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UNIBox 150VA LT

CONTROL BOX FOR AUTOMATIC POOL COVER MOTORS

Installation and user's Guide

WARNING

FOR YOUR SAFETY - Installation of this product must be performed by an authorized and qualified pool equipment installer. Before installing this product, please read and follow all warnings and instructions provided with this product. Not following the warnings and instructions could result in property damage. Improper installation or use will void the warranty.

Improper installation or use may create an unwanted electrical hazard, which may result in property damage or personal injury.

Section 1. **Important safety instructions**

WARNING

The pool can be a serious danger to your children. A drowning happened very quickly. Children near a swimming pool demand your constant vigilance and active supervision, even if they know how to swim.
The physical presence of a responsible adult is essential when the pool is open.

WARNING

Check that there are no swimmers or foreign bodies in the pool before and during the usage of the cover.

WARNING

Keep the keys switch or remotes out of children's reach. Only a responsible adult should operate the mechanism.

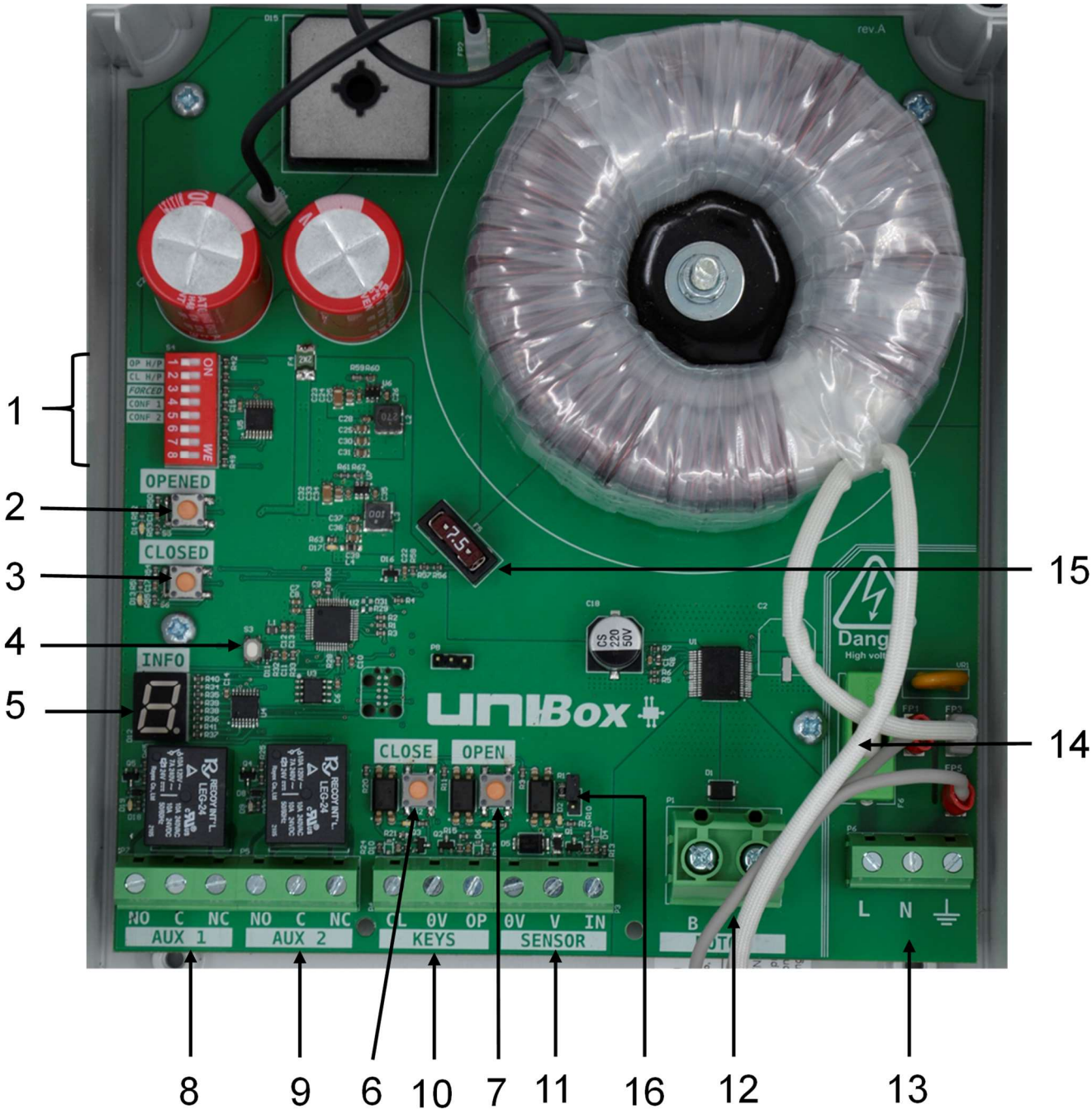
READ AND FOLLOW ALL GUIDELINES - KEEP THESE GUIDELINES

LEAFLET VERSION

DATE	VERSION	CHANGES
03/2024	**01**	**UNIBox 150 LT V1**

Section 2. **Technical data**

2.1 Board architecture and main components



1) Switches for configuring advanced functions and other board configuration.

