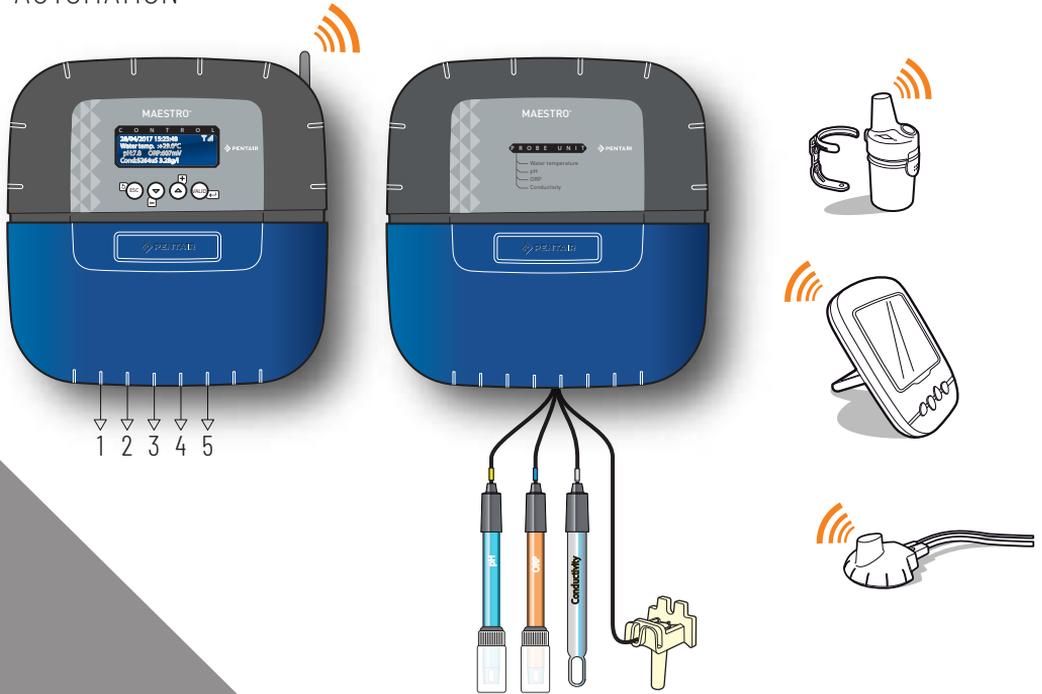


MAESTRO

AUTOMATION



SB-PF-ENS-002D

INSTALLATION AND USER GUIDE

IMPORTANT SAFETY INSTRUCTIONS,
READ AND FOLLOW ALL OF THE INSTRUCTIONS,
KEEP THESE INSTRUCTIONS

PENTAIR AQUATIC SYSTEMS SB-CU-IMP-052H (Rev. 03/2019)



Pentair thanks you for your trust and for purchasing a MAESTRO[®], a system for water analysis and its off-board display environment, with remote monitoring of your pool via the MAESTRO application from Pentair available in the App store and Play store. The MAESTRO[®] probe unit will make it possible for you to learn about the main parameters which regulate the life of your pool. The MAESTRO[®] Control Center will automatically regulate your pool and permit you to control it remotely via the internet relay. Please carefully read this user manual to fully benefit from all of the functions of MAESTRO[®]. Store it carefully so that it can be consulted at any time.



Declaration of conformity

Directives – Harmonised standards

Pentair International Sarl - Avenue de Sévelin 18 - 1004 Lausanne - Switzerland

We declare, under our own responsibility, that the product meets the directives

SAFETY EN 62368-1:2014
EMC EN 61326-1: EN 301 489-3
EMF EN 62311
RADIO EN 300 220-2

MAESTRO (+ PARTS)	PART NUMBERS:		
SB-PF-ENS-002D	SB-SE-PRO-001D	SB-SE-TEC-001B	SB-CO-DIV-008B
	SB-SE-PER-001C	SB-SE-BBX-001B	SB-SE-DOM-001B

Other normative documents

Authorised person for technical documentation

Pentair International S.a.r.l
Avenue de Sévelin 18
1004 Lausanne - Switzerland

Lausanne, 01/04/2019

Guillaume Goussé
European Vice President of Operations



Product specifications: SB-PF-ENS-002D model

Operating temperature: 0° to 40° C

Maximum operating altitude: 2,000 m

Radio relay (external use): IP 65

Internal display (internal use): IP 40

Operating hygrometry: 40% at 75° C

Power supply: 230 V ~, 50 Hz

Weight (excluding probes): 3.5 kg

Control Center + Probe Unit (internal use): IP 64

Internet relay (internal use): IP 20

Internet relay supply specifications: 230 V/DC Jack 5.5/2.1 mm (external - negative): VEL05US060-EU-JA

Input: 100-240 V ~50/60 Hz 0.18 A

Output: 6.0 V = 0.83 A max.



