



EasyNova Control Operating Instruction Book



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1 GENERAL INFORMATION

Before installing or making any interventions on your apparatus, please read carefully and follow the instructions contained in this Operating Book. The information concerning the installation refers to the operational working from the electrical point of view. The mechanical and hydraulic of the EasyMini Control in the minipool shall not be dealt with in this book.

This manual is an integrating part of our product and therefore must be kept apart for possible future reference.

ASTREL S.r.l. (Limited Partnership) reserves its right to make all possible changes that shall be deemed as necessary without any obligation of sending prior notices or performing replacements.

1.1 USER'S LIABILITY

The device object of this Manual Book was built for working without any risks for its scheduled purposes, as long as:

- The assembly, the management, as well as the maintenance are carried out according to the instructions contained in this Manual.
- The environmental conditions and the power supply fall into the specified categories.

Any other use different from as hereinbefore or the performance of changes which have been approved in a specific way by the manufacturer, are to be meant as improper.

The user shall be held responsible for any injury or damage due to an improper use.

In case of breakdown or malfunction of our product, and if you have a current warranty still valid, please contact some authorised technicians only.

The manufacturer cannot be held responsible for possible damage caused by tampered products or improperly fixed products.

1.2 ACCESS TO PARTS UNDER TENSION

This device contains some electrical components, which are always under a constant electrical tension. Therefore skilled and qualified technicians must carry out all maintenance and service operations once they have taken their proper precautions.

As the EasyMini Control is not internally provided with systems for cutting the power supply off, the electrical mains must be equipped with some sectioning and cut-off devices in accordance with what prescribed by the current law in force in the country where the apparatus is to be installed.

Before getting access to the inner locations of it, it is necessary to disconnect the control from the electrical mains through a cut-off, sectioning device.

1.3 SAFETY

This control has been designed and produced by respecting the essential requirements set out by the European Directives n° 73/23 – 93/68 on Electrical Safety and n° 89/336 – 92/31 – 93/68 for Electromagnetic Compatibility.

CEI EN 60335-2-60	Safety of household appliances and similar Part 2: Special standards for hydromassaging vats and "SPA" pools
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1.4 PRECAUTIONS WHEN HANDLING CARD

In order to avoid damage of an electrostatic kind to the card, it is necessary to follow these steps:

- Before getting closer to the control and take the card or any other electronic components with your hands, touch a earthing with your hands so as to discharge the electrostatic charges still present on your body and on your clothes.
- The inner locations of the control must stay in their original positions for as long as possible. Whenever it is necessary to remove the card, please make use of an anti-static film and try not to touch the card.
- Avoid to wrap up your card into plastic, polystyrene or sponge packages which are not of an anti-static kind.
- Definitively avoid handling not-wrapped card from operator to operator (this to avoid some phenomena of electrostatic induction and possible discharges).

1.5 TIPS FOR ASSEMBLYING

To avoid some potential problems throughout the life of your product, you have to:

- Avoid assembling the control in environments with high levels of relative humidity, exposition to direct water flows under pressure, high electromagnetic interferences and/or radiofrequencies.
- Use some cable ends suitable for the terminals as well as the cable section you are using, tighten the cable ends to the terminal and pull the cables softly so as to check their proper tightening.
- Separate for as much as possible the probe cables, the keypads and the sensors of the power connectors and the power supply of the inductive loads.
- Protect your control and the user through some electrical protections, which have been properly dimensioned and respect the current laws in force in the country of assembling.

1.6 CLEANING AND DISPOSAL

Your control is made up of plastic and metal parts. The latter must be disposed of according to the laws in force locally.



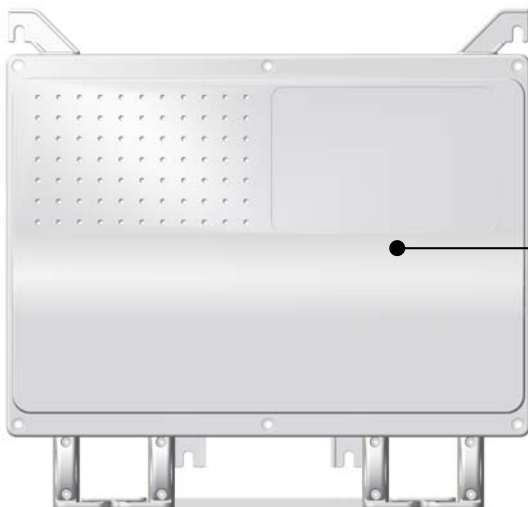
Clean your control externally only by using some neutral detergents and/or water.

2 GENERAL DESCRIPTION

The EasyNova series electronic controls can be applied in all SPAs (or minipools). The SPAs are hydromassaging tubs equipped with multi-user posts, which assemble a heating system, a filtering and water sanitation device.

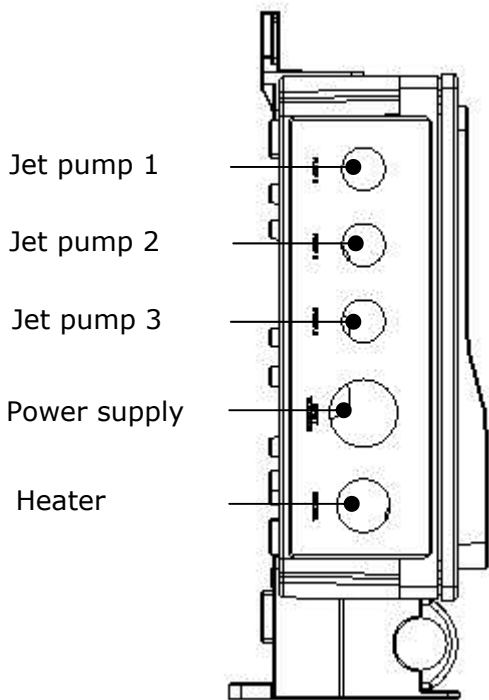
The EasyNova controls can manage functional loads, which can be directed by the user such as hydromassaging pumps, a blower, some lights, and service loads. Moreover the heater and the ozonising device are managed without the user's direct control.

Externally the control looks like a plastic case with an Ipx5 protection degree:

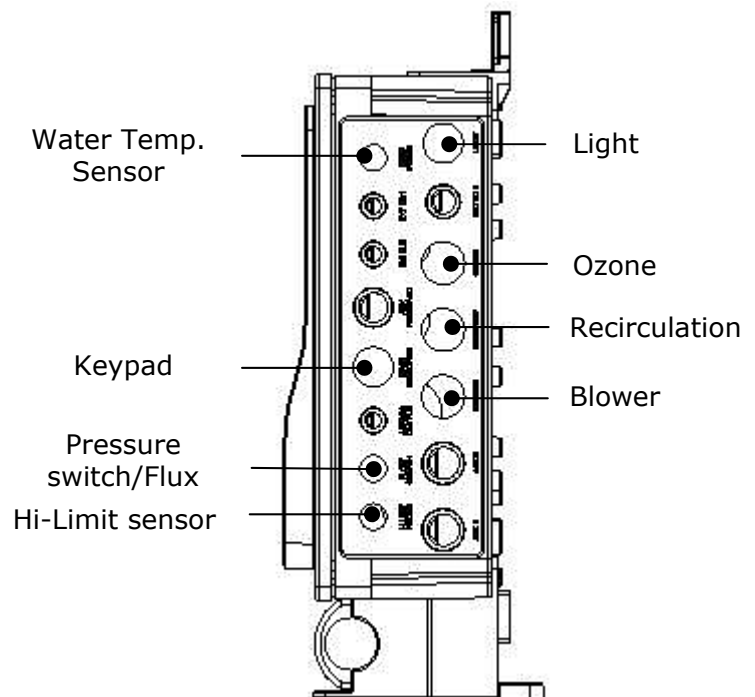


Cover to be removed to get access to the card and the terminals.

Front view



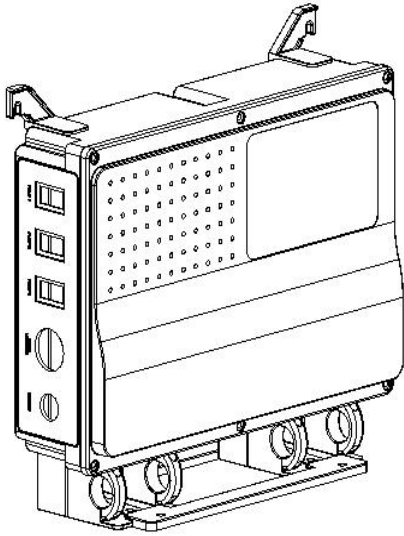
Left side view



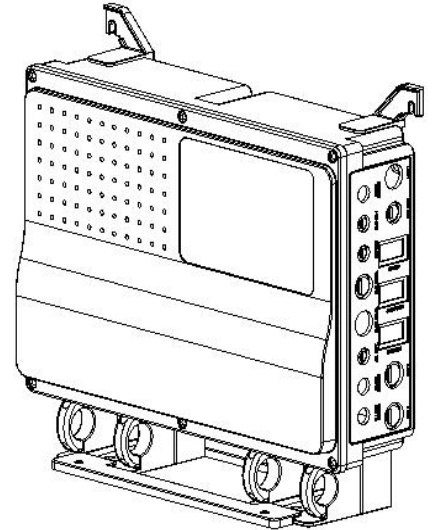
Right side view

As one can see from the layout here above, both sides of the case have some cable inputs for the connection of 230Vac loads, of the keypad and the sensors.

Model with J&J connectors:



Left side view



Right side view

2.1 ACCESS TO INNER LOCATIONS OF CONTROL

To get access to the control inner locations it is necessary to remove the case by unscrewing the 6 screws placed on the corners and in the middle of it with a screwdriver.

3 ASSEMBLY OF EASYNova CONTROL

To install your EasyNova control, follow the steps here below:

- Fixing (on the horizontal or vertical plane)
- Connection of loads
- Connection of ozonising device
- Connection of heater
- Connection of light
- Connection of keypad, temperature probes and pressure/flux switch
- Connection to the local power mains

The order of the steps as above is purely referential and will have to be adapted to your SPA characteristics.

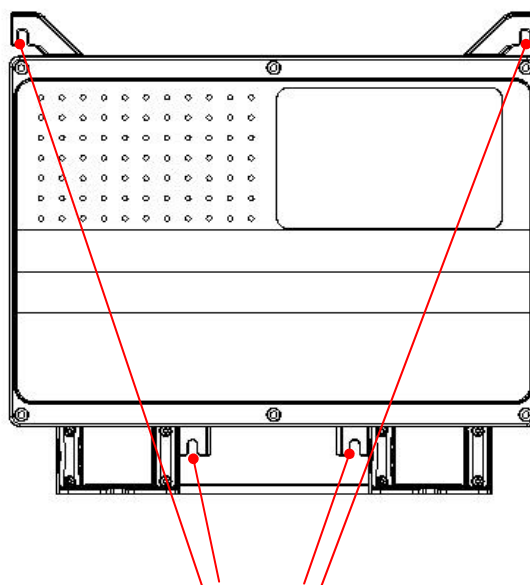
Your control can be fitted either horizontally or vertically by using some screws. The kind and the length of screws must be chosen according to the features and the thickness of the material they will be screwed on.

3.1 FIXING

3.1.1 Fixing without bracket

Before fixing the control on plane you need to make sure that the latter has no waves and is not slanted. Afterwards it is necessary to:

- Position the control without the bracket so as to rest the case bottom on the plane or on the fixing wall.
- Engage the control to the fixing plane by using 4 screws at the correspondence of the proper dentures as shown here below:



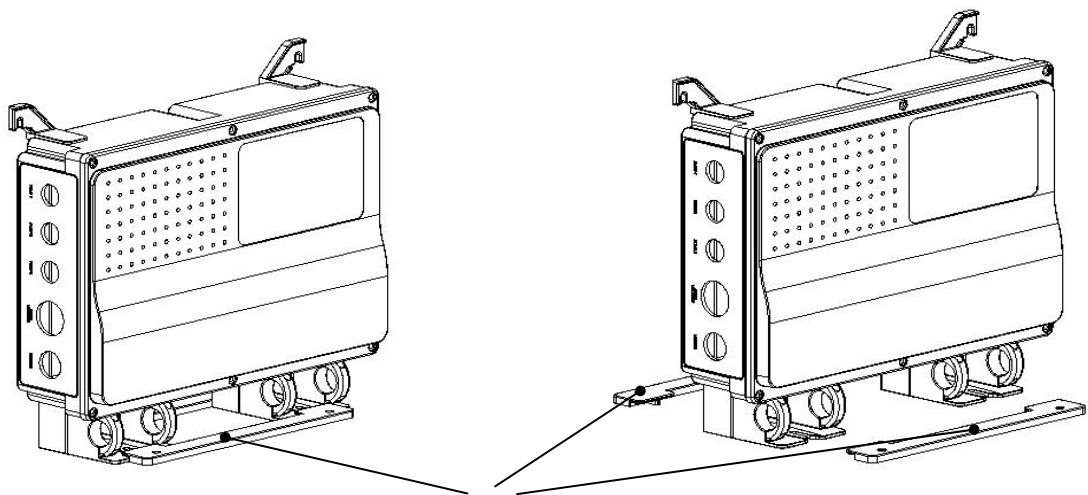
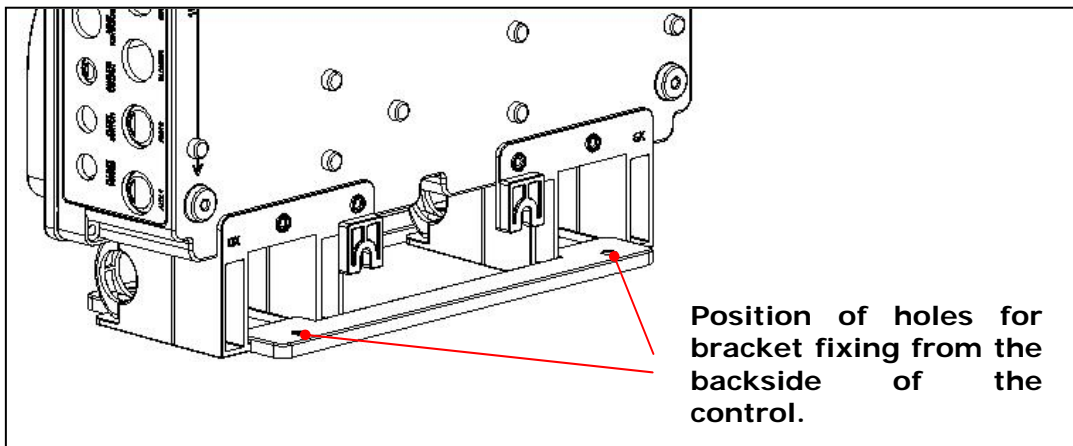
Position of 4 dentures for fixing the case onto the plane

3.1.2 Fixing with bracket

Before fixing the control on a plane, it is necessary to make sure that the latter has no waves and is not slanted. Afterwards it is necessary to:

- Position bracket on the resting plane from the back side of the control and fix it by using 2 screws
- Join the control with the bracket by using the proper dentures
- Fix the control by using 2 screws at the correspondence of the front dentures (or using the second bracket).