2) Button to program the "open" limit switch position.

3) Button to program the "closed" limit switch position.

4) Reset button

5) Alarms display

6) Button to operate the motor in the "close" direction.

7) Button to operate the motor in the "open" direction.

8) Wiring terminal for auxiliary contact 1.

9) Wiring terminal for auxiliary contact 2.

10) Wiring terminal for key switch or remote-control receiver.

11) Wiring terminal for the position sensor.

12) Wiring terminal for power supply to the motor.

13) Cabling terminal for mains 230VAC 50Hz.

14) Fuse of the alternating circuit (UNIBox 150: 4A timed, ceramic, cylindrical 5x20mm.).

15) Engine protection fuse (7.5A ATO mini 10.9 mm).

16) Jumper for UNICUM motor with inductive sensor

2.2 Available advanced functions

- Impulse and / or maintained control in the both directions (configurable)
- Overload detection in case of motor deceleration in both directions.
- 2 Auxiliary relays (Electrolyser, filtration pump...)
- Display for easy installation and troubleshooting.
- Compatible with multiple sensor technologies

2.3 Technical specifications

CHARACTERISTICS	UNIBox 120	Unit
Supply voltage	230	V AC
Supply current	1	A
Frequency	50	Hz
Single-phase AC network	L/N/PE	
Input power	230	W
Maximum power	150	VA
Voltage without load	30	V DC
Maximum current (fuse capacity)	7,5	A
Nominal voltage	24	V DC
Nominal current	6	A
Dimension (HxWxD)	250x175x75	mm
Weight	2,7	Kg
Sealing	IP55	
Operating temperature	from 0 to 50	°C
Permissible humidity	from 0 to 85	%
Permissible altitude	up to 2000	m
Pollution degree	2	

Note: UNIBox 150LT: control box compatible with **PL2010, UNIMOT Elec** engines

This product is compliant with standard EN 61800-5-1.

This product has been tested and certified in compliance with standard EN 61800-3 (CEM).

The board does not include a protection for motor overheating.

Section 3. **Installation**

WARNING

FOR YOUR SAFETY – The installation of this product must be carried out by an authorized and qualified technician according to NF-C 18-510 or EN 50110-1.

Definition of qualified personnel according to the NF C 18-510 standard: "person with appropriate training, knowledge and experience in electricity to enable him/her to analyse the electrical risk and avoid the dangers that electricity can present".

3.1 Installation of the box

The installation must be carried out in accordance with the electrical standards in force in the country of installation; in France according to standard NF-C 15-100 (part 7-702), in Europe according to standard HD 384-7-702 or equivalent according to local regulations.

The box must be installed in a frost-free technical room, away from rain, sun, any heat source and any risk of spraying or immersion.

It should be installed level, ideally between 1.2 and 1.5 metres from the floor, vertically, with the cable glands downwards, and on a sufficiently solid, flat and smooth wall to withstand the weight of the box.

Fixing the box:

1. Mark the (4) positions of the outer holes at the gasket on the mounting surface.

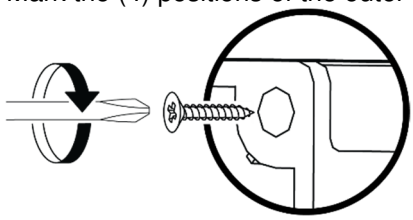


Fig.1 – Position of external holes

WARNING: Failure to comply with this attachment method may result in the warranty being voided.

