ZELIA ZLT

Salt electrolysis

Reference: PF10I060 / PF10I061 / PF10I062

Contents

Please read these instructions carefully before installing, commissioning and using the product.

The ZLT unit cell must not be regularly flushed with large amounts of water. If you have integrated or recessed technical blocks, we recommend not installing the cell under the skimmer, as it will regularly overflow if there are people in the pool.

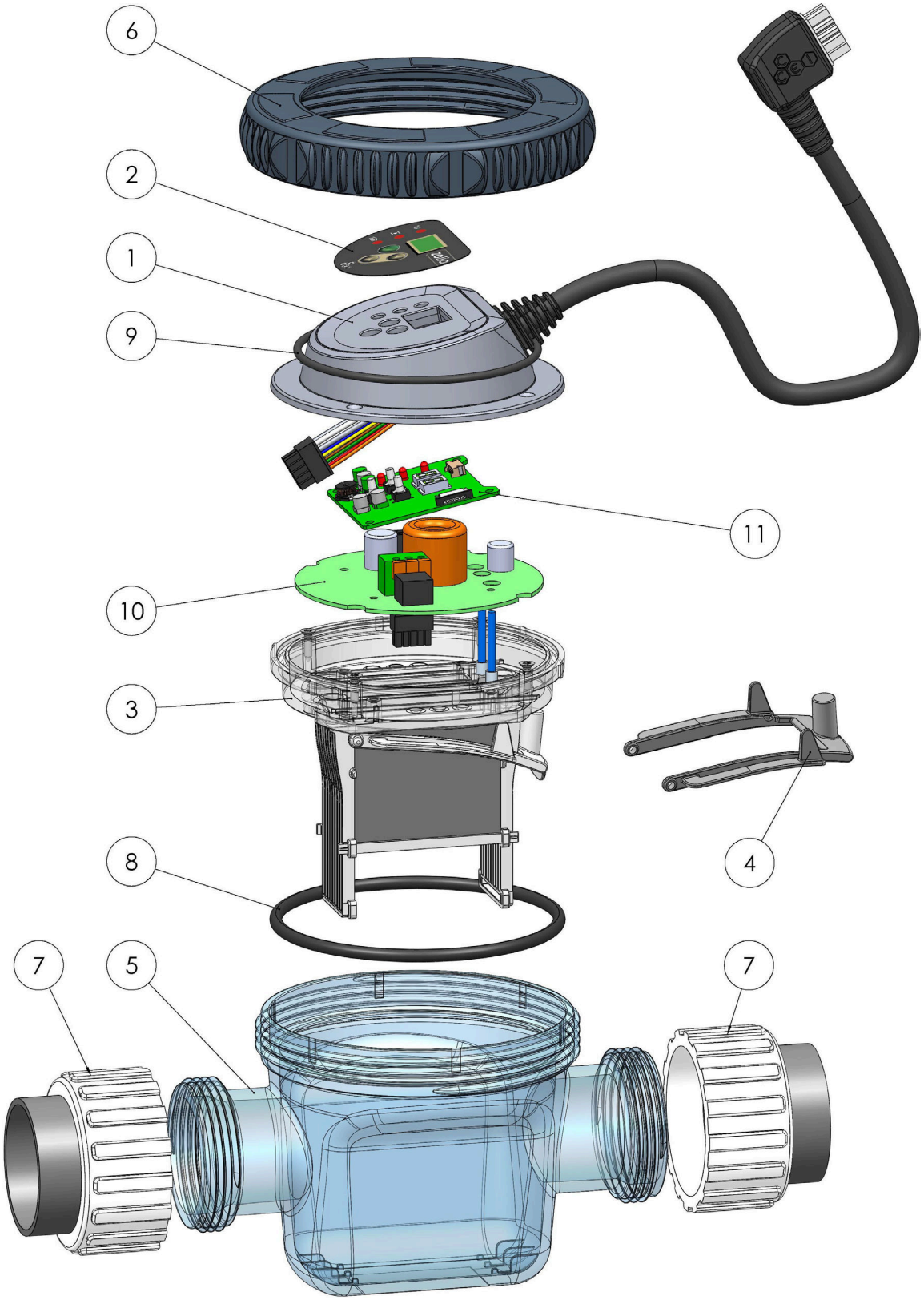
1. Package contents

- 1 ZELIA power supply
- 1**ZLT(25-50-75)**cell
- 1 set of 2 1.5” couplings for 1.5” diameter pipes
- 1 bag containing
  - 1 clip for cell connector
  - 4 screws and 4 wall plugs for the power supply
  - 2 gaskets for couplings