The drawings here below show you the correct positioning of the fixing brackets onto the control:



Front view of positioning of fixing brackets

WARNING: We recommend you to plan ahead the fixing of pumps to the spa through anti-vibrating ball-bearings so as to avoid transferring the vibration to the electronic control which, as time goes by, might damage the components.

3.2 CONNECTION TO THE POWER SUPPLY

WARNING:

Read carefully this paragraph before performing the connection of your Control! The lack of observance of what specified in this paragraph might cause serious damage to the Control as well as the other electrical appliances, which have been installed.

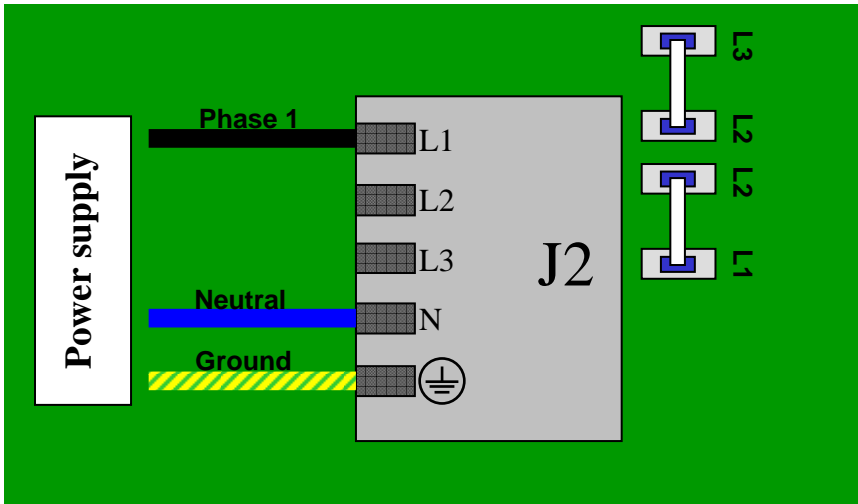
3.2.1 General description

To connect with the power mains, it is necessary to remove the front lid, which keeps your control closed. Slip the power supply cable into the proper cablegland located on the left-hand side of the Control. Connect the terminals of the cable to the terminal located on the lower left-hand side of the card.

The power cable must be always equipped with a neutral cable and a grounding.

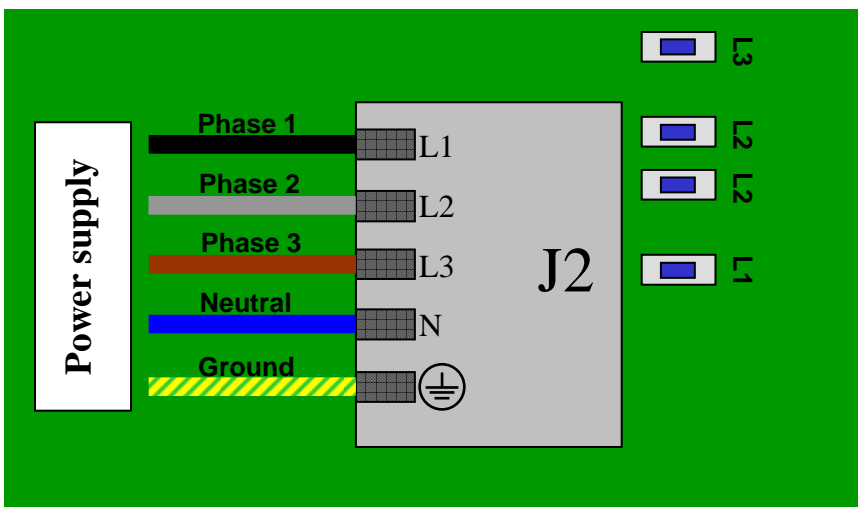
EasyNova control can be fed through the ways listed here below:

- 230Vac Single phase, 1 x 32A + N 50/60Hz



The cables as shown on the left **MUST NOT** be removed.

- 380 Vac three phases, 3x16A + N, 50/60 Hz

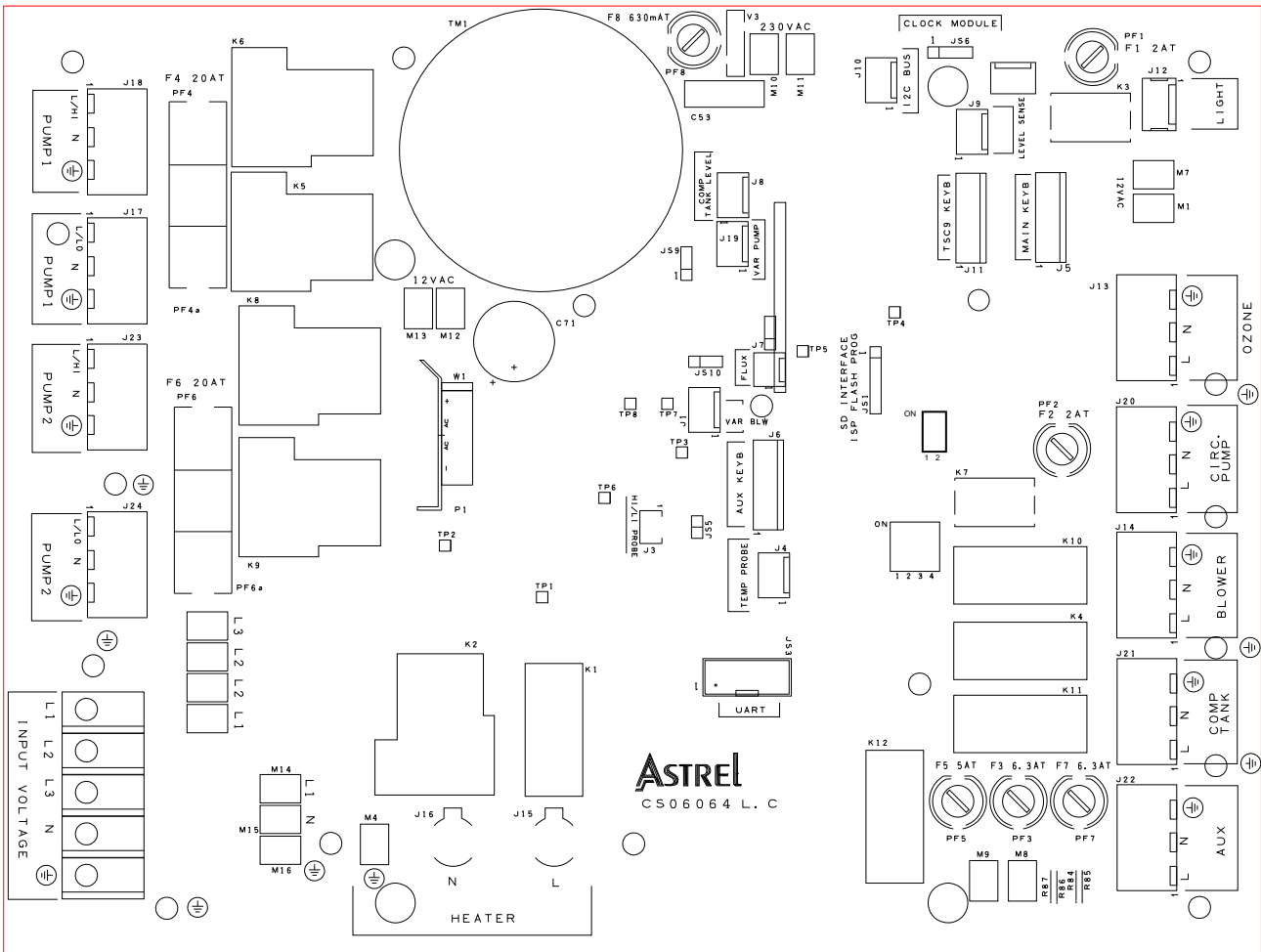


The L1-L2, L2-L3 cable **MUST** be removed.

3.3 CONNECTION OF 230V-AC LOADS

The cables of loads working with the mains tension (230Vac 50/60Hz) must be connected to the inside of the control by slipping them through the cable inputs located on the sidewalls. The load to be connected is specified by the code located at the correspondence of the connector itself. On the left side of the EasyNova control you will find the connection for the jet pumps, the heater and the power supply, while, on the right side, you will find these connection: Blower, Ozonising device, Probe light and Keypad.

The layout here below shows you the arrangement of connectors on the card inside the control:



WARNING

The connectors placed on the card which are not being used are still powered through the mains. In order to avoid shock hazards to people and/or things, and to respect the safety laws, the hole of the cable sockets must be closed with its proper closing lid. If you wish to obtain a fine mechanical holding and protection from water, it is necessary to tighten the nut of the cable gland in an adequate way.

3.4 LIGHT CONNECTION

Your control is equipped with a connecting cable for the SPA lights. It comes out from a cableglend located on the right hand side of the control and gives out a 12Vac, 2Amp power supply (max absorption).

To connect the halogen or LED lamp, simply put it into the bayonet connector placed at the end of the light cable.

3.5 CONNECTION TO EXTERNAL UNITS

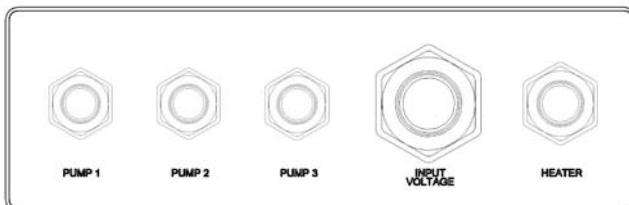
To perform a connection with external units, it is necessary to open the controller so as to get access to the terminals placed inside it on the card. To perform the connections, you will have to slip the cable through the proper cableglend (please read the marked on information under each cable and inside the card, near each terminal).

Follow these steps in order to connect your control:

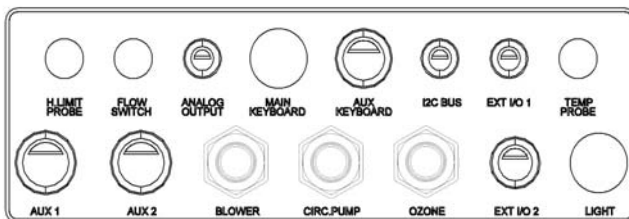
1. Remove the lid (unscrew the 6 screws placed on the corners and in the middle).
2. Read the marked code, with reference to the load you wish to connect.
3. Let the cable slip through the cableglend.
4. Connect the cable to its corresponding terminal on the card (see table below).
5. Reduce the length of the cable inside the container and tighten the external ring of the cableglend so as to block it firmly.

The illustration here below shows you the arrangement of the cableglends for the connection of external units.

Version with cableglend and terminals for inner connections:

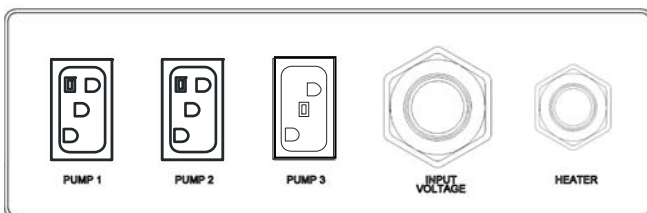


Left side view

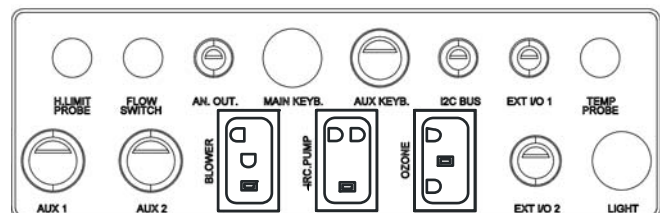


Right side view

Version with J&J external connection connectors:



Left side view



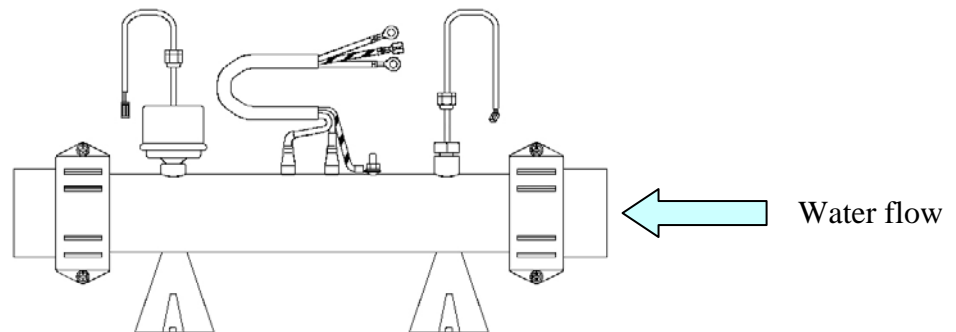
Right side view

3.6 CONNECTION WITH HEATER

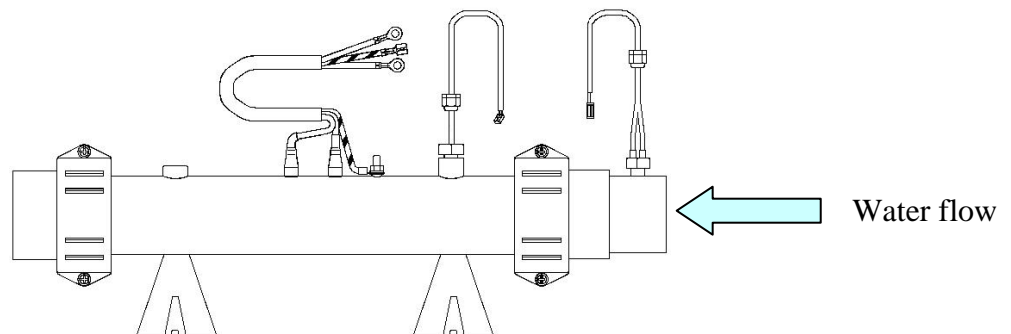
EasyNova control can manage various types of heaters according to the kind of installation and required power.