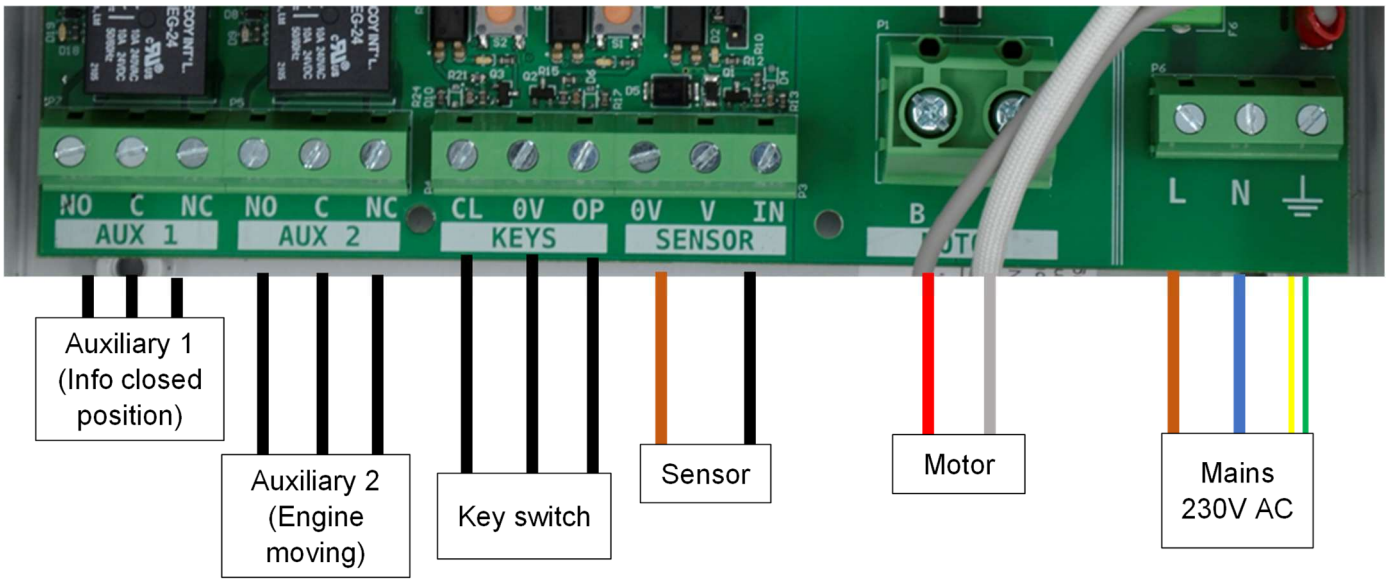
2. Drill four (4) holes in the mounting surface using the provided drill template.
3. Push four (4) pegs firmly into the holes.
4. Screw the enclosure onto the mounting surface

The lid is closed by screwing the 4 plastic screws of the lid in the 4 corners of the base of the box (if the box is removed, remove these 4 plastic screws using a screwdriver).

3.2 Electrical connections

WARNING

All connections must be done with the power turned off.



NOTE : This wiring schema is applicable to UNICUM motors equipped of a mechanical position sensor. For the wiring of other sensor technologies (inductive, Hall, etc.) please check chapter 3.6.

WARNING

FOR YOUR SAFETY – Connections are to be made by a QUALIFIED and AUTHORIZED person. Electrical connections must comply with the C15-100 standard in France or the HD 384-7-702 standard in Europe.

3.3 General

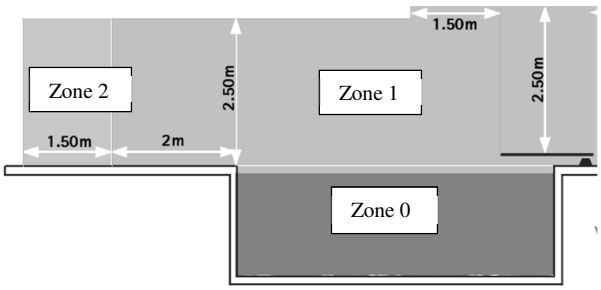
Check the cables for defects.

Cables must be protected so that they cannot be torn off or crushed.

The green/yellow wire may only be used for an earth connection in compliance with electrical standards.

Do not forget to tighten the cable glands after the cables have been routed to ensure that the enclosure is watertight.

NOTE: Submerged cables cannot be repaired or connected in zone 0.



3.4 Sector 230VAC single phase:

An electrical separation device must be installed upstream of the enclosure. It must be easily accessible, identifiable and lockable in the open position. This device may be of the "switch-disconnector" type with a current rating of at least 6A or any other system that can be disconnected for optimum safety and in compliance with current regulations.

Note 1: the installer must ensure that this device is chosen according to external constraints: humidity level (IP65), etc.

Note 2: The power supply of the unit must be protected according to the ground connection diagram in compliance with the legislation of the installation site.

Note 3: for a TT operation, the circuit must be protected upstream by a bipolar circuit breaker with a high sensitivity differential 30mA, intensity 6A and trigger curve type C.

Use a 2-wire + ground 2.5 mm2 cable, type H07 VV-F.