Waste treatment of electronic devices at the end of their service life:

The crossed-out bin placed on the main parts which make up the product indicates that it must not be disposed of together with the household waste. It must be returned to an appropriate collection point for electronic device recycling (information available from the local household waste collection service). This product contains potentially dangerous substances which may have adverse effects on the environment and human health.

Customer Support: PISA, ITALY (8:30 A.M. to 4:30 P.M.) CET

website: www.pentairpooleurope.com

- Warranty (excluding probes and consumables): 2 years

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- The document is subject to change without notice

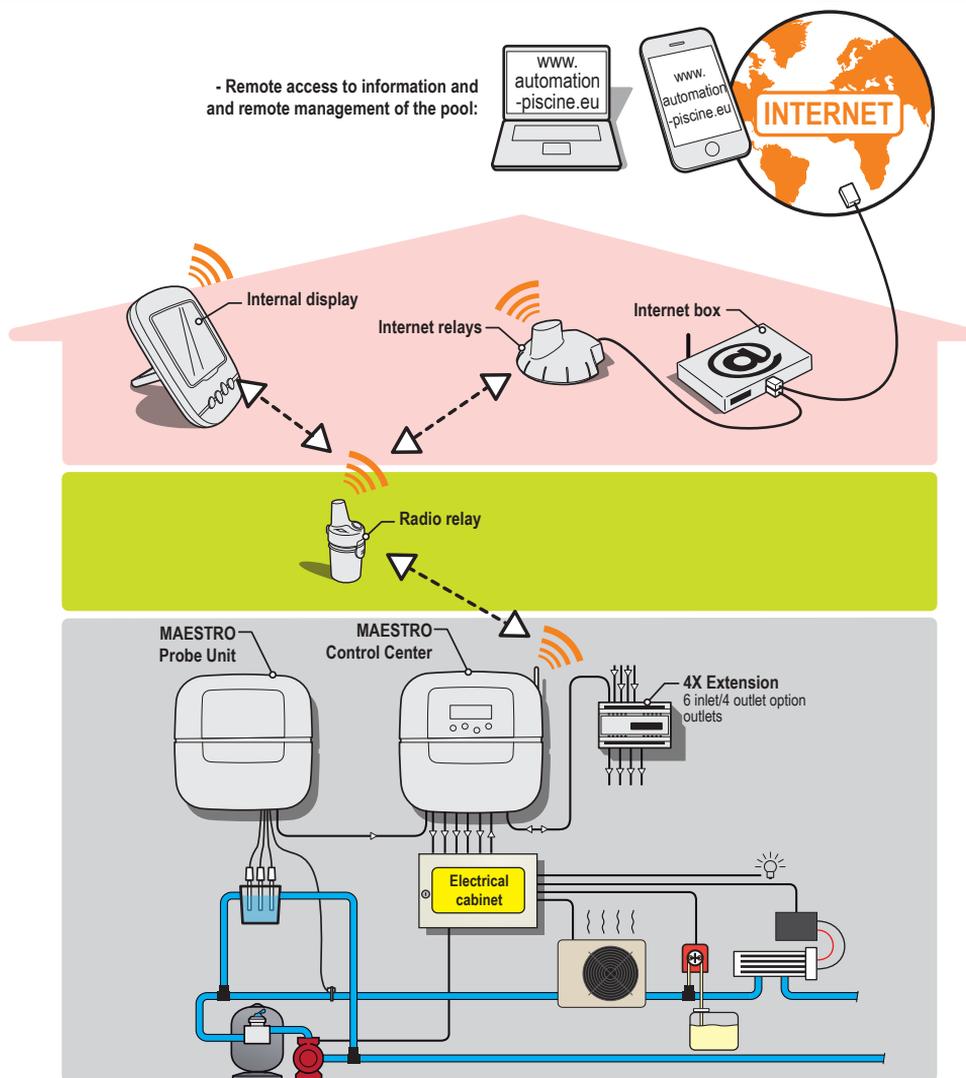
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General operation



- Control of the equipment in the technical room:

MAESTRO supplies the dry contacts to which the classic equipment of the technical room is connected (filtration pump, disinfectant [electrolyser, dosing pump], heat pump, lighting, AUX1).