3.6.1 Available heaters

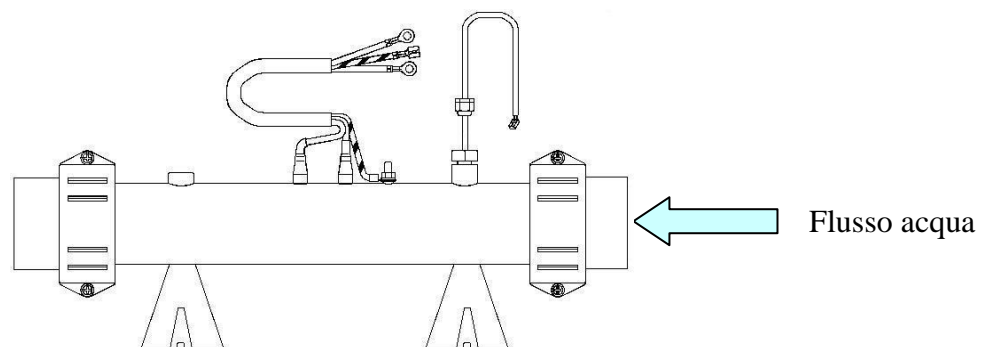
- 2.0kW heaters
- 3.0kW heaters
- 3.6kW heaters



Horizontal heater with pressure-switch



Horizontal heater with flow-switch



Horizontal heater without pressure/flow-switch

ATTENTION: the standard heaters supplied for the utilize with EasyNova control CANNOT work with salt water (ex.: sea water).



The heaters come along with two supporting feet and the following components which have already been assembled:

- Pressure/ Flux switch
- Limit temperature probe (High-Limit)
- Cable for connection to the control (phase, neutral, ground)
- 2" plastic joints for the connection to the hydraulic minipool system.

3.6.2 Fixing on Horizontal Plane

The heater has two supporting feet which are equipped to dentures on each. Position your heater in your selected spot, place four screws in the dentures of the supporting feet, then screw them till you fix the heater to the plane.

The heater must always be positioned with the HI-Limit probe close to the output of the delivery pipe of the filtering/heating pump. If you are using a flux switch equipped heater, please pay attention to the flow direction. There are three arrows, which show the direction the water must flow along on the upper part of the flow-switch.

3.6.3 Connection to the Control

The heater is equipped with a power cable made of three wires of which two of them have an O-ring end and one with faston end. The cables are coded as follows:

- Black wire: phase (O-ring end)
- Blue wire: neutral (O-ring end)
- Yellow/Green: ground (faston end)

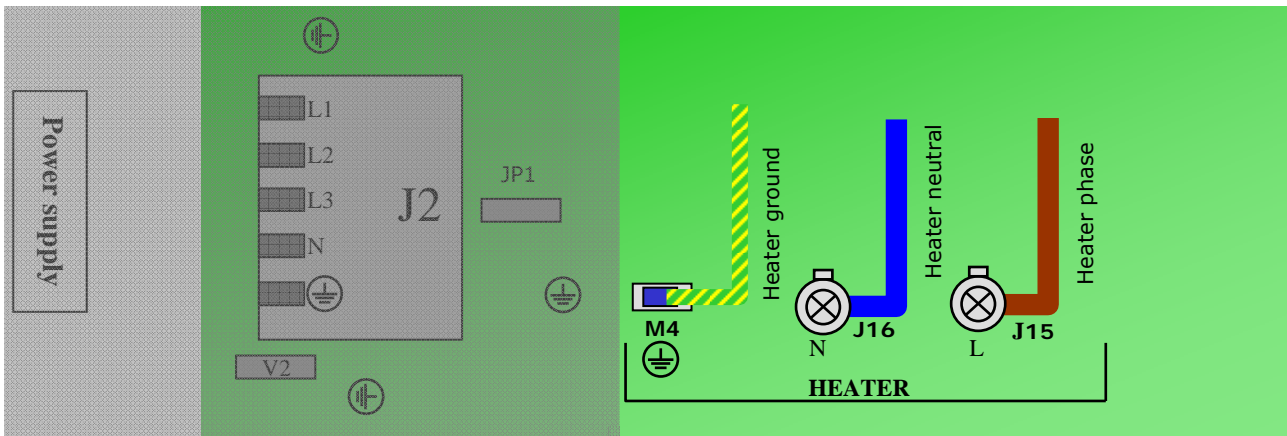
The heater is power supplied by connecting it to the card position inside the EasyNova control. Once you have removed the control front case, slip in the power wire through the corresponding cable gland.

Remove the screw from the J15 (L) terminal and connect the phase wire (black), tighten the screw firmly.

Remove the screw from the J16 (N) and the neutral wire (blue), tighten the screw firmly.

Insert the faston end of the ground wire into the M4 bayonet terminal.

Once you have performed the above-mentioned operations, pull outwardly the wire and then tighten the cable gland.



Apart from the above mentioned connections, it is necessary to connect the pressure/flux switch and the temperature probe by slipping the proper wires through the related and already open holes which are positioned on the right side of the control. After that, insert the connectors located on the wires into their corresponding terminals located on the card as follows:

- Pressure/ flux switch to be connected with the J7 terminal
- Limit temperature probe to be connected with J3 terminal

3.6.4 Connection with Heater Control with Built-in Double Probe

In case you are using the version with the heater which has the function of limit temperature probe (Hi-Limit) and water temperature control probe into a single probe, insert the connectors located on the cables into the proper terminal located on the card. Follows these steps:

- Pressure/ flux switch to be connected with the J7 terminal
- Limit temperature probe /water temperature adjustment equipped with two connectors to be connected as follows:
 - 4-way connector with J4 terminal (TEMP PROBE)
 - 2-way connector J3 terminal (HI-LI)



3.7 CONNECTION MODE OF JET PUMPS

PUMP 1 SINGLE SPEED PUMP			
Connector	Cables colour Pump 1		
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 Ground	Yellow/Green		
PUMP 1 DOUBLE SPEED, PUMP 2 SINGLE SPEED PUMP			
Connector	Cables colour Pump 1	Cables colour Pump 2	
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 Ground	Yellow/Green		
Pump1 J17 L/LO	Black		
Pump2 J23 L/HI		Brown	
Pump2 J23 N		Blue	
Pump2 J23 Terra		Yellow/Green	
PUMP 1 SINGLE SPEED, PUMP 2 SINGLE SPEED PUMP			
Connector	Cables colour Pump 1	Cables colour Pump 2	
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 Ground	Yellow/green		
Pump1 J17 L/LO			
Pump2 J23 L/HI		Brown	
Pump2 J23 N		Blue	
Pump2 J23 ground		Yellow/green	
PUMP 1 DOUBLE SPEED, PUMP 2 SINGLE SPEED PUMP, PUMP 3 SINGLE SPEED			
Connector	Cables colour Pump 1	Cables colour Pump 2	Cables colour Pump 3
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 Ground	Yellow/Green		
Pump1 J17 L/LO	Black		
Pump2 J24 L/LO		Brown	
Pump2 J24 N		Blue	
Pump2 J24 Ground		Yellow/Green	
Pump2 J23 L/HI			Brown
Pump2 J23 N			Blue
Pump2 J23 Ground			Yellow/Green
PUMP 1 DOUBLE SPEED			
Connector	Cables colour Pump 1		
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 Ground	Yellow/Green		
Pump1 J17 L/LO	Black		
Pump2 J23 L/HI			
Pump2 J23 N			
Pump2 J23 Ground			

•



PUMP 1 DOUBLE SPEED, PUMP 2 DOUBLE SPEED PUMP			
Connector	Cables colour Pump 1	Cables colour Pump 2	
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 Ground	Yellow/Green		
Pump1 J17 L/LO	Black		
Pump2 J23 L/HI		Brown	
Pump2 J23 N		Blue	
Pump2 J23 Ground		Yellow/Green	
Pump2 J24 L/LO		Black	
PUMP 1 SINGLE SPEED, PUMP 2 SINGLE SPEED, PUMP 3 SINGLE SPEED			
Cable	Cable	Cable	Cable
Pump1 J18 L/HI	Brown		
Pump1 J18 N	Blue		
Pump1 J18 ground	Yellow/Green		
Pump1 J23 L/LO		Brown	
Pump1 J23 N		Blue	
Pump1 J23 ground		Yellow/Green	
Pump2 J24 L/HI			Brown
Pump2 J24 N			Blue
Pump2 J24 Terra			Yellow/Green

Remark: to identify the connection cables of jet pumps, the colours commonly used in the European market have been taken into account:

- Brown > High Speed
- Black > Low Speed
- Blue > Neutral
- Yellow/green > Ground

3.8 CONNECTION OF VARIABLE SPEED PUMP

EasyNova can manage an Ozonator activated from the software according to the parameters setting. Is possible to connect Ozonators with power supply: 230Vac (default setting) or 12Vac.

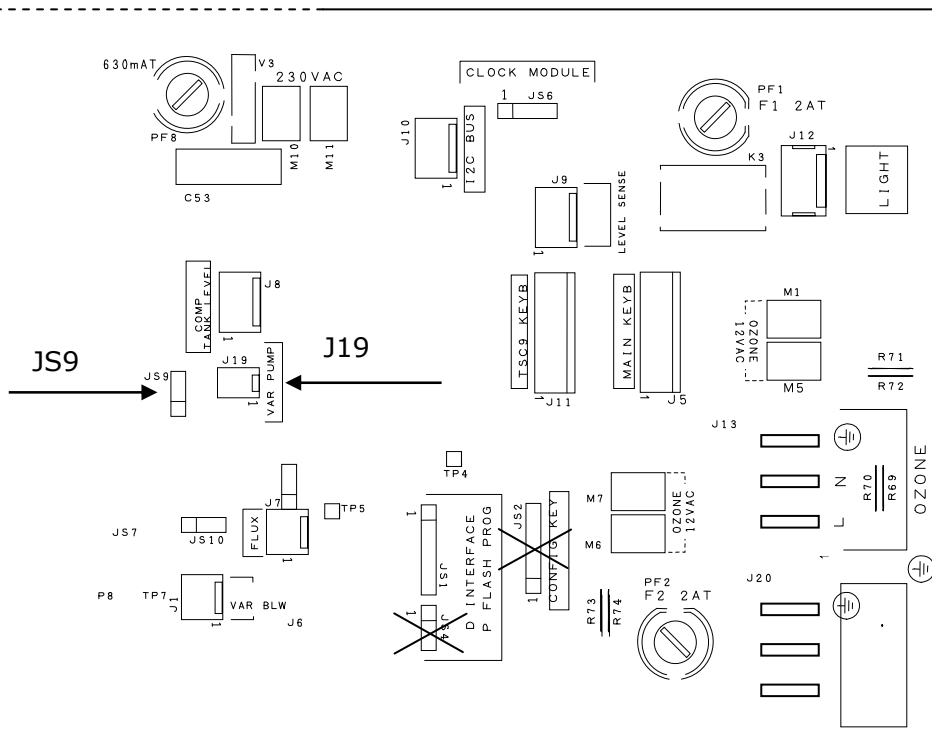
0÷5 V Output:

- **JS9 Cable** > Jumper between pin 1 and 2
- **J19 Cable** > Connection of speed adjuster between pin 3 and pin 4 (GND).
- **J19 Cable** > Enabling Contact of inverter (enable) between pin 1 and 2.

0÷10 V Output:

- **JS9 Cable** > Jumper between pin 2 and 3
- **J19 Cable** > Connection Speed Adjuster between pin 3 and pin 4 (GND).
- **J19 Cable** > Enabling Contact of inverter (enable) between pin 1 and 2.

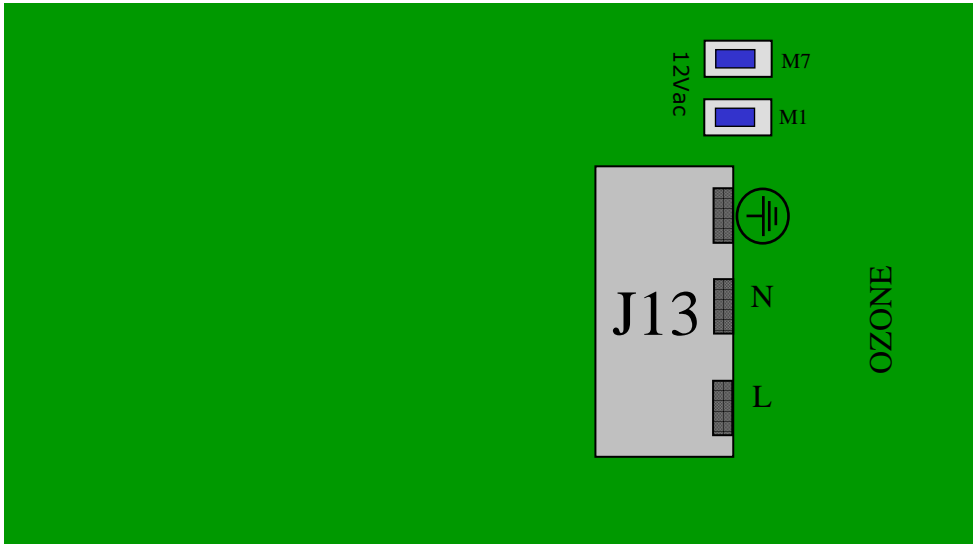
See schematic here below for the arrangement of connectors on the card.