2. Technical data

Power source	230 V~ 50/60 Hz
Power consumption	40W**(ZLT25)**70W**(ZLT50)**100W**(ZLT75)** (maximum)
Maximum volume of treated water	**ZLT25**-25 cubic meters maximum
	ZLT50-50 cubic meters maximum
	ZLT75-75 cubic meters maximum
Cleaning the cell	Automatic, by changing polarity
Recommended salt content	1.5 to 4 g/liter
Maximum pressure (cell)	3 bars
Maximum power (cell)	15 m3/h
Minimum flow rate	3 m3/h
Degree of protection	Power supply: IP-44 Cell: IP-55
Overall dimensions	Power supply: 180 x 130 x 66 mm Cell: 192 x 138 x 134 mm Complete box: 383 x 230 x 164 mm
Installation	Power source: Wall mounting (4 screws and wall plugs included) Cell: On PVC hoses with a diameter of 50 mm (1.5" couplings are included)
Weight	Power supply: 1.04 kg / Cell: 1.03 kg**(ZLT25)** 1.08 kg**(ZLT50)**1.13 kg**(ZLT75)** Complete box: 2.75 kg**(ZLT25)**2.8 kg **(ZLT50)**2.85 kg**(ZLT75)**

3. Exploded view



Position	Link	Description	Amount
-	SF160100 **(ZLT25)** SF160102 **(ZLT50)** SF160104 **(ZLT75)**	COMPLETE ZLT CELL	-
1	SF160154	ZLT25/50/75 CABLE + CABINET ASSEMBLY/SPARE PART FOR ZELIA ZLT	1
2	MPET06N5	FRONT PANEL OF THE ZELIA ZLT CELL UNIT	1
3	SF160155 **(ZLT25)** SF160151 **(ZLT50)** SF160156 **(ZLT75)**	ZLC/ZLT REPLACEMENT BOARD SET WITH FLOW SWITCH AND TEMPERATURE SENSOR	1
4	SF160152	ZELIA CELL FLOW SWITCH WITH ADHESIVE MAGNET	1
5	MPTE0150	VEGETABLE CONTAINER / TRANSPARENT ABS	1
6	MPTE0151	CAP ZELIA / ABS RAL 7031	1
7	SF160153	SET OF 2 ZELIA UMIVERSAL COUPLINGS	1 set = 2 pcs
8	MPCS01L3	Ø107.32 O-RING TORUS 5.33/O RINGS 70 IRHD EPDM	1
9	MPCS01L4	Ø91.67 O-RING TORUS 3/CABLE CELLS EPDM	1
10	SF1100A6 **(ZLT25-50)** SF1100A6 V02**(ZLT75)**	CI_ZILIAFOND_EQP_ZLT/CARD FOR ZELIA CELL	1
11	SF1100A7	CI_ZILIAFF_EQP_ZLT /DISPLAY CARD FOR ZELIA	1

Table 1

4. Description

4.1. Principle of electrolysis

Salt (NaCl) dissolved in water electrolytically breaks down into sodium (Na) and chlorine (Cl). Chlorine immediately dissolves in water to form hypochlorous acid (HClO). This is a powerful disinfectant that kills bacteria and algae before it is converted back into salt.

The amount of chlorine needed to disinfect a pool increases with the temperature and pH of the water.

Chlorine production must be adjusted according to the environment and water properties:

• water conductivity

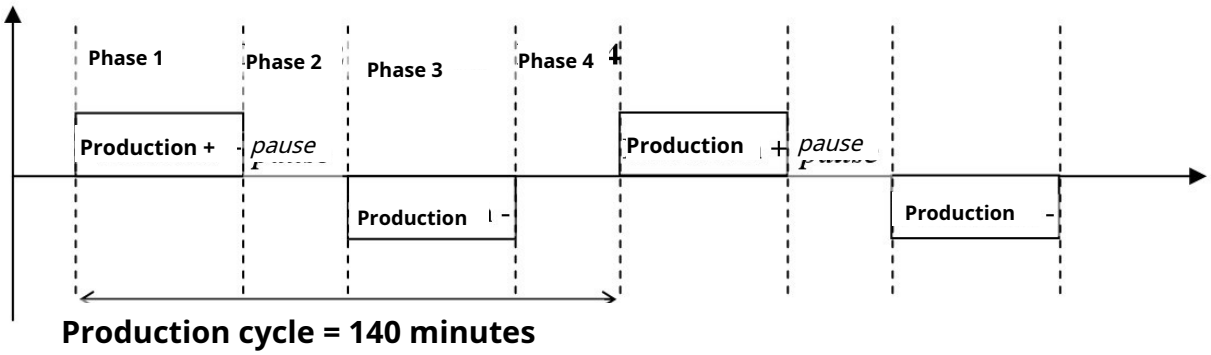
• water temperature

• volume of the treated pool

• pH of water

To ensure the safety of the installation, the electrolyzer only produces chlorine when the flow detector signals a full flow of water.

This means that the electrolyzer produces chlorine only during the filtration periods set by the programmable clock in the pool control panel. The production time of the said filtration periods consists of two intervals (normal and reverse) in which the polarity of the electrodes changes. Said polarity changes prevent the deposition of limescale on the electrodes.