Pass the cable through the cable gland provided for this purpose.

3.5 3-position key switch with center return: (2 NO contacts)

Use a 3-wire cable of 1.5 mm2, type H07 VV-F.

Connect the switch to the KEY SWITCH terminal block provided for this purpose on the electronic board.

Respect the "CL" (Closing) and "OP" (Opening) markings indicated on the electronic board and on the switch.

Wire the common switch to the " 0V " indicated on the electronic board

Pass the cable through the provided cable gland.

3.6 Sensor:

Use a cable with 1 mm^2 wires - type H07VV-F

Respect the colors of the wires according to the screen-printed values on the electronic board at the terminal block "SENSOR" and the sensor wires coming out of the motor.

In all cases, in order to wire the sensor, the cable must be passed through the cable gland provided for this purpose.

Functional test:
The green LED above the connection terminal returns the sensor signal:

- ✓ Engine stopped: LED off or on.
- ✓ Motor running with proper sensor operation: LED with regular flashing.

3.6.1 Mechanical sensor:

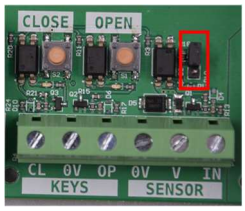
Our current range of motors are equipped with mechanical sensors. If your motor is equipped with mechanical sensors, please apply the following connection;

Printing	Wire color
0V	Brown
V	
IN	Black

3.6.2 PNP inductive sensor (standard for older UNICUM motors):

The UNIBox 150VA LT box can be used to replace old Unicum boxes; in this case it will be necessary to check whether the motor installed in the winding tube was equipped with a three-wire inductive sensor. In this case, in addition to connecting cables as shown below, it is necessary to close the bridge by connecting the two pins on the P205 connector on the board, using the jumper (see photo and chapter 2.1 point 16).

Printing	Wire color
0V	Blue
V	Brown
IN	Black



3.6.3 NPN inductive sensor:

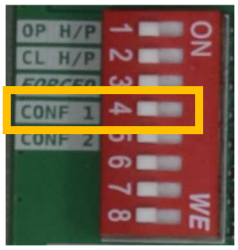
The UNIBox box can be used to control inductive sensors of the NPN type; in this case it will be necessary to connect the cables according to the diagram below.

Screen printing	Wire
0V	Neutral
V	12V power supply
IN	Sensor signal

3.6.3 Hall Effect Sensor:

The UNIBox box can be used to control Hall effect sensors; in this case it will be necessary to connect the cables according to the diagram below. It will then be necessary to put the dip-switch "CONF1" of the Configuration block (chapter 2.1 point 1) and restart the board.

Screen printing	Wire
0V	Neutral
V	12V power supply
IN	Sensor signal



This sensor is used in the following motors: **UNIMOT Elec**, DL7710 INOX and other motors for pool moving floors.

3.6.4 Other sensor technologies :

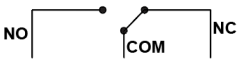
UNIBOX controller can be programmed to manage other position sensor technologies. Please contact the sales department to confirm project feasibility.

3.7 Auxiliary relays:

3.7.1 Auxiliary 1

(To activate an electrolysis system or other)

Dry contact 3A 30VDC, with common (COM) and contacts rest (NC) / work (NO).



AUXILIARY REL.

Auxiliary relay status:

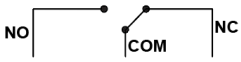
Auxiliary 1: Closed position info:

To the 1: UNIBox	NO	NC
Opened position	0	1
Motor closing	0	1
Motor not moving between limit positions	0	1
Motor opening	0	1
Closed position	1	0

3.7.2 Auxiliary 2

(To deactivate a filtration pump…)

Dry contact 3A 30VDC, with common (COM) and contacts rest (NC) / work (NO).



AUXILIARY REL.

Status of the auxiliary relay:

Auxiliary 2: information given when the motor is in motion:

To the 2: UNIBox	NO	NC
Opened position	0	1
Motor closing	1	0
Motor not moving between limit positions	0	1
Motor opening	1	0
Closed position	0	1

3.8 Motor:

Wiring in cable 2 wires type HO7 RN-F, section up to 10mm² flexible according to the distance between the box and the motor.

Identification of the wire colors of the motor cable: red and gray wires.

Connection on the MOTOR terminal block.

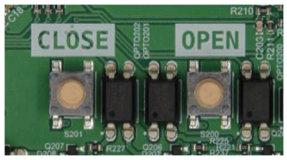
Pass the cable through the provided cable gland.