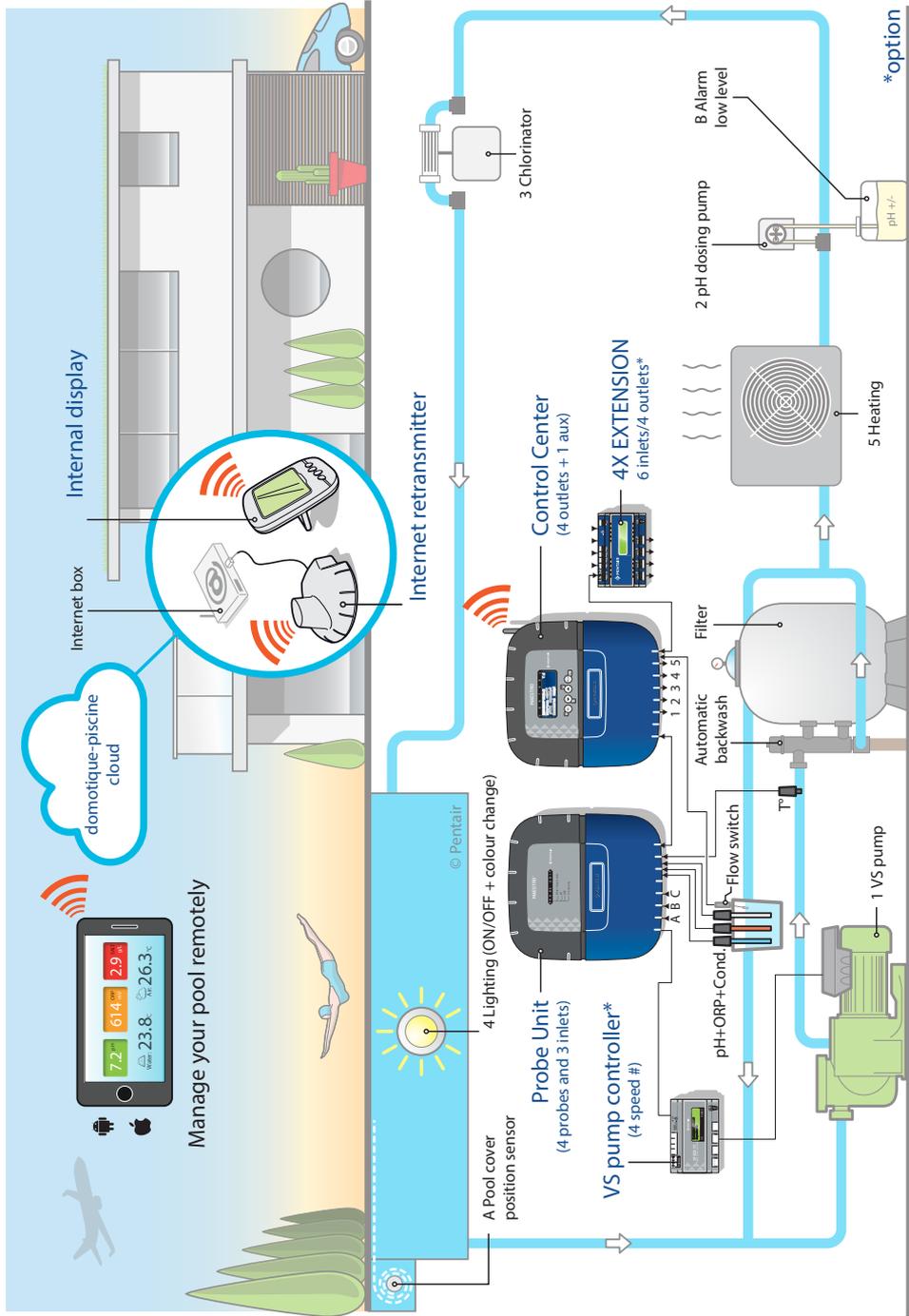
Please do not use the individual automations of the equipment. MAESTRO will start/stop the devices.

- Receiving and processing information:

MAESTRO probe unit supplies the information required for regulating the MAESTRO Control Center; indeed, at the end of a dosing (disinfection, addition of a pH regulator, heating pump, etc.), the device providing the information sends a value which makes it possible for MAESTRO to refine its settings

Installation example

A pool which is fully automated and can be controlled remotely.



IMPORTANT SAFETY GUIDELINES, READ AND FOLLOW ALL OF THE INSTRUCTIONS, KEEP THESE INSTRUCTIONS



GENERAL POINTS

- **DANGER** - INSTALLERS, POOL SPECIALISTS AND OWNERS MUST CAREFULLY READ THESE WARNINGS AND ALL INSTRUCTIONS BEFORE USING THIS PRODUCT.

- **WARNING** - Most countries regulate the construction, installation and operation of public swimming pools and spas, and the construction of residential pools and spas. It is important to comply with these regulations, many of which directly regulate the installation and use of this product. Consult your local building and health codes for more information.
- **WARNING** - This installation and user guide contains important information on the installation, operation and safety of this product. This guide should be provided to the owner and/or user of this product.

