair will not be concluded until integral payment of the invoice has been issued. In this case, Bright Blue, Lda, 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, Lda will issue an invoice of the diagnosis fee and dispatch costs. If the customer requires the repair, Bright Blue, Lda will charge the repair and transportation costs according to the estimate. The goods will be returned after full payment verification.