3.10 CONNECTING THE OZONISING DEVICE

Your **EASYNova** can manage an ozonizing device power with AC 230V, which is directly triggered by the software according with the set parameters.

Connect your ozonizing device as shown on the layout here below:



4 FIRST SWITCHING ON

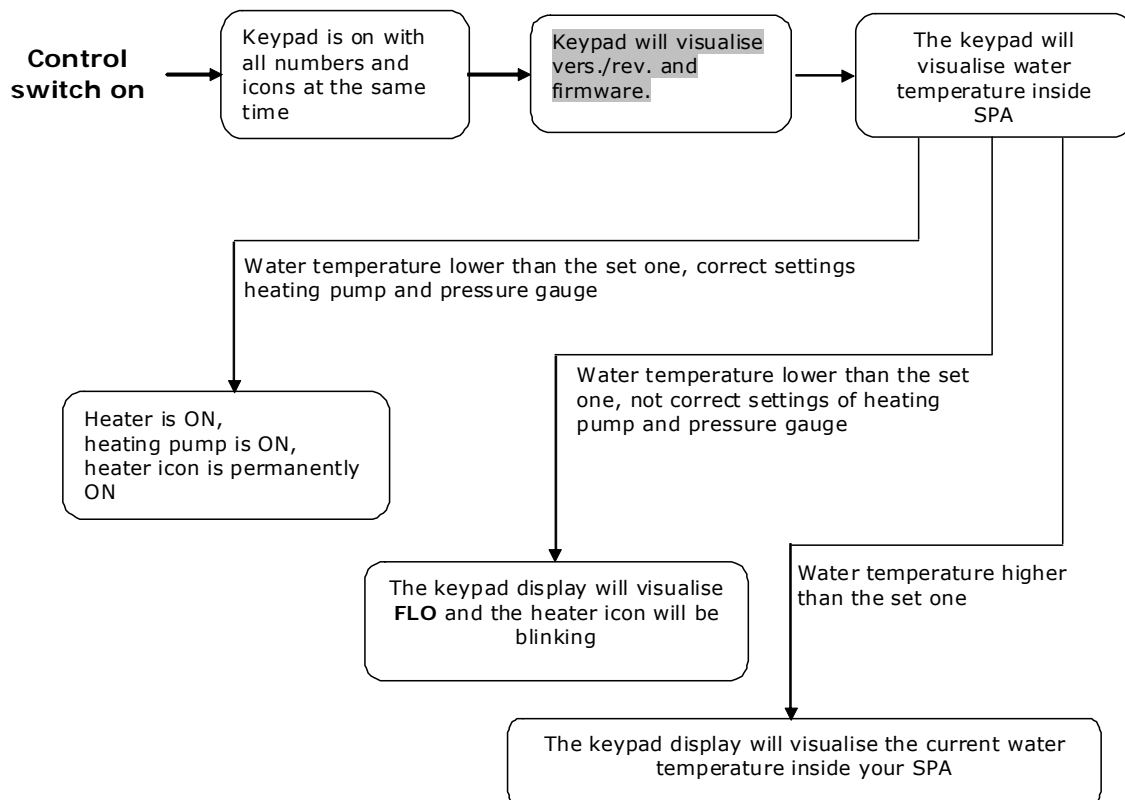
Before feeding your control with power, make sure that:

- There is sufficient water inside the pool
- All valves of the hydraulic system are open
- There are no particles that might obstruct the water flow inside the pipes
- The connections and the configuration settings are congruent and adequate to the connected loads.

REMARK:

Generally, on the first switching on, the water temperature inside your SPA is lower than the set value (the default setting is at 35°C); therefore, as soon as you have started the control after the positive check coming from the self-learning device (see paragraph 8), will be activated the water heating pump and the heater.

The schematic here below sums up the various situations that you might be faced with on the first switching on:



NOTE: Example of visualisation with a standard configuration (two probes: temperature, HI-LIMIT).

5 DESCRIPTION OF KEYPAD AND KEY FUNCTIONS










All EasyNova models can be equipped with main or auxiliary keypads. The models differ for the number of keys and for the presence/absence of the display.

The main keypads allow users, apart from the control of the different functions, also the programming and the settings of a few functional parameters of the control. The auxiliary keypads allow only the management of the ON/OFF functions, which are specified on the keypads itself.

The table here below shows you the function keys available for the various models.

Keys	Keypad Models				
	K-4/ K-89/K-90 Main	K-8 Main	K-9/K-19-K91 Main	K-35 Main	K-3 Auxiliary
Pump1	✓	✓	✓	✓	✓
Pump2	✓	✓	✓	✓	✓
Blower	✓	✓		✓	✓
Light	✓	✓	✓	✓	✓
Econo	✓	✓			
Up	✓	✓	✓	✓	
Down	✓	✓		✓	
Pump3	✓				
Clock	✓				
Purge	✓	✓			

The table here below shows you the icons meaning and lighting modality keys.

Meaning of Icons and Lights		
Icon	On solid	Blinking
	Pump 1 active at high speed	Pump 1 active at low speed
	Pump 2 active at high speed	Pump 2 active at low speed
	Pump 3 active at high speed	-
	Blower active at high speed	-
	Display showing the desired temperature	
	Heater is activated	Heater is not activated but water should be heated up.
	Light ON	-
	Econo function is activated	Econo function is in stand-by
	Filtering or purge function is activated	Filtering or purge function is set to STAND-BY



5.1 CONTROL AND MASTER KEYPAD

As a default visualisation, your keypad display shows you the water temperature inside your SPA.

To access to the available functions or to the menus for setting your Control, it is necessary that the control keypad is in the above-mentioned default state.

According to the keypad you have chosen and the connected loads, your EasyNova Control, once it has performed the self-learning, will automatically configure the function of the keys.

The table here below describes the configurations, which are available for each keypad model.

Model	Nr of Keys	Configuration of Keys	Notes about Loads
K-4 K-89 K-90	10	PUMP1, PUMP2, PUMP3, BLOWER, LIGHT, ECONO, FILTER/PURGE, UP, DOWN, CLOCK	P1, P2 single or double speed. P3 at steady or variable speed. Blower at steady or variable speed.
K-8	8	PUMP1, PUMP2, BLOWER, LIGHT, ECONO, FILTER/PURGE, UP, DOWN.	P1, P2 single or double speed, Blower at steady or variable speed.
K-35	6	PUMP1, PUMP2, BLOWER, LIGHT, UP, DOWN	P1, P2 single or double speed, Blower at steady or variable speed.
K-9 K-19 K-91	4	PUMP1, BLOWER, LIGHT, UP/DOWN	P1 single or double speed, Blower at steady or variable speed
		PUMP1, PUMP2, LIGHT, UP/DOWN	P1, P2 a single or double speed
		PUMP1, LIGHT, UP, DOWN	P1 single or double speed.

5.2 K-3 AUXILIARY KEYPAD (OPTIONAL)

Model	Nr of Keys	Configuration of Keys	Notes about Loads
K-3	4	PUMP1, PUMP2, BLOWER, LIGHT.	P1, P2 single or double speed Blower at steady or variable speed.

The K-3 auxiliary keypad, added to the main keypad, allows you to direct the jet pump loads, the Blower and the Light from another spot of your SPA.



5.3 USE OF UP, DOWN AND UP/DOWN KEYS

The **UP**, **DOWN** keys can be replaced by a single key UP/DOWN according to the keypad which is being used and their function is to increase or decrease the values visualised on the display (Ex.: setting the water temperature in your SPA).

Keypads with separate keys:

UP key

By pressing this key, the visualised value is increased for as much as the setting step.

DOWN key

By pressing this key, the visualised value is decreased for as much as the setting value.

Keypads with single key:

UP/DOWN key

This key integrates the functions of the two previous keys; at each disengagement of the latter, the variation direction is reversed though.

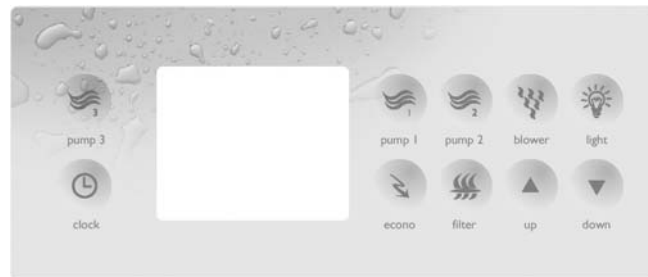
Notes:

- During the setting of the desired temperature values, by keeping on pressing the key, the variation takes place automatically till you release your key or till the extreme limit has been reached.
- Throughout the steps of configuration and setting of parameters, the **UP/DOWN key** performs the function of increasing the value until it reaches the max extreme limit which is followed by the minimum limit and the sequence starts up again. In this case, if you keep the key pressed the automatic variation is not active.

In the pages that follows the expression UP, DOWN keys will be used also with reference to the **UP/DOWN keys**.

5.4 K-4, K-89, K90 MAIN KEYBOARD

It's the mostly equipped model featuring 10 keys and a LCD display on which are normally visualised some information on the state of the system, such as the water temperature or the error messages. Moreover, the icons of the activated loads are visualised on the display.



EXAMPLE OF K-4



EXAMPLE OF K-89



EXAMPLE OF K-90

REMARK: You are advised to use this keypad mode along with the control version EasyNova with Real Time Clock (RTC) and the installed pump 3.

5.5 K-8 MAIN KEYPAD

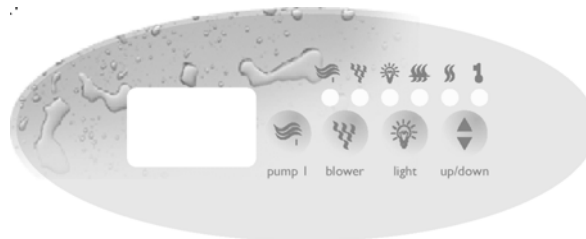
It is equipped with 8 keys and a LCD display, on which are normally visualised the information of the state of the system, such as the water temperature or the error messages. Moreover, in the lower part of the display, you can see some indicators, which show the state of loads. The corresponding icon located on the cover applied on the keypad gives the association with the load itself.



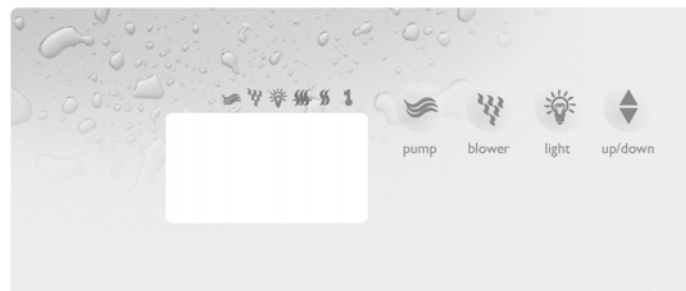
EXAMPLE OF K-8

5.6 K-9/K-19, K-91 MAIN KEYPADS

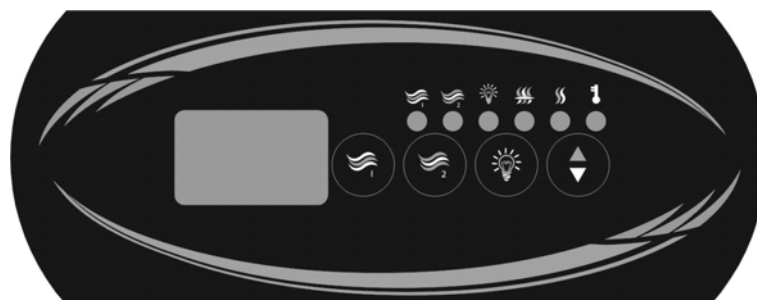
It is made up of 4 keys and a 3-digit and 7 segment LED display:



EXAMPLE OF K-9



EXAMPLE OF K-19



EXAMPLE OF K-91

The possible configurations are the following ones:

Key Configurations	Loads to be Activated
Pump 1, Blower, Light, Up/Down	P1 single or double speed, blower, light.
Pump 1, Pump 2, Light, Up/Down	P1, P2 single or double speed, light.
Pump 1, Light, Up, Down	P1 single or double speed, light.
Pump1/2, Blower, Light, Up/Down	Single speed P1/P2, blower, light

5.7 K-35 KEYPAD

It's made up of 6 keys and a 3 digit, 7 segment, backlighted display:



K-35

The functions that can be managed are the following ones:

Descriptions of Keys	Loads to be Activated
Pump 1	Jet pump 1 single or double speed
Pump 2	Jet pump 2 single or double speed
Blower	Blower
Light	Light
Up	Increases temperature
Down	Decreases temperature

5.8 MESSAGGES AND BLINKINGS

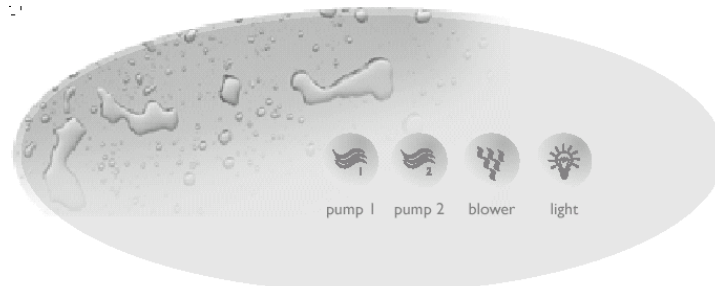
The visualisation on the display depends on the kind of keypad you are using:

Blinking Way	Meaning
BLINKING LED	<ul style="list-style-type: none"> Functioning of low speed jet pumps All functions are temporarily suspended
STEADY LED ON	<ul style="list-style-type: none"> Functioning of high speed jet pumps Other functions are activated (ex: heater).





REMARK: Valid only for K-9/K-19, K-91 and K-35 keypads.

5.9 K-3 AUXILIARY KEYPAD

It features 4 keys and no display. Therefore it is not capable of providing any indication to the user about the state of the control.