INSTALLATION

- **DANGER** - RISK OF ELECTRIC SHOCK or electrocution
- **BEFORE WORKING ON THIS DEVICE** - Always cut the supply to the device at the circuit breaker before maintenance. Failure to do this may lead to death or serious injury to service staff, pool users or others, due to an electric shock.
- **DANGER** - SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THIS PRODUCT IS NOT INSTALLED AND USED CORRECTLY.
- **WARNING** - Before installing this product, read and follow the warnings and instructions of this guide. Failing to follow these warnings and instructions may lead to serious injuries, death or material damage. Refer to www.pentairpooleurope.com for more information linked to this product.
- **WARNING** - Connect the device to a differential interrupter. If this system is used to control the underwater lighting devices, a differential interrupter must be installed upstream of these devices. Conductors downstream of the differential interrupter shall not be located in ducts, junction boxes or enclosures containing other conductors, except if the conductors are also protected by a differential interrupter. Refer to valid local codes for more details.
- **WARNING** - This product must be installed by an authorised or certified electrician or a qualified swimming pool professional. All of the applicable installation codes and local regulations must also be respected. Poor installation will create an electrical hazard which could result in serious injury or the death of pool users, installers or others due to electric shocks, and may also cause damage to property.
- **DANGER** - DISCONNECT THE POWER SUPPLY CONNECTIONS BEFORE WORKING ON THIS DEVICE; ELECTRICAL POWER MAY BE SUPPLIED TO THE RELAY TERMINALS FROM OTHER SOURCES.
- **WARNING - CHEMICAL BURN HAZARD:** Make sure all pumps are switched off at the main circuit breakers at the domestic distribution board before drilling into any pipes. Set rules for all handling related to electrical aspects, water and chemical products. Group the supply pumps and chemical product tanks in a safe and secured area.
- **WARNING** - Do not use this product to control an automatic swimming pool cover. There is a risk that swimmers could become trapped under the cover.
- **WARNING** - Devices which are not intended for use in single-family dwellings may require additional safety equipment to comply with local regulations.
- **WARNING** - Except for remote controls, install components at a minimum of at least 1.5 m (5 feet) from the inside wall of the pool or spa.
- **WARNING** - This product is intended for use in swimming pool applications only.
- **WARNING** - A sufficient equipotential earth connection (min. 4.5 mm² recommended), in accordance with local regulations, is obligatory for all metal components of the swimming pool, including the pool pump. This is necessary for the electrical safety as well as reduction of the corrosion risk.

USE

- DANGER - DO NOT LET CHILDREN OPERATE THIS EQUIPMENT.

- **WARNING** - Strictly respect the safety and handling procedures from the acid manufacturers, including protective measures for hands, body and eyes during transfer and use of acid. Follow the prescribed safety precautions for handling muriatic acid intended for checking the water pH. Muriatic acid may cause serious physical harm and may damage the swimming pool equipment. Extra care must be taken when installing, maintaining and operating the acid pump feed systems. Acid is dangerous to handle and should be properly contained, transported, poured, stored and dispensed.

- **WARNING** - Check the pH and sanitizer levels of the water before using the pool and make sure the filtration device is not obstructed.

- **WARNING** - Periodically use an independent pH and chlorine testing kit to ensure that the pH and chlorine is at a safe level. If the pH and Oxidation Reduction Potential (ORP) or conductivity probes are broken, depleted or dirty with oils, lotions, or other contaminants, they can report inaccurate results to the system causing incorrect water chemistry, which could harm people or equipment.

- **WARNING** - Consult the device display daily to ensure there are no alarm messages.

- **DANGER** - Water temperatures greater than 37.7° C (100° F) are a health hazard. Prolonged immersion in hot water may induce hyperthermia. Hyperthermia occurs when the internal body temperature exceeds the normal temperature of 37° C (98.6 °F) by several degrees. Hyperthermia may produce the following effects: (1) Unawareness of impending danger. (2) Failure to perceive heat. (3) Failure to recognise the need to leave the spa. (4) Physical inability to leave the spa. (5) Harm to the foetus in pregnant women. (6) Unconsciousness leading to the risk of drowning. The use of alcohol, drugs or medicine is a factor which increases the risk of hyperthermia in hot tubs and spas.

- **WARNING** - When mixing acid with water, ALWAYS ADD THE ACID TO THE WATER. Never add water to the acid. When adding a chemical product to the swimming pool, carefully follow the manufacturer instructions.

- DANGER - DO NOT MIX SODIUM HYPOCHLORITE AND MURIATIC ACID.

- **DANGER** - Keep standard solutions away from children, ensure that the bottles are securely closed, store them in a dry and ventilated location and do not let them freeze. The pH 4 calibration solution is acidic.

- **DANGER** - Batteries may contain dangerous substances. They should not be thrown into the bin, opened, thrown into fire or recharged, as there is a risk of explosion. Dispose of the batteries in accordance with the manufacturer instructions. There is a risk of explosion if the battery is replaced by an incorrect type of battery. Handle a leaking battery with gloves. Remove the batteries if the device is not used for an extended period of time.

- **DANGER** - UV index information is supplied for information only and depends on the orientation and exposure of the radio relay. For more information, we advise you to consult your dermatologist to inform you of the risks linked to your skin type.