The production cycle therefore consists of 4 phases:

1. Phase 1 normal production (positive)
2. Phase 2 quiescent state
3. Phase 3 reverse mode production (negative)
4. Phase 4 quiescent state

At the end of the filtration period**ZLT**stops production and resumes the cycle exactly at the point of the previous interruption when the filtration period begins.

The main advantage of the chosen method of work is the guarantee under all circumstances (even in the event of an interruption in the electricity supply) of exactly identical normal and reverse production times and therefore the guarantee of the least possible scale deposition on the cell (due to the quality of production and the service life of the material).

4.2. Description of ZLT

CCEI has developed light electrolysis. The compact ZELIA light salt electrolyzer is housed in a transparent cell whose color changes according to the salt concentration and temperature of the pool water (patented method).

When the user opens the pool's technical facilities, they immediately see the status of the water treatment equipment and verify the water quality:

• Production in idle mode, color according to water temperature

• Production in work mode, color according to salinity.

Efficient and optimized production - according to water temperature - reduced when the automatic pool cover is closed - 8 production modes

Compact and durable monoblock cell - equipped with titanium plates.

Compact to fit even in cramped technical environments.

Cell with self-cleaning effect due to polarity changes.

Increased safety with built-in flow detector.

The unit is assembled in a few minutes and can be easily connected with a connector.

Special modification for underground technical spaces.

In temperature-controlled mode, production periods are adjusted**according to temperature**.

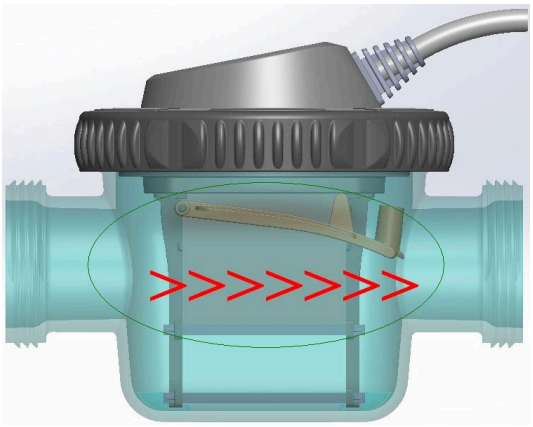
5. Installation

5.1. Waterway installation

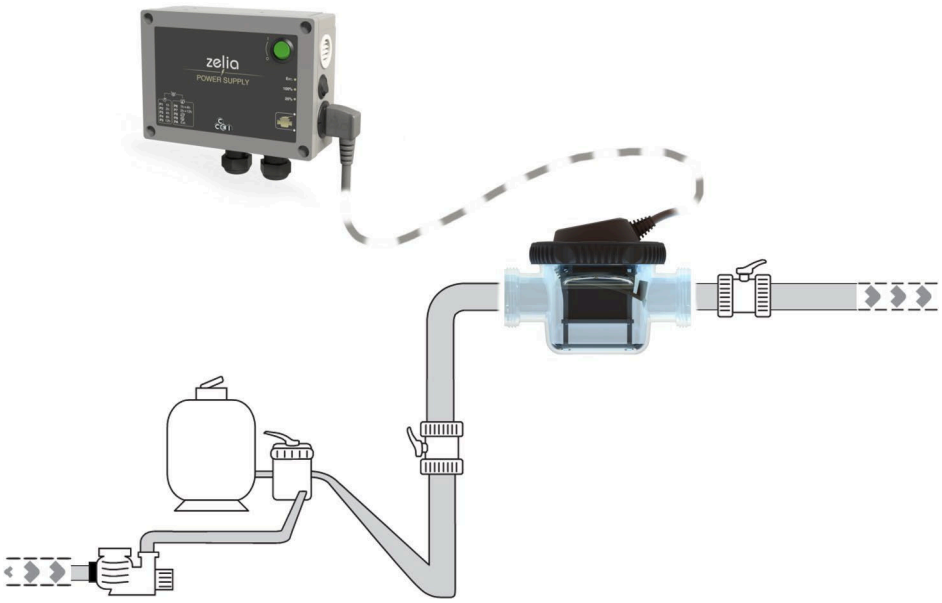
Unit**ZLT**is installed in a 50 mm diameter pipe using the supplied couplings. It is installed after filtration (behind the filter). It can be placed vertically or horizontally.

It is recommended to install a bypass (necessary for flow rates above 22 m3/h) to be able to regulate the flow rate and to be able to dismantle it without interrupting filtration.