K-3

Meaning of Keys			
Keys	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at low speed	Pump 1 active at low speed	Pump 1 is OFF
	Pump 2 active at low speed	Pump 2 active at low speed	Pump 2 is OFF
	Blower is ON	Blower is OFF	-
	Light is ON	Light is OFF	-

5.10 MAIN FUNCTIONS AND CONFIGURATIONS




This section describes the main user's functions of the EasyNova Control. Typically, each function is managed through a specific key, even though, from time to time, it may allow for the control of manifold functions.

The table here below describes the functions assigned to each key according to the configuration and the keypad you have chosen.

- **K-9/19, K-91**

Control configuration: Double speed pump 1 and blower

Overlay: Pump 1, Blower, Light, Up/Down

Meaning of Keys			
Key	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at low speed	Pump 1 active at high speed	Pump 1 is OFF
	Blower is ON at high speed	Blower is OFF	-
	Light is ON	Light is OFF	-



Control configuration: Pump 1, Single speed pump 2

Overlay: Pump 1, Pump 2, Light, Up/Down

Meaning of Keys			
Key	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at high speed	Pump 1 is OFF	-
	Pump 2 active at high speed	Pump 2 is OFF	-
	Light is ON	Light is OFF	-

REMARK: With this configuration, two double speed pumps are not managed.

Control configuration: Double speed pump 1

Overlay: Pump1, Light, Up, Down

Meaning of Keys			
Key	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at low speed	Pump 1 active at high speed	Pump 1 is OFF
	Light is ON	Light is OFF	-

Control configuration: Single speed pump 1

Overlay: Pump 1, Light, Up, Down

Meaning of Keys			
Key	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at low speed	Pump 1 is OFF	-
	Light is ON	Light is OFF	-

Control configuration: Pump 1, Single speed pump 2, Blower

Overlay: Pump 1, Blower, Light, Up/Down

Meaning of Keys				
Key	1 st touch	2 nd touch	3 rd touch	4th touch
	Pump 1 active at high speed	Pump 1 and Pump 2 are active at high	Pump 2 active at high speed	Pump 1 and Pump 2 are OFF
	Blower activated at high speed	Blower is OFF	-	-
	Light is ON	Light is OFF	-	-

REMARK: the same key directs Pumps 1 and 2.

With such a configuration, two double speed pumps are not managed.





Control configuration: Pump 1, Double Speed pump 2

Overlay: Pump 1, Pump 2, Light, Up/Down





Significato dei tasti			
Key	1st touch	2nd touch	3rd touch
	Pump 1 is active at low speed	Pump 1 is active at high speed	Pump 1 is OFF
	Pump 2 is active at high speed	Pump 2 is active at high speed	Pump 2 is OFF
	Light is ON	Light is OFF	-

- K-35

Control configuration: two single-speed pumps and blower

Meaning of Keys			
Key	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at high speed	Pump 2 is OFF	-
	Pump 2 active at high speed	Pump 2 is OFF	-
	Blower activated at high speed	Blower is OFF	-
	Light is ON	Light is OFF	-

Control configuration: two double-speed pumps and blower

Meaning of Keys			
Key	1 st touch	2 nd touch	3 rd touch
	Pump 1 active at low speed	Pump 1 active at high speed	Pump 1 is OFF
	Pump 2 active at low speed	Pump 2 active at high speed	Pump 2 is OFF
	Blower activated at high speed	Blower is OFF	-
	Light is ON	Light is OFF	-

REMARKS:

The jet pump and the blower, if they are not deactivated manually come to a stop automatically after 20 minutes.

6 MAIN CONTROL MENU

The EasyNova control manages different functions by means of a menu featuring the entries specified in the table here below:

Meaning	Display Visualisation
Control configuration through keypad	cFn (configuration)
Start-up of self learning procedure	ALn (AutoLearn)
Restore of default settings	rAF (reset As Factory)

To access the functions that manage the control, follow these steps:

- Press the key LIGHT and keep on pressing for at least 12 seconds
- Wait for the visualisation of the first entry in the menu (cFn)
- Scroll down the menu entries by using the keys **UP/DOWN**
- Select the desired sub-menu by confirming through the key **LIGHT**
- Follow the procedure related to the selected sub-menu and described in the corresponding paragraphs they are associated with.

7 CONFIGURATION OF EASYNova CONTROL

The configuration operation consists of the following steps to be performed according to the specified sequence:

- Configuration of the main keypad model.
- Configuration of parameters.
- Performance of auto-learning procedure (manual or automatic start-up).
-

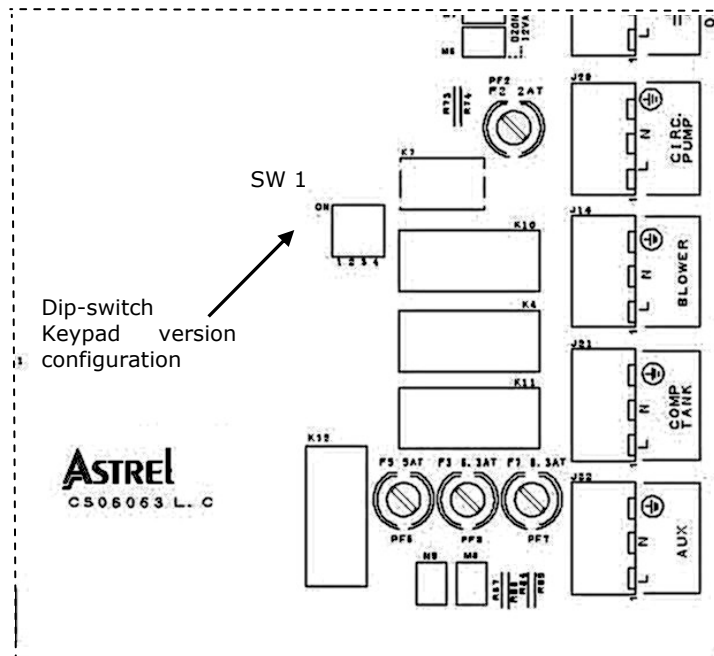
7.1 MAIN KEYPAD CONFIGURATION

On EasyNova control there is a dip-switch (see picture below, SW1) to select the keypad version. The electronic control has the factory settings with dip-switch set in OFF position and **default keypad K-4** (set as parameter on control memory).

Changing the dip-switch settings, it's possible to install a different keypad instead of the default one (see the table below).

Dip n° 1 position	Dip n° 2 position	Dip n° 3 position	Dip n° 4 position	Installed Keypad
OFF	OFF	OFF	OFF	DEFAULT
ON	OFF	OFF	OFF	K-4, K-89, K-90 (10 keys)
OFF	ON	OFF	OFF	K-8 (8 keys)
ON	ON	OFF	OFF	K-35 (6 keys)
OFF	OFF	ON	OFF	K-9/K-19, K-91 (4 keys)

Warning: If the kind of keypad is not properly selected, the electronic control will not work correctly.



REMARKS: The default keypad can be modified only through the programming key.

•



7.2 CONFIGURATION OF CONTROL PARAMETERS

The parameters allowing for the configuration of the control are stored by the EasyNova control.

The updating of parameters can be carried out in two ways:

- through the **programming key**
- through **keypad**.

7.2.1 Configuration through Programming Key

The programming key is a device that can be connected to the control by the proper connector (see UART on the card). It permits the updating of all parameters in a single operation as well as the updating of the firmware of the EasyNova control.

The programming key is equipped with a series of dipswitches, which allow defining the values of the parameters that one may want to insert on the EasyNova control.

The operations, which are necessary for the updating through the programming key, are the following:

- Setting of dip-switches on the key
- Connection of the key to the EasyNova control (which must be switched off)
- Switch on of EasyNova control (see **REMARK 1**)
- Waiting for the configuration operation to be over.

REMARK 1: on switching on, the EasyNova control checks if the programming key is connected and starts automatically the download of parameters from the key to the memory of the EasyNova control.

REMARK 2: the previous values of the configuration parameters are cancelled and overwritten.

Warning: In order to utilize the programming key, refer to the specific manual.



7.2.2 Configuration through Keypad

The parameters of the EasyNova control can also be configured through the keypad by entering the proper menu (**cFn**).

Warning: the keypad model stored in the memory cannot be modified through this procedure (see configuration through programming key).

To access the configuration menu (cFn) and enter parameters:

- Press the key **LIGHT** and keep on pressing it for at least 12 seconds
- Wait for the visualisation of the first menu entry (**cFn**)
- Digit the proper password to access the desired menu
- Scroll down the parameters and pass to the next option by using the keys **UP/DOWN**
- Select the visualised option by confirming with the key **LIGHT** (see **REMARK 2**)
- Scroll down all parameters with the key **LIGHT** until you exit from the configuration menu (the control is started again) in order to store the set values.

REMARK 1: once 20 seconds have elapsed without pressing any key, your keypad will exit from the configuration menu without storing the possible set values.

Setting Parameters through Keypad (cFn)

The parameters are classified as:

- **Installer parameters (I):** these are those that can be accessed by an installing or maintenance workman so as to set the working according to the final user's needs.
- **Manufacturer parameters (C):** it configures the default settings according to the building characteristics of the SPA.

By selecting the option "cFn" from the configuration menu, you will be asked a password which allows you to access, according to the code you have entered, the desired list of parameters (**I** or **C**), and change the settings they are associated with.

Ensemble of Parameters	Password
Installer (I)	123
Manufacturer (C)	357

According to the chosen menu (**I** or **C**), the parameters will be displayed with the following suffix:

- Manufacturer: mnemonic $C_y x$ (y is a rising index, x is the parameter value)
- Installer: mnemonic $I_y x$ (y is a rising index, x is the parameter value).

To shift from one parameter to the other press the key **LIGHT**, while to change its value press **UP/DOWN**.

The exit from the configuration procedure and the storage of settings takes place after you have confirmed (key **LIGHT**) the value of the last parameter.

REMARK: after 20 seconds of idle time of the keypad, you automatically exit from the configuration menu without storing some possible parameters, which have been previously entered.



7.3 VALUES AND MEANINGS OF PARAMETERS

The following table describes the meaning of each parameter:

- **configuration through key:**
 - Dip-switch of the key, definition of the value that can be set
 - Dipswitch position and value of the parameter associated with each dipswitch.
- **configuration through keypad:**
 - The parameter suffix visualised on display
 - The value displayed on the keypad and its meaning
-
- **REMARK:**The default values for each parameter are highlighted in **bold**.

Parameter Description	KEY			KEYPAD	
	N° dip switch	OFF	ON	Parameter	Value to be entered
Nr of temperature probes	1	1	2	C1 x	0 = 1 probe 1 = 2 probes
Tub level sensor	2	Not present	Present	C2 x	0 = NOT present 1 = present
Time of sensor intervention	3	1 sec	25 sec	C3 x	0 = 1 second. 1 = 25 seconds
Stand-By priority	4	High	Low	C4 x	0 = high 1 = low
Temperature unity	5	°C	°F	I1 x	0 = °C degrees 1 = °F degrees
Current max (see note1 and note 3)	6	16 A	32 A	I2 x	0 = 16 A 1 = 32 A
Ozonising device	7	See table 1		C5 x	See table 1
	8				
Nr of pumps	9	See table 2		C6 x	See table 2
	10				
Detection of water flow (see note 2)	11	Pressure/Flow switch	HL Probe	C7 x	0 = Press./Flow. 1 = HL probe
Variable speed Pump (P3)	12	Not installed	Installed	C8 x	0= not installed 1= installed
Variable speed Blower	13	Not installed	Astrel	C9 x	0= generic 1 = Astrel
Level sensor function	14	Loads stop	Compensation tub	C10 x	0= loads stop 1= compensation tub
Remote heater	15	NO	YES	I3 x	0= Not remote 1= Remote
Heating and sanification pump	16	P1	CP	C11 x	0= P1 1 = CP
Kind of sanification	17	Filtering	Purge	C12 x	0= Filtering 1= Purge
CP activation	18	All times	Sanification and Heating	C13 x	0= Always 1 = Sanification and Heating
Keypad model	23, 24	See table 3			



Note 1: Starting from the version firmware 2.0 onward, the configuration of current occurs by 2A step by step increases, within a 10-32 ampere range which can be selected through the up, down keys. At step I2, therefore, the value of configurable current will be visualised. The dip 6 of the programming key is not used.

Note 2: Starting from the version firmware 3.0 onward, the parameter C7 is used to configure the function of waterflow detection with pressure/flow switch or without it (it is thus detected by the HL probe).

Note 3: Starting from the version firmware 3.2 onward, setting I2=0, the management of current consumption is excluded (Suggested setting with threephase power supply).

7.3.1 Configuration of Ozonising Device:

- The Nr. 7-8 dip-switches are used to choose the ways of ozonising device activation.

Table 1: Setting of Ozonising Device Working				
Filtering/Heating Pump	Switch 7	Switch 8	Value C5 on display	Ozonising Device
At low speed Pump1	OFF	OFF	0	Activated only during filtering
	ON	OFF	1	Activated during filtering and heating
With re-circulation pump (CP)	OFF	OFF	0	Activated only during filtering
	ON	OFF	1	Always activated EXCEPT FOR when heating is ON
	OFF	ON	2	Always activated

7.3.2 Configuration of Pumps:

The Nr.9 and 10 dip-switches allow you to select the number of pumps, which are managed by your Control:

Table 2: Setting of Number of Pumps			
Switch 9	Switch 10	Value C6 on Display	Number of Pumps
OFF	OFF	1	1
ON	OFF	2	2
OFF	ON	3	3

The default settings (**in bold**) related to the number of pumps make use of 2 double speed pumps.

REMARK: even though the default settings meet the necessary requirements, it is **advisable** to go through the self-learning procedure so as to let the system adopt the current values absorbed by the loads.

7.3.3 Configuration of default Keypad with programming key:

Table 3: Setting of Keypad		
Switch 23	Switch 24	Kind of Keypad
OFF	OFF	K-9/K-19, K-91
ON	OFF	K-35
OFF	ON	K-8
ON	ON	K-4, K-89, K-90



7.4 AUTOMATIC AUTOLEARNING EXECUTION

Automatic autolearning

At the end of the **manufacturer** parameter settings, automatically starts a countdown procedure (duration 10 sec) after of which, starts an autolearning procedure. It's possible to cancel the autostart by pressing any key during the countdown. The pressing of a key causes an immediate reset of the control.