Functions

Filtration control:

- By calculating the time according to the pool temperature (automatic mode).
- By programming a 24 hour cycle (makes it possible to benefit from off hours).
- By integrating the frost protection function (activation of the filtration below 3°C)
- By giving priority to the heating, RedOx regulation, or pH (if the value of one of these references falls below the set value, the filtration will start on the next hour, on the hour).
- Possibility to select the start time and end time of the filtration in automatic mode (to prevent noise at night).
- Possibility to increase or reduce the filtration time according to the use of the swimming pool (economical mode = pool with a low number of visitors, turbo mode = pool with a high number of visitors).
- Possibility to change into "SHOCK" mode (forcing of the filtration and electrolyser for 24 hours) via the supplied remote control or in the filtration menu.
- Automatic warning of the need to backwash the filter.
- Automatic detection of performance of filter backwash.

Lighting control:

- By programming on a 24h cycle.

Control of a salt chlorinator (or a dosing pump):

- By integrating the information supplied through the RedOx probe.
- Possibility to bring the electrolyser in hibernation at temperatures below 15°C, to prevent premature wear of the electrodes.

Control of heating (heat pump, electric re-heater, heat exchanger, etc.):

- By incorporating information from the integrated temperature sensor.

Control of an AUX1 outlet:

- Possibility of controlling a pH dosing pump, or a cleaning robot, or a fountain, etc.
- By programming on a 24h cycle (excluding the pH pump).

MAESTRO also makes it possible to visualise, on its screen (in the technical room):

- Instant information from the pool (pH, RedOx, conductivity, water temperature, radio signal strength) as well as from the previous 64 days.
- The daily functioning durations of filtration, of the electrolyser, of the heating and the AUX1 outlet as well as those of the 64 previous days.

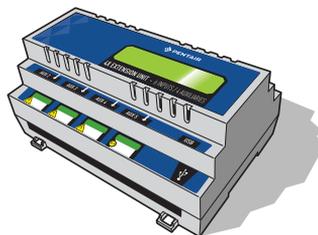
MAESTRO also provides information on the current status of the outlets (open/closed) and allows, via 4X extension, various options to be added (peristaltic pump, sensors, inlet or outlet extension).

Therefore, in summer and winter, you no longer need to worry about your filtration and you limit the interventions in the technical room to a bare minimum.

Supplementary inlets and outlets - (option with 4X Extension)

Requirement for additional connected equipment:

- If you need to connect more equipment, the 4X Extension unit can be linked (ref SB-PF-INA-001A, available as an option).



Possible connections on the 4 In inlets:

- **Disabled:** Unused inlet, or makes it possible to disable an inlet which was previously used and to leave the connection without any consequences.
- **pH tank:** Affects the relevant input to a dry contact (normally open, the contact closes when there is no more product) at a low level in the pH tank. In case of low level, the indoor display shows a symbol of a fuel pump in front of the numerical pH value, an identical indicator appears on the internet account summary and an e-mail is sent following the pre-set alert settings.
- **RedOx tank:** Affects the relevant input to a dry contact (normally open, the contact closes when there is no more product) at a low level in the disinfectant tank. In case of low level, the indoor display shows a symbol of a fuel pump in front of the numerical RedOx value, an identical indicator appears on the internet account summary and an e-mail is sent following the pre-set alert settings.
- **Filtration stop:** Any closure of a dry contact on the relevant input will result in the filtration immediately stopping.
- **Pool cover:** Connecting a dry contact linked to closed sensor of a pool cover (the rolling shutter covers the pool) automatically reduces daily duration production of a salt chlorinator.
- **Not specified:** Connecting a dry contact has no effect on the operation of the technical room but allows you to view, on the history menu, the activation time of a piece of equipment that you want to monitor (refilling, etc.) as well as its real time status in the summary menu.

Possible connections to the 4 Aux outlets:

- **Disabled:** Unused outlet, or makes it possible to disable an outlet which was previously used and to leave the connection without any consequences.
- **pH:** The relevant output closes a dry contact which makes it possible to control a pump which injects a pH corrector. You must specify the type of pH- / pH + regulation in the relevant menu.
- **If filtration is on:** The relevant output closes a dry contact when the filtration starts (useful for UV lamps).
- **Aux:** The relevant output closes a dry contact
- **Aux triggers filtration:** The closure of this output automatically conditions the filter to start.

INTERNET RELAY - installation and connections

- i** The INTERNET RELAY makes it possible to stay in contact with your installation. Thanks to the internet relay, you have access to data in real time and can also work on the settings and orders from a computer or smartphone connected to the internet.

Simply connect the internet relay to your internet box and connection to the www.domotique-piscine.eu server is automatic.

By following the instructions, and after creating your free account at www.domotique-piscine.eu, you will be able to connect to your installation in a few minutes. The controls imposed at MAESTRO via the internet are effective in a few seconds.

- i** Connecting the internet relay before the installation of MAESTRO to automate pairing of the devices is preferable. However, if the internet relay was installed after MAESTRO, it can be paired via the radio menu, see p 18.