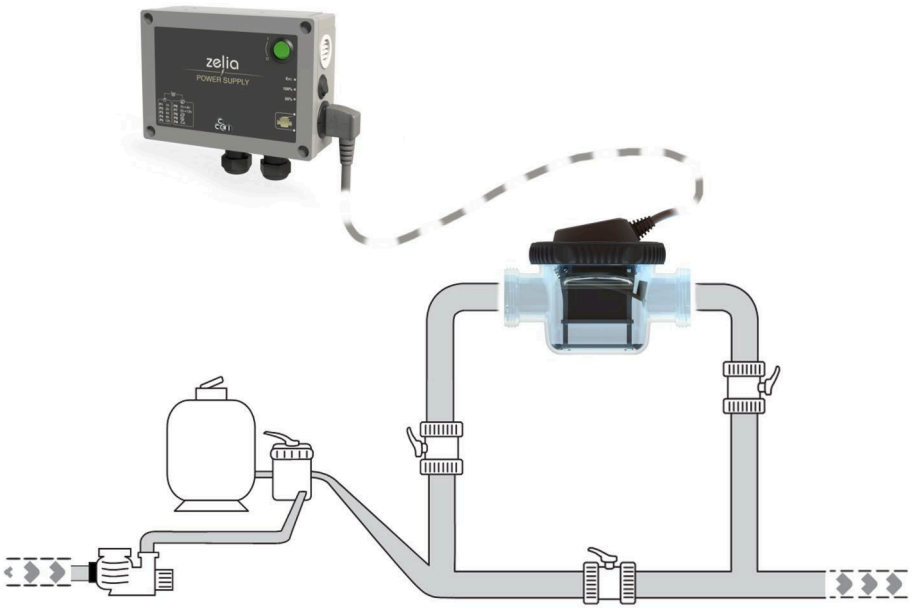
Pay attention to the direction in which the water flows to ensure the flow detector will function properly.



5.1.1. Installation directly into the pipe



5.1.2. Installation with bypass



5.2. Electrical connection

Installing this product involves the risk of electric shock. We strongly recommend that you hire a professional installer. Incorrect installation exposes you to danger and may irreversibly damage the product and the devices connected to it.

For safety reasons and in accordance with the NF C15-100 standard, the ZLT distribution box must be installed

- **be more than 3.5 m from the edge of the pool. This distance is measured taking into account any obstacles that need to be avoided. If the ZLT switchboard is installed behind a wall, the distance needed to avoid the wall on the way to the switchboard is also counted.**
- **or in an underground space near the swimming pool. In this case, the space must be accessible through a hatch that requires a tool to open.**

The housing is splash-proof, but must not be placed in an area that could be flooded with water. To maintain watertightness, the 4 lid screws must be tightened firmly. Unit power supply**ZLT**must be placed on a flat, stable surface and attached to the wall with screws and dowels.

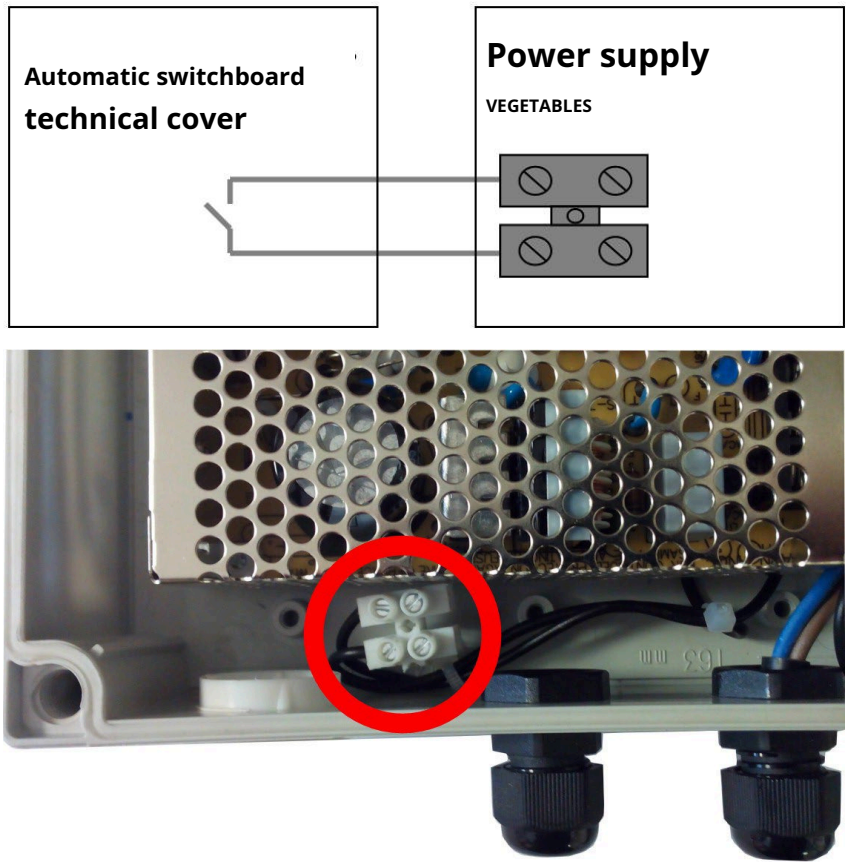
5.2.1. Power supply

The power supply is supplied with a 2 m cable fitted with a European 2P plug + American T plug. It is connected to a single-phase 120 V or 230 V, 50/60 Hz circuit via a 30 mA residual current device capable of delivering a sufficient current (15 A). The cross-section of the power supply cable must correspond to the required power input over its entire length.