Manual autolearning

In order to start the autolearning manually, see details in paragraph 8.

8 SELF LEARNING / SELF TESTING

It allows you to determine the exact configuration of the loads connected to the EasyNova control as well as their current absorption. It is used in the procedure for configuring the control (see proper section). The self-learning start-up can be activated only after the configuration of the EasyNova control has been achieved.

8.1 PREPARATION OF CONTROL FOR SELF LEARNING

Before starting the Autolearning, is necessary to make the procedure described:

- Configure the control through keypad or programming key; for the correct performance of the cycle, it is necessary to insert the number of pumps, which are directly fed y the EasyNova control.
- Make sure that the minipool is full of water.
- Make sure that the pressure/flux switch (if installed) is connected to the EasyNova in a correct way.
- Make sure that your hydraulic circuit has no air bubbles inside it.

8.2 AUTOLEARNING FUNCTION ACTIVATION

The self-learning function can be activated automatically, once you have performed the configuration through the keypad, programming key, or manually through the configuration menu.

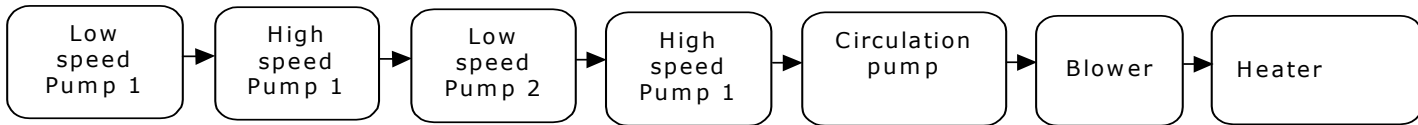
Automatic triggering of cycle:

- Wait for the timing step to be over after having performed the configuration of the manufacturer's parameters (see related paragraph).

Manual triggering of cycle:

- Enter the configuration menu (see section " Configuration through keypad").
- Select the "ALn" option
- Activate the function by pressing the LIGHT key for 5 sec.

Triggering sequence of outputs:



Every time that the function is being performed on the display keypad the blinking "ALn" message will be visualised.

The following situations will take place at the end of the procedure:

- End with positive result: the EasyNova control is automatically re- started and the new detected settings become active.
- End with negative result, errors and inadequacies: an error code is visualised on the display of the keypad (see table below).
- When, on user's command, by pressing the **LIGHT** key for 1" (when time is about to finish, the control is reset again so as to take the initial configurations back to use again).

Table of detective errors:

CODE VISUALISED ON THE KEYPAD	KIND OF DETECTED ERROR
Er 1	Heating circuit: the configured pump, which is activated for heating and filtering, is not the one detected during self-learning.
Er 2	Connection error of cabling related to the speed of loads (Ex.: two-speed jet pump).
Er 3	<ul style="list-style-type: none"> • Connection error of the loads to terminals or non-coherent configuration with what detected during self-learning. • Heater is not detected when configured as electric heater (non present).

9 USER'S MAIN FUNCTIONS

This section illustrates the functions that the final user can enter or activate in the normal use and it describes the details of the operations as well as the interaction ways of the user himself through keypad.

9.1 WATER TEMPERATURE ADJUSTEMENT

The control can manage the heating functions (activation of heater/circulation pump) so as to adjust the water temperature inside your SPA and it keeps it within a $\pm 0,5^{\circ}\text{C}$ (1°F) range with respect to the entered set-point.

Characteristics of user's parameter SPA water temperature set-point:

- Possible range of values: min. 15°C (59°F), max. 40°C (104°F).
- Setting step: 0.5°C (1°F).
- Default value: 35°C (95°F).
- Switch on value: the last entered value is restored.

Temperature Setting Operations

The user decide if want or not to warm the water inside the SPA by setting the desired value of temperature.

With you keypad in a "normal" state (water temperature visualisation):

- First touch of the **UP/DOWN** keys determines the visualisation of the temperature value, which has been previously set, and the led/icon associated with it will be ON permanently.
- It is now possible to change the value through the **UP/DOWN** keys.
- The keypad display goes back to the "normal" visualisation if no key is pressed for 5 sec.



9.2 HYDROMASSAGING PUMPS

Users can straightforwardly direct the jet pumps through keypad. The triggering mode varies if it is one speed or two speed pumps.

9.2.1 Switch ON/OFF Keys of Single or Double Speed Pump

Users can trigger the jet pump by pressing the proper key.

The tables here below show the effect of the triggering of the various keys with reference to the loads and associate their message on the display.

TABLE OF DOUBLE SPEED PUMP TRIGGERING WITH A KEY			
Previous state	Event	Future state	Icon/Led
OFF	Touch of key	LOW SPEED	Blinking
LOW SPEED	Touch of key	HIGH SPEED	Permanently ON
HIGH SPEED	Touch of key	OFF	OFF

TABLE OF SINGLE SPEED PUMP TRIGGERING WITH A KEY			
Previous state	Event	Future state	Icon/Led
OFF	Touch of key	HIGH SPEED	Permanently ON
HIGH SPEED	Touch of key	OFF	OFF

TABLE OF 2 SINGLE SPEED PUMP TRIGGERING WITH A KEY			
Previous state	Event	Future state	Icon/Led
P1 OFF/P2 OFF	Touch of key	P1 ON/P2 OFF	Blinking
P1 ON/P2 OFF	Touch of key	P1 ON/P2 ON	Permanently ON
P1 ON/P2 ON	Touch of key	P1 OFF/P2 ON	Blinking
P1 OFF/P2 ON	Touch of key	P1 OFF/P2 OFF	OFF

REMARK:

- The jet pumps deactivate automatically after 20 minutes of continuous working (if the user before does not switch them off).
- Both the presence and the configuration of the water sensor can affect the working of pumps.

9.2.2 Switching ON/OFF of Variable Speed Pump

If installed and correctly configured (see paragraphs Control configuration) the output for directing a variable speed jet pump can be activated.

In this way your control send a command signal to the speed adjustment system through the J19 output.

TABLE OF VARIABLE SPEED PUMP 1 TRIGGERING			
Previous state	Event	Future state	Icon/Led
OFF	Touch of Pump 1	60% speed	ON
ON	Touch of Pump 1 (< 1 sec)	OFF	OFF
ON	Touch of Pump 1 (> 1 sec)	Speed variation	Blinking

REMARK: the function is managed only through K-4 keypad.



9.3 BLOWER

Users can activate directly the Blower through the key **BLOWER** on the keypad with which it is possible to activate/deactivate its working.

If the Blower is not deactivated manually, it will go OFF automatically after working 20minutes.

9.3.1 Switching ON/OFF of Variable Speed Blower

If installed and correctly configured (see paragraphs Control configuration) the output for directing a variable speed blower can be activated.

In this way your control send a command signal to the speed adjustment system through the J1 output.

TABLE OF VARIABLE SPEED BLOWER TRIGGERING			
Previous state	Event	Future state	Icon/Led
OFF	Touch of Blower 1	60% speed	ON
ON	Touch of Blower 1 (< 1 sec)	OFF	OFF
ON	Touch of Blower 1 (> 1 sec)	Speed variation	Blinking

REMARK:

the speed variation occurs within the 30% - 100% range of the maximum foreseen value. Once the maximum value has been achieved, the speed will remain constant even if you continue pressing the key. To reverse the direction, you need to disengage the key and then press it again.

9.4 LIGHT

Your Control allows you to manage a light through the key **LIGHT** on the keypad.

TALE OF LIGHT ACTIVATION			
Previous state	Event	Future state	Led
OFF	Touch of a key	ON	ON
ON	Touch of a key	OFF	OFF

REMARKS:

- With the level sensor fitted on and correctly configured, the light can be activated only with a sufficient amount of water.
- The light goes OFF automatically after having worked continuously for 2 hours (if the user has not switched it off before).

9.5 ECONO ENERGY SAVING MODE (K-4, K-8, K-89, K-90)

The function **ECONO** allows you to benefit from an energy saving mode by keeping the water temperature at 10°C (50°F) below the value entered by the user. In any case, the minimum permitted temperature for water is 15°C.

The user by means of the key **ECONO** fitted on the K-4, K-8, K-89, K-90 keypad models controls such a function.

The state of the Energy Saving Mode is highlighted by the corresponding icon/led on the keypad as follows:

- **ACTIVE:** icon/led is ON;
- **STAND-BY:** icon/led is blinking. The Energy Saving Mode goes to a Stand-by position when the user activates a load and starts up again after 40 minutes from the last load which has been switched off.

REMARK: When the function is activated, it's automatically repeated every 24 hours.



9.5.1 Programming the ECONO Function

The user can customise this mode by entering the following parameters during the activation step:

- Parameter **Ed** (Economy Duration): shows the duration in hours of the function:
 - > range of possible values: minimum 0 hrs, max 24hrs (always active);
 - > setting step: 1h;
 - > default value: 10h;
 - > Switch-on value: the last entered value is restored.
- Parameter **Es** (Economy Start): shows the start up moment and according to the fact that the card is equipped or not with the RTC optional card, you can have the following settings:
 - > **Card with RTC**: you can enter the start-up time
 - > Proposed value: last value entered.
 - > **Card without RTC**: you can enter the start-up delay; in such a case:
 - > range of possible values: minimum 0 hrs, max 23 hrs (immediately active);
 - > setting step: 1h;
 - > default value: 0h;

9.5.2 Setting and Start-up of Energy Saving Mode

It consists of the following steps:

Press the key **ECONO**; your display will visualise **Edx** (**x** indicates the value of the duration in hours).

Set the delay with the keys **UP/DOWN**.

Confirm the value with the key **ECONO**.

Set the time or the delay with the keys **UP/DOWN**; if you set the time, you will have to set the hour first, then the minutes (See paragraph "Clock Function"). The value is always confirmed with the key **ECONO**.

9.6 CLOCK FUNCTION

This function is controlled by the user through the key **Clock**, which helps you visualise and set the time on the clock of your EasyNova Control.

The function *Clock* can be controlled only through the K-4, K-89, K-90 keypad model in conjunction with the EasyNova Control equipped with the RTC optional card RTC (real time clock).

9.6.1 Visualisation of Time

The time is visualised on the display; alternatively to the normal temperature or alternatively to the messages of error in cases of detected anomalies.

9.6.2 Time Setting

Carry out the following steps, as listed here below:

- Keep on pressing the key **Clock** for 5 seconds until your display visualises the time digits in a blinking way;
- By using the keys **Up** and **Down** on the keypad, choose your desired time;
- Press the key **Clock** to change the minutes;
- By using the keys **Up** and **Down**, choose your desired minutes;
- Press for the third time the key **Clock** so as to store the new settings.



10 USER'S SECONDARY FUNCTIONS

This Section describes the accessory functions available on the EasyNova Control.

10.1 LOCKING OF KEYPAD (K-4, K-8, K-89, K90)

This function is available only with the K-4, K-8, K-89, K-90 keypads.
It has two working modes:

- **Lock P** (partial locking): it allows you to activate the loads Jet pumps, Blower, Light.
- **Lock F** (total locking): no key is enabled.

Every time one of the two modes is activated, the locked keypad icon is lit up permanently.
When pressing one of the locked keys, your display will visualise **LockP** or **LockF**.

10.1.1 Partial locking keypad

The partial lock of the keypad is activated by following these steps:

- Press continuously the key **ECONO**; after 2 seconds from the beginning, the locked keypad icon will start blinking.
- After keeping on pressing for 3, your display will visualise **LocP**; the function becomes active and the locked keypad icon keeps on lighting permanently;
- Disengage the key

REMARKS:

- If there is no power, the keypad lock is cancelled.
- If your keypad is partially locked, you cannot activate the total lock without unlock it beforehand.

10.1.2 Total locking Keypad

Follow these steps and your keypad will be locked totally:

- Keep on pressing the key **ECONO**; after 2 seconds from the beginning, the locked keypad icon starts blinking.
- After keeping on pressing for 3 seconds, your display will visualise **LocP**; your function becomes active and the locked keypad icon is lit up permanently;
- Keep on pressing the key;
- after 5 seconds of key holding, your display will visualise **LocF**; your function becomes active;
- Disengage the key

To unlock the keypad, you have to press the key **ECONO** and keep on pressing it for at least 5 seconds. If one of the keys is engaged when the total lock has been activated, your display will visualise **LocF** for 5 seconds.

NOTES:

1. If there is no power, the lock is cancelled.
2. The icon of locked keypad is not activated on the K-8 keypad.

10.1.3 Unlocking of keypad

To unlock the keypad (partial or total):

- Press and keep on pressing the key **ECONO**; when pressing the related message will be visualised (**LocP** o **LocF**)
- 2 seconds after having pressed the key, the locked keypad icon starts blinking.
- 5 seconds after having pressed the key in a continuous way, the function is deactivated, the icon goes off and the message "**ULoc**" will be visualised for 5 seconds on your display.

10.2 ACCELERATED FILTERING FUNCTION (BOOST)

The “boost” function allows you to carry out a fast filtering cycle to be performed after an intensive use of the minipool, or, to perform an even dissolution of chemicals inside the pool (sanification).

To get access to this function, it is necessary to keep on pressing the key **PUMP1** for 5 seconds. This function lasts 45 minutes during which the following devices will be activated:

- **Always:** ozonising device and pump associated with filtering.
- **Only with other pumps installed:** the jet pumps are activated only once, at a turn, for 1 minute.

During the performance of the function “boost”, the heater keeps on working normally, except for the case when the power absorption reducer comes into effect. When the function is activated, your display will visualise the message “**boo**” for the whole duration of the cycle.

The function sets itself to OFF immediately in the following cases:

- The users connects a load.
- The water level inside the SPA is insufficient (if the level detector is installed and correctly configured).

10.3 STAND BY FUNCTION

This function allows you to lock all the loads (60-min duration) so as to carry out the ordinary maintenance operations without cutting off power to the minipool.

The **STAND-BY** function becomes operational:

- Keeping pressed the key **FILTER** for 5 seconds with the keypads: K-4, K-8, K89, K90.
- Keeping pressed the key **LIGHT** for 5 seconds with the keypads: K9, K19, K91, K35.