3.9 Electromagnetic brake configuration :

Most of UNICUM motors are equipped with a patented permanent magnet brake (CPS – Constant Positioning System) which UNIBOX manages correctly by default. On the other hand, a lot of pool cover motors are equipped of an electromagnetic brake. Managing this brake technology on UNIBOX is possible by activating dip-switch « CONF 2 » and restarting the board.

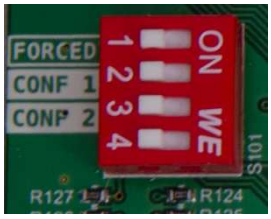
UNICUM compatible motors equipped of this brake type are the following: **Unimot ELEC**

3.10 After complete wiring:



Check the direction of movement of the cover according to the switch positions.

Check that the direction of movement of the cover when activating the "Open" command of the key switch is consistent with the direction of movement when pushing the "Open" button on the board. The same applies to the opposite direction, when closing the pool.



To perform this control, use the FORCED mode by activating/deactivating the "FORCED" dip-switch as described in chapters 4.1 and 4.2.

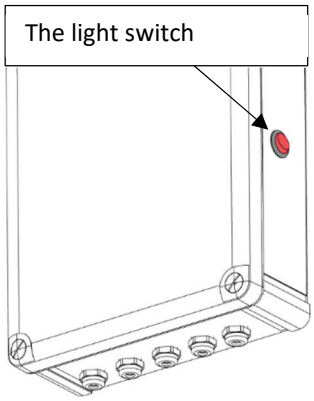
This operation is of great importance and must be extended to any possible control device, such as remote controls, smartphone receivers, etc.

If the direction of movement of the cover is wrong, and if the switch wiring is correct, reverse the motor wires.

Section 4. **Operation of the control box**

4.1 General:

Power is switched on using the illuminated switch on the side of the cabinet.



As soon as the power is switched on, the switch lights up. You can check the initialisation of the electronic board on the INFO display for a few seconds.

The electronic box has been designed for operation for a maximum of **10 minutes of** continuous use. Beyond this time, there should be a 30-minute interval between manoeuvres. In the event of overheating of certain components, the board goes into self-protection mode and stops supplying power to the motor until the temperature returns to a useable level.

The operating range of the electronics box is between 0°C and 50°C max.

Three operating modes are available and must be familiar to the installer.

AUTOMATIC MODE: this is the normal mode when all programming has been done correctly. Advanced functions can be enabled and alarms are active.

FORCED MODE: this is the preferred mode for maintenance operations. Once in forced mode all configurations (limit switches, measured current levels, etc.) are overridden and therefore the operator uses the motor without limit switches. This mode must therefore be used with great care. It can also be used in case of sensor failure.

PROGRAMMING MODE: this is the mode that allows the operator to save the basic parameters for using the card in AUTOMATIC mode. PROGRAMMING mode is entered when the limit switches and the end of the speed ramp have to be configured. In this mode the advanced functions are not active as well for some of the alarms.

NOTE: To activate the advanced functions, once the corresponding switch has been switched on, **the board must always be restarted** using the power switch or the white reset button available on the board (see chapter 2.1 point 4). This operation requires the parameters and active functions to be re-read.

4.2 Programming mode (to be used only by qualified personnel)

This mode allows you to program the distance to be covered by the pool cover by setting the end positions (full open or full close).

4.2.1 Programming the end positions

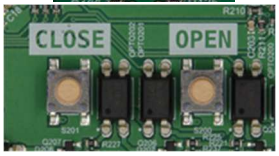
WARNING

The programming of the end of the race must be done with total visibility on the pool.

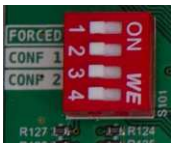
NEVER USE REMOTE CONTROLS OR RADIO SETS TO PROGRAM THE END POSITIONS. The procedure must be executed with the key command or with the "OPEN" and "CLOSE" buttons on the card.

Put the card in FORCED mode using the "FORCED" switch and setting it to "ON".

1. Use the OPEN and CLOSE buttons or the key switch to check that the motor wiring is correct; if not, switch off the box and change the wiring.



2. When finished, return the "FORCED" switch to the "OFF" position.



3. Push and hold the "OPENED" button until the green LED next to it lights up. You have now entered the programming mode for the "open" limit switch.

4. Put the cover in rolled up position (fully open).

5. Wait at least 5 seconds and then press the "OPENED" push button - The green LED turns off and the position is recorded.

6. Push and hold the "CLOSED" button until the green LED next to it lights up. You have now entered the programming mode for the "closed" limit switch.

7. Place the cover in the unrolled position (fully closed). Beforehand make sure that nothing and nobody is using the pool.