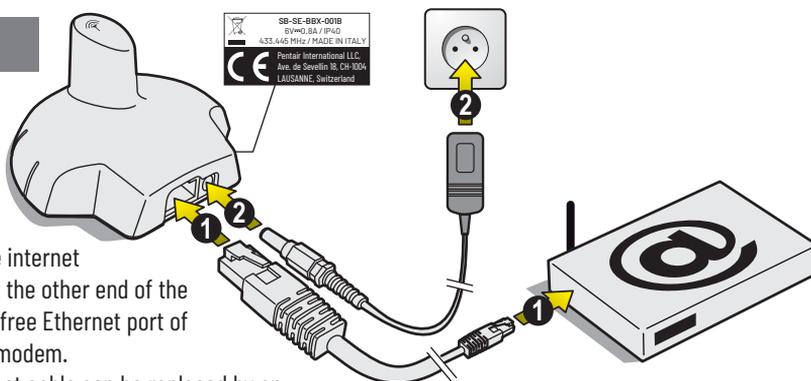
Connection

1 - Connect one end of the supplied Ethernet cable to the Ethernet port of the internet relay. Then connect the other end of the Ethernet cable to a free Ethernet port of your "box" or ADSL modem.

The supplied Ethernet cable can be replaced by an equivalent cable with a maximum length of 100 m.

If you do not have a free Ethernet port on your "box" or ADSL modem, we advise you to obtain an Ethernet switch to permanently connect your installation. Disconnect your Ethernet cables (except for the TV, telephone) and connect your switch in their place. Then connect your internet relay and the previously disconnected cable to the Ethernet switch. Then power your switch by connecting its power unit to the mains supply.

2 - Connect the power cord and plug in the transformer unit. Only use the supplied power pack: 230 V/DC Jack 5.5/2.1 mm ref. VELO5US060-EU-JA.



DHCP configuration (automatic IP address configuration)

The internet relay is automatically configured provided the DHCP server of your internet box is activated (in the vast majority of cases, the DHCP server is activated by default on installation of your internet box). This function can be accessed via the management menu of your internet "box", refer to your internet access supplier for more details.

The internet relay uses port 8001. Ensure that this port is open.

INTERNET RELAY - functioning



= not connected to the server

> Check the power supply, connection of the Ethernet cable and the internet connection.



Connected to the server



Data transfer in progress



Not lit



Lit



Flashing



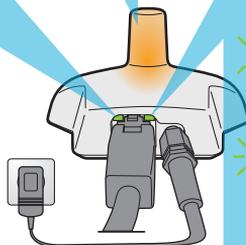
Transmission of data in progress

 - Not lit

 - Slow flashing

 - Quick flashing

 - Lit



 Initialisation fault or no supply

> Check the connection of the 220-V supply.



No network

> Check the connection of the Ethernet cable and check the internet connection.



DHCP resolution in progress

> Takes less than a second. If the flashing continues, check the activation of the DHCP in the management interface of your internet "box"



Network connection

> The internet relay is connected to the network.

Creation of a free account at www.domotique-piscine.eu



To monitor a pool for free on the internet, an account must be created in advance.

- > Connect to www.domotique-piscine.eu
- > Click *My account*
- > Click *Create an account*
- > Complete the fields of the PERSONAL INFORMATION window
 - Account type: A *poolbuilder* account is reserved for professionals.

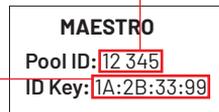
Choice of account	BASIC	OWNER	POOLBUILDER
Reading of information: (pH, RedOx, Temp, etc.)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfort command: heating pump, lighting and if a 4x extension is connected, only the "Aux" outlets are accessible	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setting the schedules: filtration, pH or RedOx priorities, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Fixing the set point values: pH, water temperature	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Assigning set point parameters: Injection time, pump volume, etc.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Setting installation parameters: type of disinfectant, pH+ or pH-, etc.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

> Complete the fields of the INSTALLATION INFORMATION window:

- **Pool ID:** The Pool ID number is on the side of the probe unit and the control center. It is a five-digit number. Do not use the serial number of the internet relay or the indoor display.

- **ID Key:** This is a unique security code which certifies the device. It is on the same label.

