

MICROSPA controller - Installation and user manual

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1. General warnings

Before installing or operating on the appliance, carefully read and follow the instructions contained in this manual. The information on installation refers to the electrical connections. No information is provided on the mechanical or plumbing fittings for connecting the MSPA controller to the minipool.

This manual is an integral part of the product and therefore must be kept for future reference.

Astrel S.p.A. reserves the right to make any modifications it considers necessary without prior warning or replacement.

2. Responsibility of the user

The device described in this manual has been manufactured to operate risk-free and for the specific purpose, as long as:

- the device is installed, programmed, operated and serviced according to the instructions in this manual;
- the environmental conditions and the power supply are within the specified limits.

All other uses and modifications made to the device that are not authorised by the manufacturer are considered incorrect.

Liability for injury or damage caused by the incorrect use of the device lies exclusively with the user.

In the event of faults or malfunctions of the product under warranty, contact authorised technical personnel only. The manufacturer is not liable for any damage caused by products that have been tampered with or repaired incorrectly.

3. Accessing the live parts

This device contains live electrical components. Consequently, all the service and maintenance operations must be performed by expert and qualified personnel, after having taken the necessary precautions.

As the MICROSPA controller does not feature any internal systems for disconnecting the power supply, the power line must be fitted with disconnecting and protection devices compliant with the standards in force in the country of installation.

Before accessing the inside parts, the unit must be disconnected from the mains power supply using a disconnecting switch.

4. Precautions when handling the board

To avoid damage of an electrostatic nature to the board, the following precautions must be adopted.

- Before handling the controller, the board or any electronic component, touch an earthed object so as to discharge the electrostatic charges present on the body and on the clothing.
- The materials must remain as long as possible inside their original packages; when having to remove the board from the antistatic packaging, touch it as little as possible.
- Never use plastic, polystyrene or non-antistatic sponge bags for packaging the board.
- Never pass the unpackaged boards, as described previously, between operators (to avoid electrostatic induction and consequent discharges).

5. Installation tips

The following suggestions should be heeded to prevent potential problems during the life of the product:

- do not install the controller in environments with high levels of relative humidity, exposure to direct pressurised jets of water, high levels of magnetic and/or radio frequency interference.
- use cable ends suitable for the corresponding terminals and the cross-section of the wires used; tighten the cable terminals and slightly tug the cables to check that they are sufficiently tight.
- separate as much as possible the probe cables, the keypad cables and sensor cables from the power lines and cables supplying power to the inductive loads.
- protect the controller and the user with suitably rated electrical protection devices, in compliance with the standards in force of the country of installation.

6. Disposal and cleaning

The controller is made up of metal and plastic parts. These should be disposed of according to the local legislation in force.

The controller should be only be cleaned on the outside using neutral detergents and/or water.

7. Connection to the power supply

IMPORTANT:

Carefully read this paragraph before connecting the controller! Failure to observe the instructions contained in this paragraph may cause serious damage to the controller and to the other electrical devices installed.

The power cable should be connected to the main power supply.
The MICROSPA controller can be connected of power supply:
Single-phase: 230 V, 50/60Hz, 15 A

8. Connecting the 230 VAC loads

The loads operating at mains voltage (230 VAC) must be connected to the controller using the jacks. Each jack can only accept the type of plug with the contacts set out in a similar manner. For this reason, before making the connection, check that the jack corresponds to the plug.

For good mechanical tightness and protection against water penetration, insert the plug fully into the jack.

WARNING

The jacks on the controller that are not used are still connected to mains voltage. To prevent personal injury or material damage and maintain conformity to safety standards, these must be covered on the outside so that internal contacts cannot be reached by sprays of water and are not accessible.

9. Connecting the light

The controller is fitted with a cable for connecting the spa lighting. This cable is located on the right side of the controller, and supplies 12 Vac, 2 A.

For the connection of the halogen lamp simply fit the light bulb into the bayonet at the end of the cable.

10. Starting for the first time

Before switching the controller on for the first time, make sure that:

- there is sufficient water in the pool;
- all the valves are open;
- there is nothing that can block the flow of the water in the pipes.

Moreover, check that the connections of the loads correspond to the configuration settings.

Generally, when starting for the first time, the temperature of the water introduced into the spa should be lower than the temperature set point (35°C). For this reason, when started, the controller will activate the pump to send the water to the heater, as well as the heater itself.

11. Main functions

This section describes the most commonly used functions during the operation of the controller.

• **Pump1**

The first press the pump is active in low speed and the led blinking (*)

The second press the pump is active in high speed and the led is on solid.

The third press the pump is off.

If the pump is not stopped manually, it stops automatically after 20 minutes of operation.

(*) Only if set for dual speed in low-level programming.

• **Pump2 or Blower (*)**

The first press the pump or the blower is active in high speed and the led is on solid

The second press the pump or the blower is off.

If the pump or blower is not stopped manually, it stops automatically after 20 minutes of operation.

(*) Only if set as blower or pump in low-level programming.

• **Light**

The first press the light is turned on high intensity and the led is on solid

The second press the light is turned off.

If the light is not turned off stopped manually, it stops automatically after 20 minutes of operation.