8. Wait at least 5 seconds and then press the "CLOSED" push button - The green LED turns off and the position is recorded.

Now the end positions are programmed and the card operates in "AUTOMATIC" mode.

4.2.2 Limit switch position modification

In the event that an adjustment of a single limit position is required, the user can do so without reprogramming the other one. The user is able to enter into the programming mode of the particular limit position to modify it according to the procedure in the previous paragraph.

4.3 Automatic Mode

This mode allows the cover to be opened and closed in normal use, with automatic stop at the end positions.

The cover is opened or closed by different control devices (switch, wall remote control, remote control, etc.).

The cover is automatically stopped at the end positions which have been previously programmed (see programming mode).

You will not be able to choose the direction of movement of the cover when it is located at one end since one of the directions becomes momentarily invalid: the closing direction does not work in the fully closed position of the cover. Same for the opening direction; it does not work in the fully open position (use manual mode to move beyond the programmed distance if necessary).

All alarms are activated as well as the advanced functions selected by the user.

4.4 INFO display

The INFO display visualizes any alarms that allow the operator to detect and correct anomalies.

In the event that two alarms are present at the same time, the display will show them one after the other in cycle.

The acknowledgment of alarms is done using the motor control device (key contact, remote control or physical buttons); by operating the device twice in the same direction the alarm will be acknowledged and the engine can then be restarted. The list of alarms is as follows:

0	**Fixed**	Error starting card.
1	**Fixed**	Error programming the end positions.
2	**Fixed**	The engine is not wired.
3	**Fixed**	Faulty sensor.
4	**Fixed**	Fuse melted.
5	**Fixed**	Current threshold exceeded (“amperometric control" function active).
6	**Fixed**	Active alarm on the security loop.
7	**Fixed**	Activated anti-snatching alarm; check the straps.
8	**Fixed**	Overloaded motor
9	**Fixed**	Weather sensor alarm
A	**Fixed**	Acquisition of the current level during closing phase requested (amperometric control programming.)
U	**Fixed**	Acquisition of the current level during opening phase requested (amperometric control programming.
b	**Fixed**	Completed current acquisition without errors; amperometric control function active.
C	**Fixed**	Error during current acquisition; the amperometric control function has to be reprogrammed.
d	**Fixed**	Possible major fault on motor driver.

For advice on the management of these alarms see chapter 5.1.

4.5 Advanced functions

The advanced functions are accessible from a 12-switch block that allows selection and activation. Here is a list of the switches, their labels and functions:

1 - "OP H/P": Opening in Man Present (OFF) or impulse (ON)

2 - "CL H/P": Closing in Man Present (OFF) or impulse (ON)

3 - "FORCED": Forced mode inactive (OFF) or active (ON)

4 - "CONF1": High frequency sensor disabled (OFF) or enabled (ON)

5 - "CONF 2": Electromagnetic brake not equipped (OFF) or present (ON)

6 – Not available

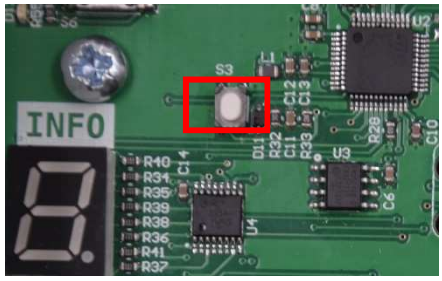
7 - Not available

8 - Not available

<u>These functions can only be activated after the end positions have been set correctly.</u>

<u>IMPORTANT NOTE</u>: To activate any configuration changes, it is necessary to completely restart the card. This can be done:

- Using the white reset button (Chapter 2.1, point 4)
- By powering the card off and on again



4.5.1 « Man present » or « Pulse » Mode

Dip-switch 1 and 2 allow activating command pulse mode respectively on pool open and on close actions. By default, this function is disabled (« Man present mode) so the cover will stop immediately if the user stops giving the command. If on the contrary pulse mode is active, a simple command will be enough to completely open or close the cover automatically. If user wants to stop the motor while cover is moving, he'll have to give a command in the opposite direction.

CAUTION: activating switch 2 in the ON position permanently makes the cover NON-COMPLIANT WITH THE SAFETY STANDARD NF P90-308. It is therefore prohibited in France and strongly discouraged as a general rule. The activation of this function entails the **direct responsibility of the user**.

Section 5. **Intervention and troubleshooting**

5.1 Diagnostic table

(to be carried out only by qualified personnel)

WARNING

Before any work on the box and after switching off the power supply upstream of the cabinet, wait 15 seconds for the capacitors to dissipate their residual energy.