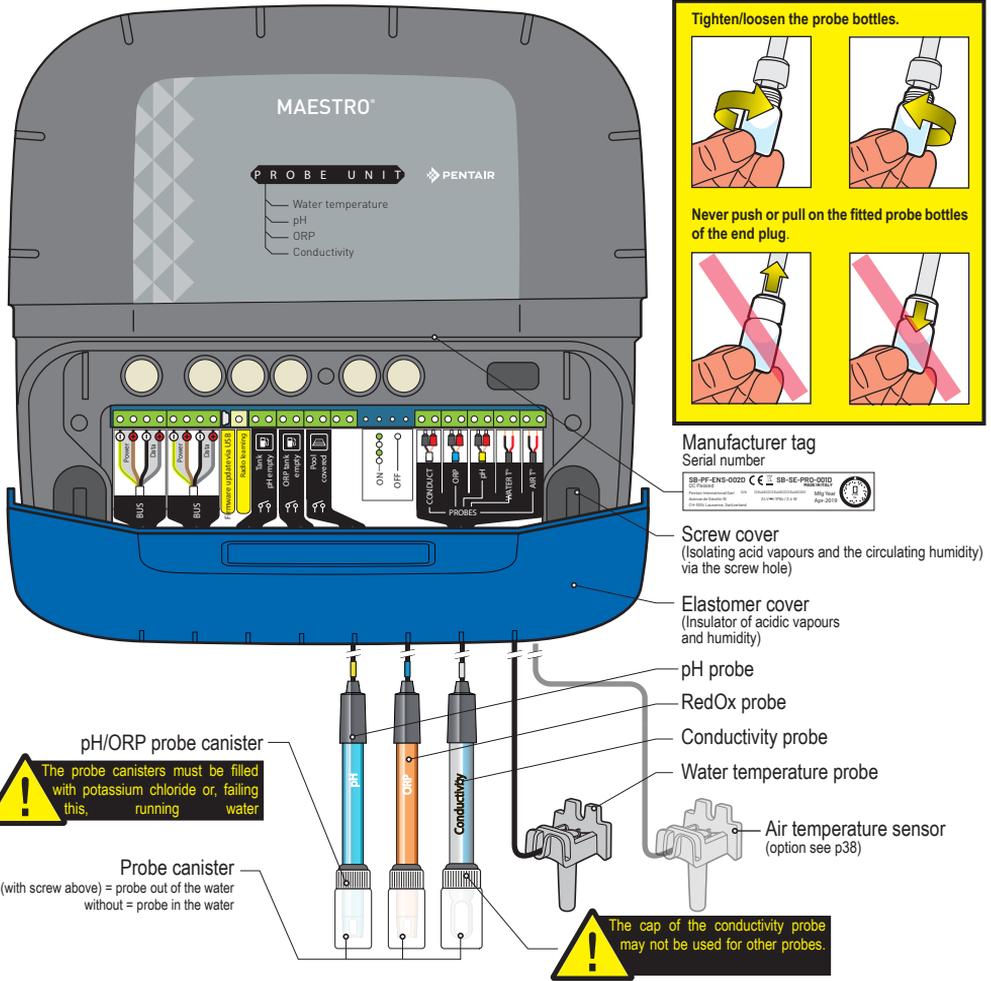
> Click *Create account*



The account has been created.

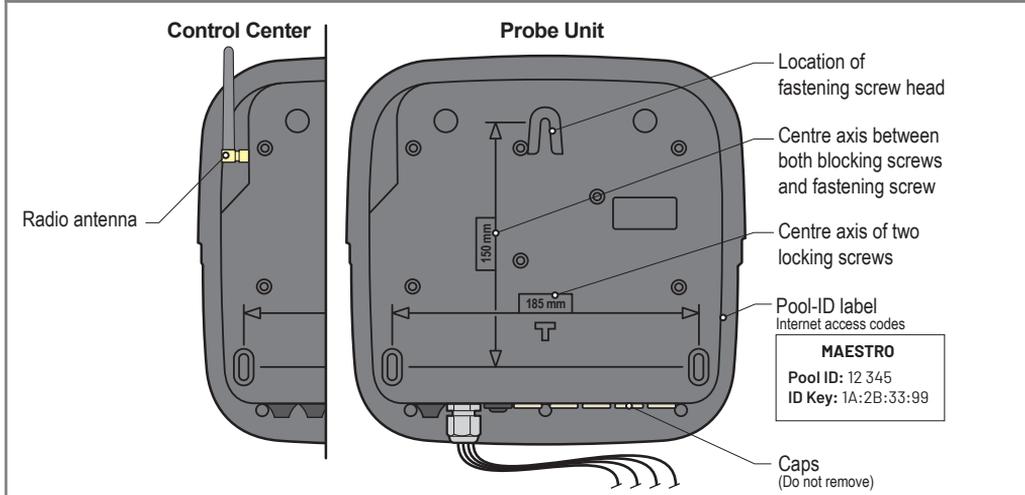
Probe Unit (P.U.), description

i The multi-sensor measurement makes it possible to find the water values. The length of the cables for the pH and RedOx probes is voluntarily limited to 50 cm to ensure good probe reading precision. The service life of the probes (according to the conditions of use) is around 18 years for the pH probe, 5 years for the RedOx probe and a lifetime for the conductivity and temperature probes. Only Pentair probes are compatible and guarantee proper functioning of the MAESTRO probe unit (see p40).



! The bypass must be isolated by closing the two valves before changing a probe which is at risk of flooding.