Such a function can be stopped:

- Because the available time has expired (60 minutes).
- By keeping the key **FILTER** or **LIGHT** (according to the keypad version chosen) pressed for 5 seconds.
- By switching off your EasyNova Control.

The **STAND-BY** function locks the filtering/purging cycles, which are fitted on and carried out every 40 min after the end of the function.

The **STAND-BY** function can lock the anti-freeze function in accordance with the setting of the parameter “ **STAND-BY** priority”.

NOTE: If the **STAND-BY** function is **active**, while the heater is working, it goes off immediately while keeping the circulation of water active for 30” so as to cool down the resistance (Safe Switch off).

10.3.1 Stand-by Priority related to anti-freeze cycle

- **HIGH:** the anti-freeze cycle is not carried out is the **STAND-BY** function is active.
- **LOW:** the anti-freeze cycle occurs even though the function **STAND-BY** is active.



10.4 DISPLAY ROTATION

This function allows you to turn (upside down) the visualisation direction of the display so as to let it be readable also from the outside. If you wish to activate this function:

Press and keep on pressing the key **Light** for 5 seconds.

The function is deactivated in the same way. The function can be deactivated also by switching off the control.

NOTE: The function "Display rotation" is available only with the K-4, K-8, K-89, K-90 keypads.

10.5 WATER TEMPERATURE SETTING ABOVE 40°C

This function allows you to increase in a controlled way the set-point value of the water temperature inside the SPA well above the maximum foreseen value of 40°C (104°F) till a maximum of 42°C (108°F).

- Range of possible values: minimum 0.5°C(1°F), max 2.0°C (4°F);
- Setting step: 0.5°C (1°F);
- Default step: 0.5°;
- Switch on value: the last entered value is restored

To increase above 40 °C your set point, follow these steps:

- With the key **UP** (or **UP/DOWN**), enter your set point at 38 °C.
- Press the key **UP** (or **UP/DOWN**) for 5 seconds: your display will visualise **Ox.x** where **x.x** represents the value to be set.
- Press the keys **UP, DOWN** (or **UP/DOWN**) to change such a value.
- To exit form the setting, press a key different from **UP, DOWN** or wait for 5 seconds.

Once you have set the maximum value increase of your set-point, and wish to change it, just press the key **UP, DOWN** (it is not necessary to keep on pressing the key for 5 seconds).

To reset the set-point value within the normal limit, it is sufficient to:

- Press the key **DOWN** till you reach the minimum value (visualisation **00.5**).
- Press again the key **DOWN**: your display will visualise your set point and you come back again into the usual field for setting the water temperature.

10.6 WATER FLOW DETECTING WITH HL PROBE

EasyNova control with firmware 3.0 or higher (If parameter C7=1), uses the HL probe to detect the water flow inside the heater. With this configuration, IS NOT necessary to install the pressure/flow switch.

In order to activate this configuration, refer to low level programming parameters Cfn.

10.6.1 Functioning description of water flow detection

When the pump associated to the heater is on, EasyNova check continuously the temperature detected from the HL probe: if not enough flow is detected, the heater is immediately disabled. EasyNova try for three times to reactivate the heater functioning showing on the display alternately **FLO/SPA water temperature**. If the water flow is still low, the alarm "FLO" appears on the keypad display indicating to the user that a water flow problem is appened.

In order to reactivate the EasyNova functioning, deleting the alarm condition, must be made a reset (power off and on of the control).

REMARK: The counter of reactivation attempt will be reseted only if the heater remains on al least for 4 minutes.



11 WATER SANIFICATION

The control implements some functions for water sanification. There are two sanification ways which can be selected during the configuration step and whose performance varies according the loads you have entered:

- **Filtering**, it is carried out every 12 hours and has a duration, which can be programmed by users.
- **Purging**, it has a fixed duration, though it can be carried out a certain amount of numbers during the day.

11.1 FILTERING

Filtering function consists of two steps in which some loads (according to the system configuration) are activated for a certain amount of time. The modes of load triggering depend on the maximum value of absorbed current, which have been entered during the configuration.

For SW revisions until revision 2.0 excluded:

Sequence	Current set	Activated loads	Duration	Notes
Step 1	16A	Blower always active; Jet pumps: one at a time	1 minute for each load	All at maximum speed. Filtering pump activated only if only pump or if always activated.
	32A	All Jet pumps at the same time	1 minute	
Step 2	16A / 32A	Filter pump, Ozonising device	Remaining	P1 (LS if double speed) or Circulation Pump

From revision SW 2.0 the way of load activation follows the table here below:

Sequence	Set current	Activated loads	Duration	Notes
Phase 1	Max entered current LOWER than real needs	Blower is always activated, Jet pumps: one at a time	1 minute for each load	All devices at max speed. Filtering pump activated only if the only pump or if always activated
	Max entered current HIGHER than real needs	All Jet pumps at the same time	1 minute	
Phase 2		Filtering pump, Ozonising device	Remaining time	P1 (LS if double speed) or CP

The performance of filtering is specified by the related icon/led on the keypad, which is lit up. The filtering function can be suspended. In such a case, the icon/led will be blinking. The table here below sums up the possible cause, which may lead to the suspension of filtering:

Cause of Filtering Suspension	Notes
<ul style="list-style-type: none"> • A load is activated through keypad • When filtering is started up, it is detected that a load has been previously activated through keypad. 	<p>The Filtering Mode is operational again after 40 min from the end of the last user's function.</p> <p>The moment when the next filtering starts up is not changed.</p>
<ul style="list-style-type: none"> • The water temperature has increased far above the entered value. 	See paragraph "Overtemperature during filtering".
<ul style="list-style-type: none"> • The Smart Winter Mode function is activated 	The filtering starts 1 min after the end of the anti-freeze cycle.



11.1.1 Programming the Filtering Cycle

Users can enter the following parameters:

- Cycle duration, whose characteristics are:
 - Possible range of values: minimum 0hrs (never active), max 12hrs (always active).
 - setting step: 1h;
 - default value: 2hrs;
 - switch on value: the last entered value is restored.
- Time of start:
 - > If the RTC option is present, its features are:
 - > possible range of values: 0 – 23 h 59'
 - > setting step: 1';
 - > default value: 12.00;
 - > switch on value: the last entered value is restored.
 - > If the RTC option is not present, the time of beginning can be set by means of the activation delay; its characteristics are:
 - > possible range of values: minimum 0h, max 11h;
 - > setting step 1h;
 - > default value visualized: 6 h;

The setting procedure varies according to the keypad you are using and if there is or not the RTC option:

Kind of panel	Key for procedure	Display Message
K-4 K-8 K-89 K-90	PURGE	Fdx for setting the duration x . Fsy for setting the delay y . The activation time if the RTC option is present and the K-4 keypad.
K-35 K-9 K-19 K-91	LIGHT (prolonged pressure for 5 seconds)	dx for setting the duration x . sy for setting the delay y .

The exit from the setting procedure can occur by pressing the key **LIGHT** or **PURGE** again, or, without pressing any key for some time (5 seconds).

When the delay value of activation is visualised, the various exit modes generate various effects:

- exit by pressing the key **LIGHT** o **PURGE**: the new settings become effective for the cycle duration and the activation time;
- exit without pressing any key; the value of duration just entered becomes effective; the moment of beginning remains the one foreseen before entering the setting procedure.



11.1.2 Overtemperature during Filtering

If the water temperature inside your tub is above 1°C (2°F) with respect to the set value for 3 hrs, the filtering will be suspended until the temperature does not go below of at least 1°C (2°F) with respect to the entered value, or, if the moment of next filtering does not occur.

NOTES:

- Filtering with duration of less than 3hrs are completely carried out independently from the temperature level, which has been reached.
- In case of filtering with duration longer than 3hrs, in any case, at least 3hrs of filtering are carried out.
- The filtering is activated even if the water temperature is higher than the set point. Possibly, it will be suspended after 3hrs from the beginning, if the over temperature condition should persists.

11.2 PURGE

Every purging cycle lasts from 3 to 4 minutes (it depends on the number of loads and the max current value which is absorbed and has been set during the configuration); it is carried out every day for the number of times the user has chosen.

It consists of the following steps:

For revisions SW up to revision 2.0 excluded:

Sequence	Set current	Activated loads	Duration	Notes
Phase 1	16A	Blower is always activated, Jet pumps: one at a time	1 minute for each load	All devices at the max speed, Filtering Pump is activated only if is the only pump or if it is always activated
	32A	All Jet pumps at the same time	1 minute	
Phase 2	16A / 32A	Filtering pump, Ozonising device	1 minute	P1 (LS if at double speed) o CP

Per le revisioni SW dalla 2.0:

Sequence	Set current	Activated loads	Duration	Notes
Phase 1	Max entered current LOWER than real needs	Blower is always activated, Jet pumps: one at a time	1 minute for each load	All devices at the max speed, Filtering Pump is activated only if is the only pump or if it is always activated
	Max entered current HIGHER than real needs	All Jet pumps at the same time	1 minute	
Phase 2		Filtering pump, Ozonising device	1 minute	P1 (LS if at double speed) or CP

The performance of purging is specified on the keypad by the related icon/led, which goes on.

If when, at the moment foreseen for the beginning of the purging operation, the antifreeze function is active, the cycle will be postponed and it will be carried out 1 minute after the end of the function. During this span of time, the filtering/purging logo on the display will be blinking.



The purging function can be terminated instantaneously (it will not be restored) through a key placed on your keypad. The table here below sums up the causes, which may determine the termination of the purging cycle:

Cause of Purging Termination	Remark
<ul style="list-style-type: none"> A load has been activated through keypad 	<p>The purging cycle in progress is being terminated.</p> <p>The time of the next purging is not changed.</p>
<ul style="list-style-type: none"> When switching on the purging, the purging, a load previously activated through keypad is detected. 	<p>The purging cycle will start 40 min after the end of the last user's function.</p> <p>The time of the next purging is not changed.</p>

11.2.1 Programming the Purging Cycles

Users can enter the number of purging cycles to be carried out everyday. Such a parameter has the following features:

- Ensemble of possible values: 2, 4, 6, 8, 12, 24
- Default value: 6
- Switch on value: the last set value is restored.

The setting procedure entails the use of different keys according to the kind of keypad:

Kind of Panel	Key for Procedure	Display Message
K-4 K-8 K-89 K-90	PURGE	Pxx for setting the duration xx .
K-35 K-9 K-19 K-91	LIGHT (pressure prolonged for 5 sec)	

Programming procedure of purging function parameters:

- By pressing the **PURGE** or **LIGHT** key, your display will show the number of cycles a day;
- Variation of duration through **UP/DOWN** keys;
- Press the **PURGE** or **LIGHT** key to store and make the set value effective.

You can exit the setting procedure also without pressing any key for some time (5-sec).



12 MANAGEMENT OF OTHER LOADS

This section describes the way for triggering the loads, which cannot be activated directly by the user through keypad.

12.1 HEATER

During the every day use, the process of water temperature adjustment on the basis of the set point you have entered activates the heater.

The water heating requires a co-ordinated activation/deactivation of both the heater and the pump, which determines the water flow through the same (low speed jet pump or circulation pump).

NOTE:

The minimum flow that must be guaranteed from the pump which creates the water flow through the heater, is 50 liters per minute.

The steps for the activation of heating are listed here below:

- Activation of pump associated with heater for 5 sec. (if two speed Pump 1 the low speed will be activated).
- Check up of water flow (through pressure switch or flux switch input).
- Activation of heater.
- Deactivation of heater
- After 30 sec, the pump will go off (to permit the cooling down of the heating element).

Note:

For an appropriate and longlasting use of the heating device, you are recommended not to go beyond the following values of concentration of chemicals for the sanification of water:

- Free chlorine: 2÷3 mg/l
- Initial hyperchlorination : 5÷10 mg/l
- Bromo: 0.7 mg/l

The water pH must be kept within a range of 6.8÷7.8.

12.2 REMOTE HEATER OR HEATER EXCHANGER

EasyNova allows you to connect a remote heater or a heat exchanger instead of the local heating system.

This option can be set through the configuration parameter " Remote Heater".

In such condition:

- The safety control of the local heater temperature is disabled (high limit);
- The safety control of the flow through heater (a pressure/flux switch) is disabled;
- The "AUX" (J22) auxiliary relay is activated instead of the heater relay.
- From Revision SW 2.2 included, the pump which has been selected as heating pump (P1/CP) will be activated too.

NOTE: On AUX output can be connected a load with 5A 230Vac max; in order to use a remote heater, is necessary to utilize a remote control switch for the power supply.

WARNING

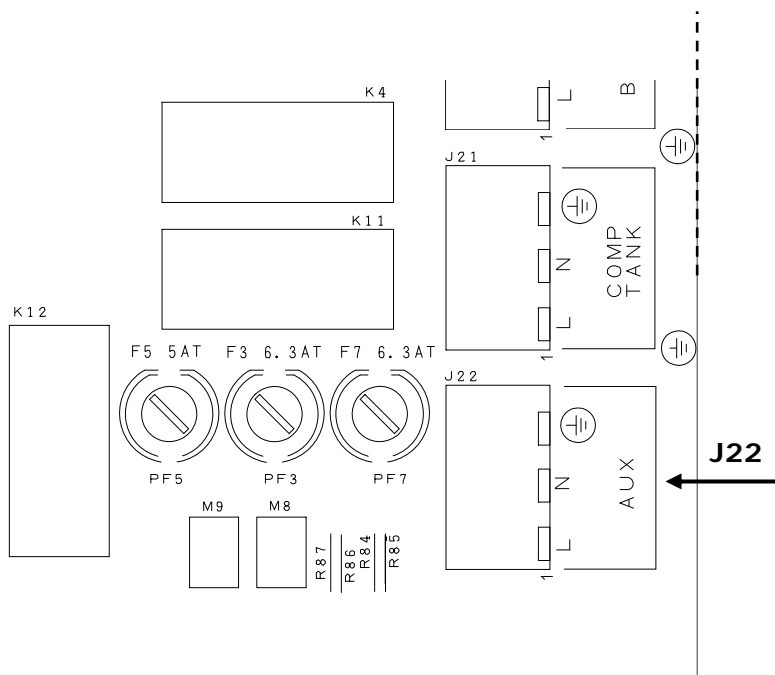
The security protection of the system are disabled so must be supplied from external devices.