WARNING

In the event of a malfunction in the box or in the event of interventions other than programming mode, manual mode, activate the upstream electrical separation device.

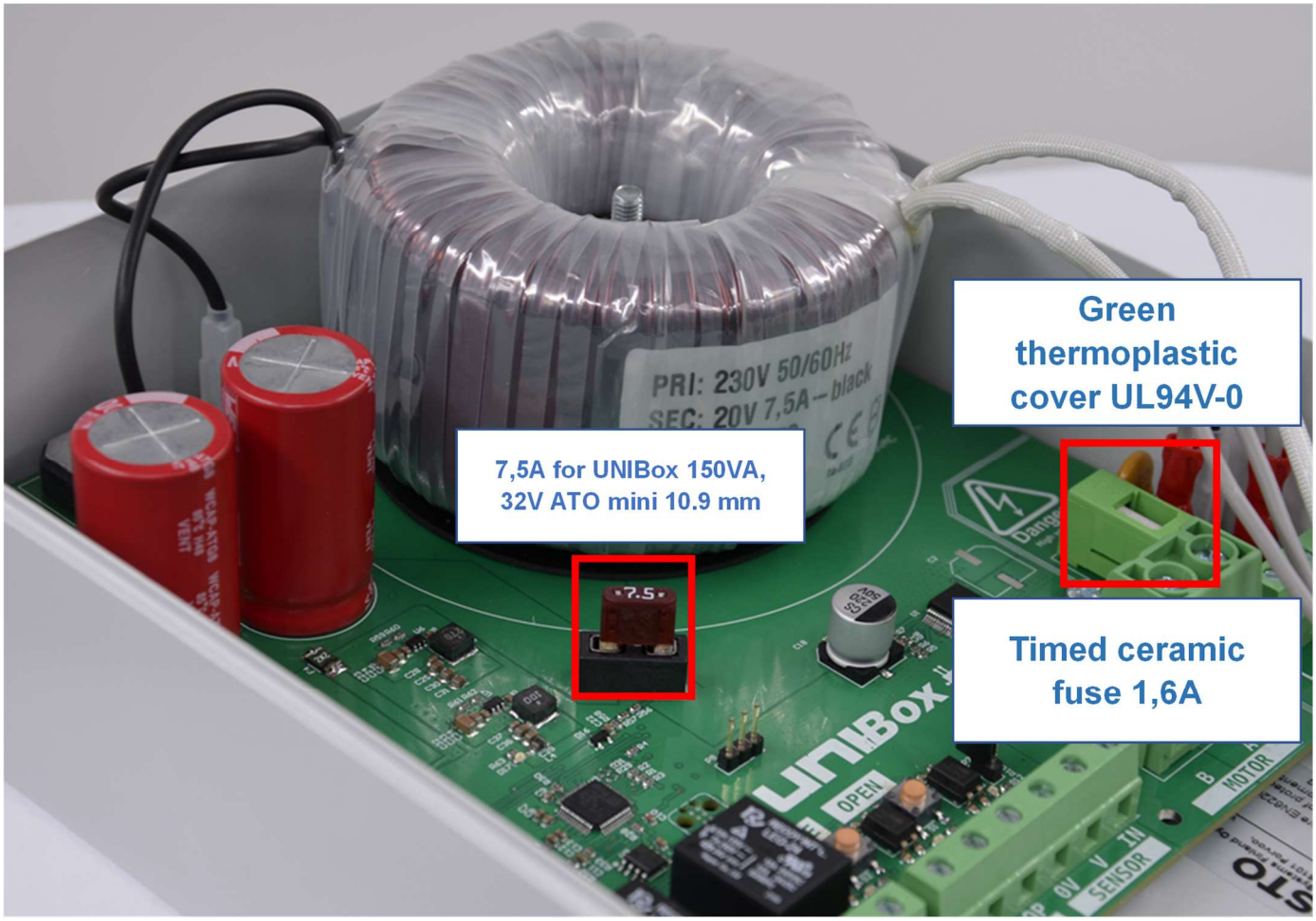
DETECTED PROBLEM	ALARM CODE	TROUBLESHOOTING
Control box doesn't start when switched on by main interruptor.		Check cabling to mains electric network. If cabling is correct and 230V AC monophasic current is present, replace completely the board when error persists.
Switching on the control box by main interruptor, initialisation sequence ends up with error.	0	Switch off the board and restart it; if alarm persists, replace completely the unit.
After first control board start-up correctly done, motor doesn't start even if motor wiring is correct.	None	Activate FORCED mode using the dip switch. This erase eventual previously registered parameters and override limit switches. Program limit switches as described in chapter 4.2.
Alarm 1 appears during limit switch programming.	1	One limit switch has been programmed but motor is running beyond the limit switch setting. This can happen when a wiring mistake is done and key switch is moving the motor in the opposite direction with respect to the standard. Re-check wiring and restart limit-switch programming.
Alarm 2 appears during limit switch programming or normal usage.	2	Motor power cables (grey and red) are not correctly connected or there is a problem in the wiring between the motor and the control box. Check carefully the wiring and try to solve the problem. If no solution is found then motor may be damaged or in shortcircuit. Try to feed the motor with DC battery to have final proof or connect the board to the motor bypassing any other wiring.
Alarm 3 appear during cover movement and motor stops; motor can't restart afterwards.	3	This alarm appears when more than 3 seconds pass between two sensor's pulses. Check sensor wiring first. If no wiring problem is found, activate FORCED mode and check if motor run at normal speed when activated manually. If so, internal position sensor is damaged and motor has to be replaced and sent to UNICUM for service and repair. While waiting for motor replacement, cover can be used carefully in FORCED mode.
Motor doesn't start and alarm 4 is shown.	4	A fuse is broken; switch off completely the board and wait for some 15 seconds. Check all fuses with the tester and replace the broken one (see chapter 5.2). Restart the board and check correct working of the motor. If fuse blows again the motor is maybe stuck.
Motor stops and alarm 8 is shown.	8	Motor is in overload and it has been stopped in order not to damage the board or the motor itself. This alarm appears when more then 3 seconds are passing between two sensor pulses AND an high current level is measured. Acknowledge the alarm, wait for components cooling down and then analyse and solve the cause of the alarm.
Motor works only in one direction.		Disconnect the motor and verify that motor run correctly in both directions by feeding it with 24V DC batteries as closest as possible to the winding tube. In this case move the slat cover in the middle of the pool. Connect again the motor to the board and activate forced mode. If motor runs only in one direction then board must be replaced.
Activating an optional advanced function with a dip switch, nothing happens.		In order to really activate a feature like "soft stop" or "safety loop" you need to completely restart the board by switching it off and on again.