The source must be permanently connected and under no circumstances must it be controlled by the pool filtration pump.

5.2.2. Dry contact input of the housing (or Redox analyzer)

The dry contact of the cover should be a potential-free switch contact. A wiring error can seriously damage the device.



5.2.3. Cell connection

Connect the cell to the side connector and secure with the metal clip.

6. Commissioning

Only a thorough analysis allows you to modify the device configuration. Carefully follow the individual stages described below to ensure a smooth startup process.

**Chemicals used in swimming pools are highly corrosive and can adversely affect your health and the environment.
Similar preparations must be handled with care and stored in suitable rooms.**

6.1. Stabilizing agent

At normal temperatures, chlorine is in the gaseous state. Its solid form (tablets, granules, etc.) is produced by combining it with cyanuric acid molecules. Cyanuric acid acts as a stabilizing agent that protects chlorine from the damaging ultraviolet rays of sunlight. On the other hand, the acid is not consumed and inevitably accumulates in pools with treated water, eventually completely neutralizing the effects of chlorine. For public pools, the maximum permitted concentration of cyanuric acid is 80 ppm (or mg/l). Salt treatment by electrolysis prevents an overdose of cyanuric acid. However, adding 25 to 50 ppm (or mg/l) of the stabilizing agent to a pool exposed to sunlight or with an insufficient concentration of chlorine can be useful. In very sunny weather, 90% of the free chlorine is actually destroyed within two to three hours in the absence of cyanuric acid, while this proportion drops to 15% with 30 ppm of stabilizing agent (cyanuric acid).

6.2. Salt content regulation

ZLT unit It is designed to operate with water with a conductivity corresponding to a salt concentration between 1.5 g/l and 4 g/l at 25 °C.

For more precise regulation of the salt content in the pool, we recommend using a conductivity tester. This device is very easy to use and offers a direct reading of the salt content in g/l. There are also analytical tables with which you can effectively regulate the salt concentration in the water.

At inappropriate salinity**ZLT unit**will interrupt production, both in the event of low or excessive salt content. If these errors are displayed, it is necessary to first check if the cell is in good condition, only then proceed with the necessary treatment of the pool water.

The conductivity of water is proportional to the salt content, but also depends on the temperature at a rate of 2.2% per degree Celsius.

Salinity (in g/l)	10°C	15°C	20°C	25°C	30°C	35°C	40°C
Minimum	2.3	2.1	1.8	1.5	1.2	1.0	0.7
Ideally	4.2	3.8	3.4	3	2.6	2.2	1.8
Maximum	5.7	5.1	4.6	4	3.5	2.9	2.4

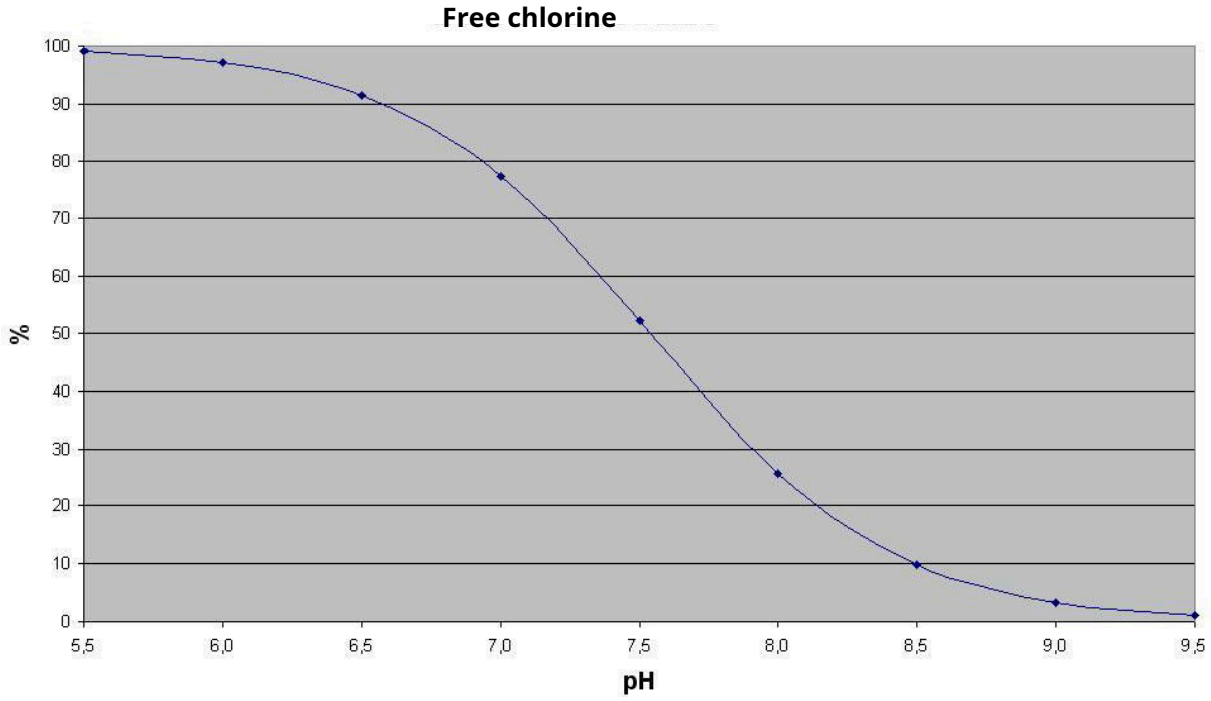
At 35°C, the salt concentration therefore ranges from 4 g/l to*2.9g/l*.