• **Controlling the water temperature (Up/Down arrow)**

The MICROSPA controller can control water temperature in a range of temperatures between 15 and 40°C.

The user can set the desired temperature from keypads using on the UP/DOWN key.

The temperature control function is achieved by heating the water using the heater connected to the controller. When the water temperature is less than the desired temperature, the MICROSPA controller:

- starts the pump configured as the heating pump
- checks the flow of water through the heater, using the pressure switch (this takes a few seconds);
- starts the heater.

Once the set point has been reached, the MICROSPA controller first deactivates the heater and, after 1 minute, the pump to avoid overheating the heating element.

The water is cooled by simply not activating the heater. The water may not cool down when the ambient temperature is high.

The MICROSPA controller maintains the temperature within an interval of $\pm 0.5^{\circ}\text{C}$ around the desired temperature.

When the heater is activated, the corresponding led on the keypad is on steady. The same led blinking when the water needs to be heated, but the heater is not activated to limit the power input. In fact, the heater may be off when multiple user loads are active.

The higher limit temperature is 40°C .

The lower limit temperature is 15°C .

The default temperature is 35°C .

• Smart Winter Mode

Smart Winter Mode is a function that is activated automatically when the room temperature measured by a sensor located inside the controller is less than 6°C , so as to prevent the water in the pipes of the SPA from freezing.

This protection function automatically activates all the pumps and the blower for 1 minute at variable time intervals; the lower the room temperature the more frequently the pumps will be started. The longest interval between two consecutive starts is two hours.

The activation of this function is not related to the water temperature inside the SPA.

The filter led blinking.

• Filtration cycle

When there is an active Filter cycle, the led is on solid. Basically the filtration is programming for one cycle at day with a duration of 6 hours. It's consists of starting the pump in high speed and the blower for one minute to purge the plumbing, then only the pump at low speed is on for the rest time of the cycle. The ozonator, if it's installed, will be on for the entire duration of the filtering cycle. At any other time, the ozonator is not allowed to be on.

It's possible to program the duration of the Filter cycle. By holding the light key for five second, the display shows the current duration value (Fxx where xx change from 0 to 24). Use the Up/Down key to adjust this value as desired.

Pressed again the light key, the display shows the parameter D indicates the number of hours to be away from the starting of the Filter cycle (Dxx where xx change from 0 to 23). Use the Up/Down key to adjust the value as desired.

During the set-up, if the user doesn't use any keys for five seconds, the system memorized the new setting up, but it will take effect only at the next cycle.

However, if the user exits the duration setting up by pressing the light key again, the new setting up are memorized.

If during the Filter cycle the user press any keys pump or light, the cycle is suspended the time the accessories are used. The pump, the blower or the ozonator are switched off. Once all the accessories are switched off, whether manually or by the built-in timer), The Filter cycle remains suspended for an extra 40 minutes. Finally when a Filter cycle is suspended, the led blinking.

• Current management

This feature is to avoid overloading the input breaker. If the LC mode (low current) is selected, the heater is not allowed to be on when the pump1, the blower or pump2 are running simultaneity.

If the HC mode (high current) is selected, the heater is allowed to be on when the pump1 running at low speed together with pump2 or blower. If the pump1 running at high speed the heater is not allowed to be on.

• Low Level Programming

It is possible to configure various systems operating parameters from the keypad. This is normally done at Astrel factory or by the spa manufacturer, but may be done at anytime. The configuration will be kept into an EEPROM memory. To program these system parameters, the Light key must be held for 20 seconds. After this time, the first parameter will be displayed (see below). For each parameter, use the Up/Down key to modify its value. Light key is used to accept the new value and switch to the next parameter. The display returns to the normal display when there is no more parameter to change. There are three (3) low-level programmable parameters:

• First parameter - HC/LC

With the Up/Down key is possible to select the HC (High current) or LC (Low current) options and the speeds of the pump1

• Second parameter – BL/O3

With the Up/Down key is possibile to select on of the two options.

If the user select BL it is possible to connect a blower or a pump single speed.

If the user select O3 it is possible to connect only an ozonator. In this case the keys on the overlay will have the following composition: Pump1, Light, Up, Down.

• Third parameter

With the Up/Down key is possibile to select on of the two options.

TuC The temperature on the display is showed in ° Celsius

TuF The temperature on the display is showed in ° Fahrenheit.

To go from one parameter to the other one press always the Light key.

To memorize the setting up and exit from the Low level programming press the Light key.

12. Error Messages

• High-limit error

Heater turned off when High Limit (HL) probe temperature reaches 48°C.

The condition keep it up until the temperature at HL probe falls below 44°C and power is reset.

On the display appear three dots blinking.

• Pressure switch error

Turns the heater off when there is a flow problem

The error persist until flow problem is resolved

On the display appear three dots blinking.

- **Temperature Sensor failure**

Turns the heater off when the temperature probe is out of range.
The error persist until unit reads a temperature between 0°C and 50°C.
On the display the upper or lower limit is displayed.

- **Over temperature error**

Turns the heater, pumps, blower & light off when water temperature reaches 44.4°C. All keys that start accessories are disabled.
Until the water temperature cools to 43°C.
The display blinking

- **Power-up detection**

The display blinking after a power failure until a key is pressed