5.2 Fuse replacement

WARNING

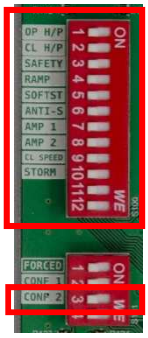
Fuse replacement must be done only when the board is completely switched off and disconnected from mains network. Not respecting this prescription will expose you to a high risk of electroshock. This operation must be performed only by authorized and trained technicians.

Fuse replacement must be done using spare parts following specifications below:



5.3 Full reset of the card

To completely erase the memory of the electronic card you must perform the following procedure:Switch all the advanced function dipswitches to off



- Set all advanced functions dip-switches to OFF
- Enter "FORCED" mode
- Exit "FORCED" mode
- Restart the card using main power switch.

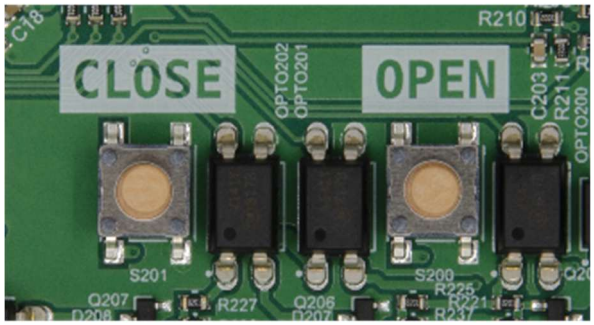
5.4 Onboard motor control during maintenance operations

WARNING

Using these buttons is strictly forbidden when not having direct sight on the pool.

During maintenance and troubleshooting operation, it is possible to operate the motor directly from the control box; this feature must not be used if it's not possible to see directly the pool to oversee cover movements effectively.

« OPEN » and « CLOSE » allow to open and close the cover at any moment, even when no key switch is used.



6 Warranty application

The warranty only applies for normal use, which corresponds to a maximum of **10 minutes** of continuous use. Beyond that, please allow 30 minutes between activations.

The manufacturer disclaims his liability in the following cases:

- Replacement of parts that do not conform to the original parts.
- Installation not in accordance with these recommendations.
- Installation does not comply with current regulations.
- Unserviced control devices causing malfunctions.
- Deterioration due to lightning or other causes.
- Deterioration due to sprinkling or immersion.
- Any other situation which would not be expected in the normal use of the equipment.

Storage temperature of the boxes and associated equipment: between -20°C and +60°C.

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