6.3. TAS/TH regulation

During installation, we recommend measuring the TAS (Total Alkali Strength) and/or TH (Total Hardness) of the pool water, or asking a specialist to measure it. The values of both factors are usually close and are most often given in French degrees (°F). If the TAS and TH values differ, use the average of these measurements. It is important to note that very soft water (TAS/TH < 10 °F) is advantageous because it forms less scale, but it is also very corrosive and its pH tends to be very unstable. On the other hand, very hard water (> 35 °F) tends to have a pH that is very difficult to correct, can irritate the skin and causes rapid scale formation on the equipment. In extreme cases, we therefore recommend adjusting the TAS and TH using suitable chemicals.

6.4. pH regulation

The pH parameter, or hydrogen potential, expresses the degree of acidity of water. It is a value from 0 to 14. A solution with a pH of 7 is neutral. If it is lower than 7, the solution is acidic, and if it is higher, the solution is alkaline. For a pleasant feeling for bathers, the efficiency of water treatment and the reliability of the installation, the pH value of the pool water should be kept as close to 7 as possible. Generally, the ideal pH is considered to be between 6.8 and 7.4. Water that is too acidic (pH < 6.8) threatens cell membranes, causes metal corrosion and damages plastics. Water that is too alkaline (pH > 7.4) can also be aggressive and significantly reduces the effectiveness of chlorine. For example, when the pH rises from 7.2 to 8.2, the percentage of active chlorine drops from 70% to 20%.



To achieve maximum efficiency**ZLT units**, keep the water pH between 7.0 and 7.4.

Since the water temperature changes during the season, it is necessary to adjust the production time accordingly. This adaptation of production to the temperature is carried out by**ZLT unit**automatically in temperature-controlled modes (/ P6 P7)

7. Control

7.1. Power supply

The power switch on the power supply supplies electricity to the electrolyzer. When the power supply is connected to the power supply, this switch lights up.

If the dry contact of the automatic pool cover is connected to the power supply, the switch located on the side of the power supply must be in the EXT position for the detection to work. However, it is still possible to set the switch to 100% or 25% regardless of the position of the pool cover and force normal or quarter production.

If the dry contact is not connected, it is possible to indicate that the pool is covered by switching it to the “25%” position. The switch must be manually switched to the “100%” position to resume normal production.

7.2. Control panel

The control panel includes a 2-digit multi-function display (temperature, programming, parameters, etc.), 3 indicators and 3 buttons.

Item	Description
Indicator 	"PRODUCTION" (production) Off when the unit is not operating It flashes when production is in standby mode, or when one cycle has finished and the next has not yet started. It lights up continuously when chlorine production is running.
Indicator 	"FLOW" (flow) Off if no water flow is detected Flashes when flow detection is in progress (with delay) Steady on when flow is detected
Indicator 	”COVER”/”REDOX STATUS” (cover/Redox analyzer status) Off when the pool cover is open (or when the Redox analyzer dry contact is open) Flashes when detection is in progress (with delay) Permanently lit when the cover is closed (or when the dry contact of the Redox analyzer is closed)
Button 	”TOP/MORE” (add/more) Allows you to increase production, switch displayed parameters, or the next program step
Button 	”BOTTOM/LESS” (reduce/less) Allows you to reduce production, switch displayed parameters, or the previous program step
Button 	”VALIDATION/OK” Allows you to verify the program selection

7.3. Program selection

The program is selected by pressing the button.  . Users have 5 seconds to select the desired program (during this time the program flashes) using the buttons  and  choose from 10 programs. After selecting program press the button  again for confirmation. To stop the program, just press again press this button once. OF lights up on the display during stop.