12.2.1 Connection of Remote Heater or Heat Exchanger

For the management of the remote heater or heat exchanger, you will have necessarily to connect the activation device (ex: magneto-thermal switch) with the connector J22 AUX.

The connector AUX can have two types of configuration:

- **By default:** 230Vac, 5A contact
- **Clean contact:** this contact requires you the removal (by cutting) of shunts R84-R85, R86-R87 and the presence of a small bridge between the terminals M8-M9.





12.3 OZONATOR

The ozonising device (if present), is activated according to what defined by the configuration of the parameter "Ozonising Device" (in any case only when the pump associated with filtering is active). The ozone function is suspended if a user's function is activated. It will be active again after 10' from switching off of the last user's function.

13 ADDITIONAL FUNCTION

This section describes the control functions, which cannot be access by the user.

13.1 LIMT OF ABSORBED CURRENT

This function manages the activation of the loads so as not to exceed the value set trough the configuration parameter "Current max".

The function bases its function on the data of current absorbed by loads acquired during the self-learning procedure (see related paragraph).

- If the total absorption of the required load is lower then the maximum permitted absorption; your control will activate the required load.
- If the total absorption is higher the maximum permitted absorption:
 - With the active heater, it is deactivated to permit the activation of the required load.
 - With a heater set to OFF and insufficient available power one of the active load is switched off to meet the user's need.

REMARK: if the heater is activated (suspended) to permit the activation of a user's load, the system will try to re-activate it every 5 minutes.



13.2 ANTI-FREEZE CYCLE (SMART WINTER MODE)

Your EasyNova control can perform certain actions to prevent the water inside pipes from freezing in extreme environmental conditions.

It consists of the cyclical activation of pumps for one minute; the performance frequency depends on the environmental temperature detected by a sensor located on the electronic card inside your EasyNova control.

The following table illustrates the interval between two anti-freeze cycles, which come one after another, with reference to the temperature (detcted inside the EasyNova control):

Temperature (°C)	Interval (minutes)
12 (54°F) < t ≤ 15 (59°F)	120
9 (48°F) < t ≤ 12 (54°F)	60
6 (42°F) < t ≤ 9 (48°F)	30
t ≤ 6 (42°F)	15

Every time that the anti-freeze cycle is in progress, your display will visualise "ICE".

In cases when an anti-freeze cycle starts, it cannot be interrupted: the blower and the light will go on working in a normal way.

The performance of the cycle takes place according to different ways and on the basis of the maximum current value, which has been set:

Max entered current: 16A	Max entered current: 32A
The pumps are activated for one minute each, at the maximum speed following this sequence (if installed): Pump 1 (LS), Pump 2 (HS), CP pump.	All pumps are activated at the same time, at high speed, for one minute.

13.2.1 Interaction of Smart Winter Mode with Other Functions

The **Stand-by** function can or cannot stop the antifreezing function according to the setting of the parameter "**Stand-By Priority**" (see proper paragraph).

Whenever the function **Stand-by** has been set in the mode **HIGH**, and the necessity of starting up an antifreezing cycle has been found, it is activated 15 minutes after the de-activation of the **Stand-by** function.

If the **Stand-by** function has been set in the mode **LOW** and the necessity of starting up an antifreezing cycle has been found, it is activated immediately.

- If, during the performance of the user's function, the necessity of starting an anti-freeze cycle is detected, it will be carried out after 15 min. from switching of the last user's function.
- The anti-freeze cycle has the priority over the filtering cycle. If during the performance of a filtering cycle, the conditions for performing the anti-freeze cycle come up, the filtering is suspended and it will be started again one minute after the end of the anti-freeze cycle.
- The anti-freeze cycle will interrupt a possible boosted filtering under way.
- The anti-freeze cycle has the priority over the start-up of the purging cycle (if an anti-freeze cycle is being performed, the purging cycle does not start immediately but only when it is over) but it does not interrupt an already started purging cycle.



13.3 MANAGEMENT OF COMPENSATION TANK

This function allows you to manage the compensation tank inside the pools with water discharge grids.

It is necessary to connect two level sensors with the Control: one to specify the maximum level the other for the minimum. Moreover you will have to configure the parameters "Tub Level Sensor" and "Level Sensor Function" (see paragraph corresponding).

When the maximum level is detected, the output "COMP TANK" (J21) is activated till the water level arrives to the minimum level sensor.

NOTE: The output can manage a load 5A 230Vac max.

13.3.1 Functioning Mode for Compensation Tub Sensors

Condition	Action
Both sensor detect the presence of water	Activation of level restored command (emptying of compensation tub)
No sensor detects presence of water	Deactivation of level restored command
After 1 min from the activation of the level restore of the command, the max level sensor still detects the presence of water	Deactivation of level restored command, triggering of alarm because the tub has not been emptied
After 15 min from the activation of the level restore of the command, the minimum level sensor still detects the presence of water	Deactivation of level restored command due to timeout
Alarm due to the fact that the tub has not been emptied, the max level sensor does not detect water	Alarm due to the fact that the compensation tub has not been emptied goes off

13.3.2 Connection of Level Sensor inside Compensation Tub

	Connection of Card	Codes
Minimum level sensor	Connector J9	LEVEL SENSE
Maximum level sensor	Connector J8	COMP. TANK LEVEL



14 ALARMS

This section refers to the description of the alarm conditions in which the Control is able to detect and inform the user through a message on the keypad display.

14.1 PRESSURE/FLOW SWITCH

The function of the Pressure/Fluow switch is to monitor the water flow through the heater. The two conditions described here below may occur:

Alarm Condition	Message on display	Inhibited function	Alarm output condition
Pressure/Flux switch which indicates the presence of flow when it should not be there (heating pump is off).	<i>FLC</i>	Deactivated heater	Restore of correct condition.
Pressure/Flux switch which does not indicate the lack of flow when it should be there (heating pump is on).	<i>FLO</i>	Deactivated heater	Restore of correct condition.

Note: If the FLC error condition is visualised when the SPA is switched on, you must switch off and then on the control.

14.2 HI-LIMIT PROBE

The function of the high-limit probe is to monitor the heater temperature to permit its deactivation in the following case:

Alarm Condition	Message on display	Inhibited function	Alarm output condition
Detected temperature (hi-limit probe) $\geq 55^{\circ}\text{C}$ (131 $^{\circ}\text{F}$)	<i>HOH</i> Alternated with water temperature inside SPA or every hour	Heater is deactivated	Temperature goes below 51 $^{\circ}\text{C}$ and the control is started up again (on/off power supply).

WARNING: if the room temperature where your SPA will be placed is close to 48 $^{\circ}\text{C}$, your display might visualise the alarm HoH.

14.3 DETECTION OF WATER FLOW THROUGH HI-LIMIT PROBE

The EasyNova control with firmware R3.0 or higher, (if parameter C7=1) makes use of a HL probe to detect the presence/absence of water flow inside the heater. With such a configuration, IT IS NOT NECESSARY to mount the pressure/flow switch.

14.4 LOW WATER LEVEL INSIDE SPA

The EasyNova control, if properly configured (see corresponding paragraph), can read the state of a level sensor to prevent the pumps from starting-up if there is no water.

It is possible to set the intervention time (1 or 25 sec) within which, if no water is detected, the activation of pumps and the heater will be inhibited and your keypad display will visualise "H2O".

The alarm will always be ON until the water level is not detected again.

WARNING: the anti-freeze cycle will be performed even if the water level does not detect the presence of water inside your SPA (just in case there is some residual water inside the pipings).



14.5 OVERTEMPERATURE OF WATER INSIDE SPA

If the water temperature inside your SPA goes beyond the value of 44°C (111°F), the EasyNova control will inhibit the working of all loads and will visualise **Ho** alternated with the value of temperature on the keypad display.

You exit from the alarm condition when the water temperature inside your SPA goes below 43°C (109°F).

14.6 EMPTING FAILURE OF COMPENSATION TANK

In cases when, the level sensor of the compensation vat keeps on detecting the presence of water after 1 minute from the activation of the water level re-activation comand, the comand is deactivated and the message "FULL" will be visualised on the display and will be alternated with the water temperature.

Such a message will fade away as soon as the malfunction condition is resolved

15 TROUBLESHOOTING

The EasyNova can detect and highlight some anomalies by visualising messages on the keypad display.

15.1 MALFUNCTION OF TEMPERATURE PROBE

In case the water temperature inside your SPA goes off the 0°C (32°F) and 60°C (118°F) range, the following error conditions will appear:

Alarm Condition	Message on display	Inhibited function	Alarm output condition
Water temperature \leq 0°C (32°F) Water temperature \geq 60°C (118°F)	rPF	Heater All commands towards loads	Temperature falls within the admitted range.

15.2 HI-LIMIT PROBE MALFUNCTION

In cases your HI-LIMIT probe detects a value, which is off the admitted range, the following conditions will occur:

Alarm Condition	Message on display	Inhibited function	Alarm output condition
HL temperature \leq 0°C (32°F) HL temperature \geq 60°C (118°F)	HPF	Heater	Temperature falls within the admitted range. Control is started-up again

16 RESTORE TO FACTORY SETTINGS

In case of necessity, users can restore the default settings of the EasyNova control and take them to the original settings made in factory, by following these steps:

- Access to the configuration menu (see paragraph "Configuration Menu of control").
- Select the option "**rAF**"
- Press and keep on pressing the key **LIGHT** for 5 sec. To confirm your choice.

The EasyNova control will reset itself and will restore the factory settings maintaining them active.



17 OTHER FUNCTIONS

The EasyNova control is equipped with other functions, which allow you to increase the versatility use

17.1 SPA WATER TEMPERATURE READING

To determine the water temperature inside your SPA, you can follow two steps, which can be selected by setting the configuration parameter "Number of Temperature Probes".

17.1.1 Measurement with Adjustment Probe

It is selected by setting the configuration parameter "Number of Temperature Probes" to the value of 2. It consists of reading the value provided by the water temperature inside your SPA.

17.1.2 Measurement with HI-LIMIT Probe

This function can be used when the EasyNova control is connected with the EasyHeater equipped with a HL, double function probe. It allows you to exploit the HL probe to determine the water temperature inside your SPA without the necessity of using a specific probe.

This function must be enabled by setting the configuration parameter "Number of Temperature Probes" to 1.

The system will activate the pump associated with the heater at an optimised interval of 30 seconds, after which it detects the correct water temperature.

REMARKS:

- When the system is configured with a single probe, on switching on, the value 40°C will be visualised on your display and the pump, associated with the heater, will be activated. After 30 seconds, the correct water temperature will be visualised.
- Every time that you perform operations that change the water temperature (Ex.: addition of water inside your SPA), it is advisable to activate the pump associated with the heater so as to obtain a correct reading of the water temperature.



18 GENERAL TECHNICAL CHARACTERISTICS

Environmental conditions of working:	U.R.max 80% non condensing, max temperature: 50°C
Environmental conditions of storage:	U.R.max 80% non condensing, max temperature: 50°C C
Insulation class	class I
Protection degree	IPX5
Software class	Class A
Power supply	Single phased: 230 V, 50/60Hz, 32 A max Two phased: 400V with neutral, 50/60Hz, 16 A max for each phase Three phases: 400V with neutral, 50/60Hz, 16 A max for each phase

19 TECHNICAL CHARACTERISTICS OF OUTPUTS AND CONNECTIONS

Output	Tension, Current	External connector	Connections function
Jet pump	230 Vac, 12 FLA	J18-1: Brown/Black J18-2: Blue J18-3: Yellow/green	Phase/High speed Neutral Ground
		J17-1: Brown J17-2: Blue J17-3: Green	Phase/low speed Neutral Ground
		J23-1: Brown/Black J23-2: Blue J23-3: Yellow/green	Phase/High speed Neutral Ground
		J24-1: Brown J24-2: Blue J24-3: Green	Phase/low speed Neutral Ground
Aux	230 Vac, 5 A	J22-1: Brown J22-2: Blue J22-3: Yellow/green	Phase Neutral Ground
Compensation tub	230 Vac, 16 A	J21-1: Brown J21-2: Blue J21-3: Yellow/green	Phase Neutral Ground
Blower	230 Vac, 6 A	J14-1: Brown J14-2: Blue J14-3: Yellow/green	Phase Neutral Ground
Recirculation pump	230 Vac, 6.9 FLA	J20-1: Brown J20-2: Blue J20-3: Yellow/green	Phase Neutral Ground
Ozone	230 Vac, 1 A 12 Vac, 350 mA	J13-1: Brown J13-2: Blue J13-3: Yellow/green	Phase Neutral Ground
Light	12 Vac, 2 A	J12	
Single-phased heater	230 Vac, 16 A	J16: Brown J15: Blue M4: Yellow/green	Phase Neutral Ground



20 LOAD DISTRIBUTION UPON LINES

Line	Description
1	Heating device
2	Pump 1, Blower, recirculation pump, Ozonsing device, Aux, Compensation tub.
3	Pump 2, Pump 3.

21 SIGNAL CONNECTION

Code marked on card	Description	Kind of connector
J5	Connector for main keypad	MTA-100, 8 pin male
J6	Connector for auxiliary keypad	MTA-100, 8 pin male
J11	Connector for TSC-9 keypad	MTA-100, 8 pin male
J10	I ² C BUS	MTA-100, 4 pin male
J7	Pressure/flux switch/	MTA-100, 3 pin male
J4	Water temperature sensor	MTA-100, 4 pin male
J3	High-limit temperature sensor	AMP MODU II 2 pin m.
J9	Level sensor	MTA-100, 4 pin male
J10	Level sensor of compensation tub	MTA-100, 4 pin male
J19	Variable speed pump output	MTA-100, 2 pin male
J1	Variable speed blower output	MTA-100, 3 pin male
JS3	UART	Connect. 2x5 ways step.2.54 for flat cable