Program	Description	Note
P1	Production 1 hour/day	
P2	Production 2 hours/day	
P3	Production 4 hours/day	
P4	Production 8 hours/day	
P5	Production 12 hours/day	
P6	temperature-controlled production (1 - 4 hours/day)	Production automatically increases with water temperature
P7	temperature-controlled production (2 - 12 hours/day)	
P8	"Impact" production	Electrolysis runs for 24 hours (if filtration is in operation) and then switches to the previous program.
P9	Continuous production	Electrolysis runs 24 hours (if filtration is in operation)
PA	Externally controlled production Requires the use of a controller (see 7.7.)	Electrolysis runs as long as the dry contact of the Redox analyzer is closed (and filtration is in operation)

In the event of a power outage, the selected program will be saved but will be alternated.

Once the program is verified, it is called up alternately with the water temperature.

7.4. Temperature control

In modes P6 and P7 **ZLT unit** automatically adjusts the chlorine production period according to the water temperature. There are two production modes depending on temperature:

- The first (P6) is for “economical” production, specially adapted for small tanks. The production time will be 1 to 4 hours per day.
- The second (P7) is designed for production of 2 to 12 hours per day.

The production time changes proportionally to the water temperature, if the temperature changes:

Program	15°C	17 °C	20°C	22 °C	25°C	30°C
P6	1 hour	2 hours	2 hours	3 hours	3 hours	4 hours
P7	2 hours	3 hours + 1/2	6 hours + 1/2	8 hours + 1/2	11 hours + 1/2	12 hours

7.5. Low temperature

The need to disinfect the water decreases rapidly as the water temperature drops. To avoid unnecessary switching on of the electrolytic cell, the device pauses production when the water temperature is below 12°C and displays . In burst mode ( ), production runs even when the water temperature is low.

7.6. Automatic covering

If it is **ZLT unit** connected to an automatic pool cover, detects that the cover is closed, lights up indicator  and shortens the chlorine production time by one quarter. This reduces the risk of too much chlorine has accumulated in the pool area. For example, when the normal production cycle is set to 8 hours, but the pool cover will be closed, the production time will be reduced to 2 hours.

7.7. Production controlled by Redox controller

Regime PA do not use if you do not own a Redox controller. In this mode with an external controller, the switch on the power supply must be set to the "EXT" position.

This mode (PA) is used to control production according to current requirements when **unit ZLT** connected to a Redox analyzer or chlorine concentration measuring device (must be purchased separately). Input marked "Cover" **ZLT units** is used to connect the switch contact of the measuring device. If the Redox or other measuring device detects that the chlorine content in the water is lower than the recommended value, the dry contact of the analyzer closes and **ZLT unit** will be in production mode (if filtration is in operation).

7.8. Parameter display

It can be useful to view some parameters that characterize the way the device works.

These parameters are displayed by pressing the and buttons. To identify the parameters, their number and character are displayed alternately. O

Parameter	Description
o1	Remaining electrolysis time in hours, or in minutes if the dot between the digits on the display is lit.
o2	Duration of completed electrolysis (in hours) from the start of the current program.
o33*	Electrolysis current (1.0 = 1.0A)(2.0 = 2.0A)(3.0 = 3.0A) flowing through the plates.
o4*	Conductivity (in mS/cm) - approximate value. This value is calculated from voltage, current and temperature on a theoretical basis for a new cell (plate wear is not taken into account).
o5(editable value)	Enter the water hardness for optimal determination of polarity reversal cycles (see section "Water hardness").
o6	Model identification (25=ZLT25)(50=ZLT50)(75=ZLT75)
o7(edit value)	Desired production level (see Production level section).
o8	Electrolysis voltage (in Volts) on the plates.

** Parameters reserved for condition assessment, repair and maintenance.*

After 10 seconds, the display automatically returns to normal mode (Standby state: temperature, default status and mode display)

7.9. Water hardness

To extend the life of the cell, it is necessary to enter the water hardness. The device then automatically calculates the most suitable length of the current polarity change cycles. The hydrometric titre (TH) indicates the mineral content of the water and is given in French degrees or mg/l. The value should be provided by the water supplier, but you can have it measured by a specialist.

Setting this parameter:

1. Press the button  and  until the symbol o5 does not appear on the display.
2. Confirm with the button  .
3. Adjust the parameter with the button  and  (see table below).
4. Confirm with the button  .

Water hardness	The value entered under parameter o5	Interval length polarity reversal*
Very soft (0 to 10 ppm)	h1	7:20 a.m.
Soft (10 to 30 ppm)	h2	6h 20
Moderately hard (30 to 60 ppm)	h3	5h 20
Medium hard (60 to 120 ppm)	h4	4h 20
Hard (120 to 180 ppm)	h5	3h 20
Very hard (180 ppm and above)	h6	2h 10

After 10 seconds, the display automatically returns to normal mode (Standby: temperature, error and mode display).

* This value corresponds to the polarity reversal cycles required for self-cleaning of the cell. This parameter has no effect on the production time per day.

7.10. Production level

The amount of chlorine produced per day is limited by the filtration time (because due to the flow switch, chlorine production only occurs when the filtration pump is running). In case of low chlorine, the daily filtration time should be checked first. The production level can also be adjusted. Reducing the production if it is too high (e.g. for small pools, etc.) will extend the life of the cell. Increasing the production level will increase the chlorine concentration, but this will shorten the life of the cell.

Setting this parameter:

1. Press the button  and  until the symbol o7 does not appear on the display.
2. Confirm with the button  .
3. Adjust the parameter with the button  and  (see table below).
4. Confirm with the button  .

Desired production level	Value entered under the parameter o7
30%	n1
40%	n2
50%	n3
60%	n4
75%	n5
90%	n6
Nominal value (100%) (factory setting).	n7
110%	n8
Maximum level (125%)*	n9

After 10 seconds, the display automatically returns to normal mode (Standby: temperature, error and mode display).

* We recommend limiting the use of levels n8 and n9.

7.11. Error reporting

Unit**ZLT**informs the user about potential faults that could be prevented and that require attention. The message alternates with the water temperature:

Message	**Cell** flashing	Description	Solution
E0	Orange	Internal error (error communication between two integrated cards)	Check the connecting line between the 2 cards inside the cell
E1	Light blue	Internal overheating (>85 °C)	Let the cell cool down and consider installing it in a cooler location.
E2	Purple	Temperature measurement error water	Check the connection of the temperature sensor inside the cell
E5	Red	Too little current/ salt deficiency	Check the salt content Use diluted acid to remove scale from the cell If the check confirms a deficiency, add salt. See the section on electrolysis. This error can also be due to the presence of air in the cell if the pump was not flooded or air has entered the circuit.
E6	Blue	Excessively high current value/too much a lot of salt	Check the salt content Refill the water. See the section on electrolysis.

7.12. Restoring factory settings

Sometimes you need a unit**ZLT**reset. Proceed as follows:

1. Turn off the power to the electrolyzer using the ON/OFF button on the power supply.
2. Wait about 30 seconds.
3. Press the button  and hold it down,
4. Turn on the electrolyzer using the ON/OFF button on the power supply.
5. Wait for the cell to get the starting colors,
6. Release the button  .
7. You will see is displayed and the cell will turn back to color, confirming that the device has been reset to its default state.

7.13. Accelerated mode

There may be a case where it will be necessary to perform a test to accelerate the unit's internal clock**ZLT**.
Follow these steps:

1. Turn off the power to the electrolyzer using the ON/OFF button on the power supply.
2. Wait about 30 seconds.
3. Press the button  and hold it down,
4. Turn on the electrolyzer using the ON/OFF button on the power supply.
5. Wait for the cell to get the starting colors,
6. Release the button  ,
7. You will see is displayed and this confirmation that the device clock has been accelerated.

8. Maintenance

8.1. Adding salt

If the salt concentration drops below 2 g/l, it must be added to the pool.

We recommend adding specially prepared salt to the pool, which contains stabilizing agents. This will greatly increase the efficiency of the electrolyzer.

At the beginning of the season, we recommend checking the salt content to see if it reaches 3 g/l. Based on the salt content, the amount that needs to be added is determined as follows:

How much salt should be added?**(in kg)**to achieve 3 g/l:

Measured concentration / Pool volume	**20m3**	**40m3**	**60m3**
1.5g/l	30	*60*	90
2g/l	20	40	60
2.5g/l	10	20	30

Example: if the measured salt concentration in a 40 m3 pool is 1.5 g/l, 60 kg must be added to bring the resulting concentration to 3 g/l.

8.2. Winter season

In winter, weather permitting, water treatment can be carried out at a much lower frequency. An 8-hour filtration cycle once every fortnight is sufficient in most cases.

However, it is important to monitor the salt content so that the cell does not operate with too little salt (2 g/l).

If a cover or at least a tarpaulin is used, the choir will be protected from UV radiation and the requirement for its content will be lower. When the cover contact is closed in automatic mode, the unit**ZLT**will automatically limit production.

In order for the unit to**ZLT**to work with cold water (below 18°C), it may be necessary to increase the salt concentration to 5 g/l

8.3. Cleaning the cell

If the reported production is low, even though the salt content is correct, it is necessary to check the condition of the cell for visible scale deposits on the plates. In this case, the cell needs to be cleaned. To clean the cell, close one side and pour diluted acid into the cell (we recommend 10% HCl). Leave the acid to act for several hours. Carry out this operation with the utmost care and follow the instructions for working with acid.

A. Declaration of Conformity

<table>
<tr><td colspan="3">Bleu Electrique SAS (FR47403521693) declares that the product ZELIA
The ZLT complies with the safety requirements and electromagnetic
compatibility according to European Directives 2014/35/EU and 2014/30/EU.</td></tr>
<tr><td>CE</td><td>  </td><td>Emmanuel Baret
Marseilles, on:</td></tr>
<tr><td colspan="3">Distributor stamp</td></tr>
<tr><td colspan="3">Date of sale: . . . . . Batch no.: .</td></tr>
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