Back of devices



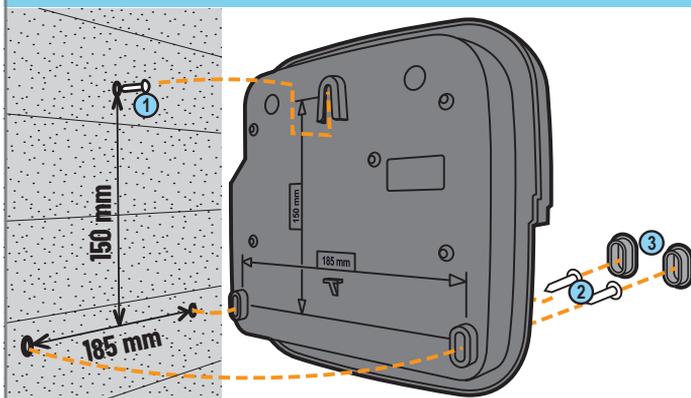
Wall mounting of the Probe Unit and Control Center



- This device is intended to be used inside, installed in a technical room which cannot be accessed by children.
- Set the device at a height lower than 2 m using three screws (4 to 5 mm diameter) in appropriate plugs for the type of support and fix the device vertically on a clean support which is able to bear a minimum vertical load of 5 kg.

Pierce three holes in accordance with the below dimensions then place 3 suitable plugs.

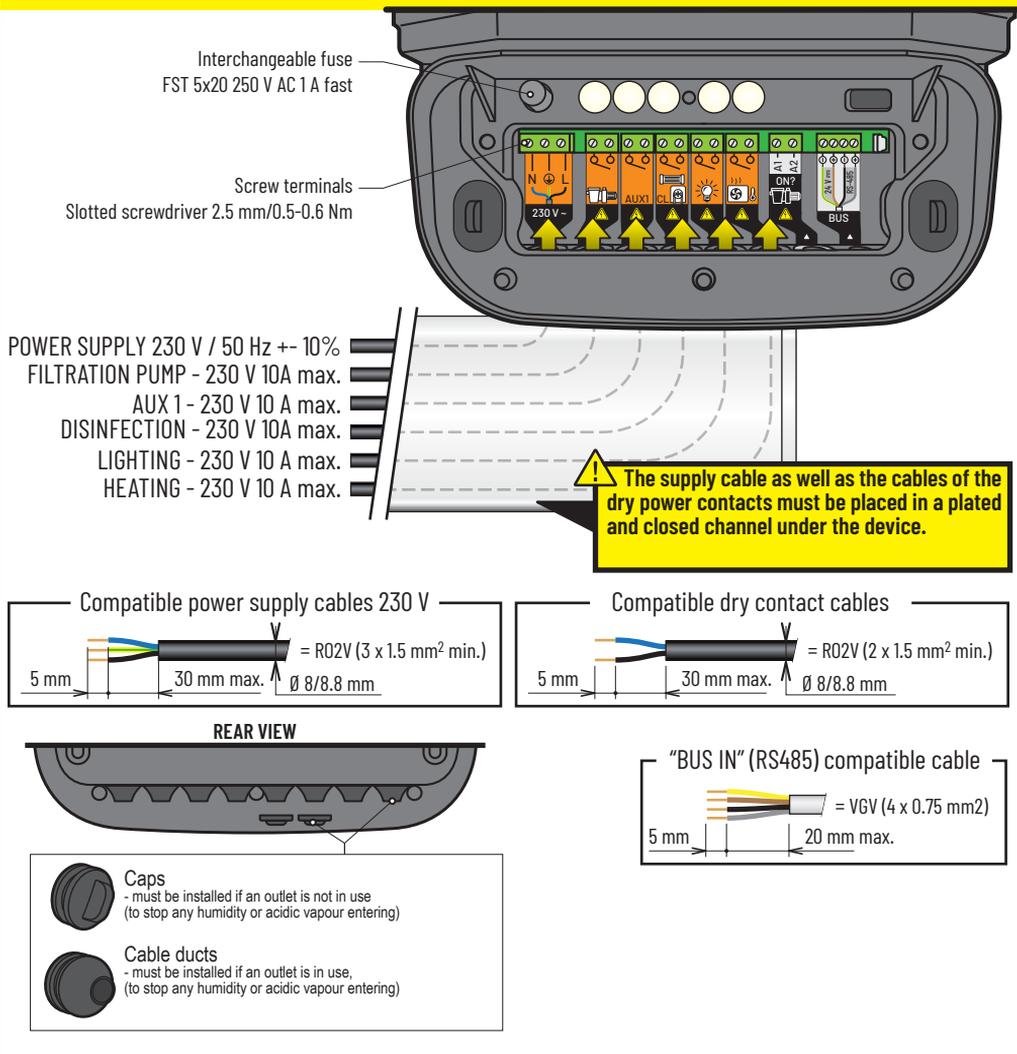
- 1 - Tighten the screw at the top, leaving 2 mm under the screw head, then hang the device on this.
- 2 - Place the 2 lower screws.
- 3 - Add the 2 lower screw covers to ensure a full seal.



Hygiene of Control Center electrical connections



- The device must be installed by a qualified technician according to valid local regulation
- This device is permanently connected.
- The power supply to the device is cut by its interrupter, which must be close and must remain accessible at all times.
- The device needs to be connected to the earth and its power supply needs to be protected by 16A 30 mA differential protection. This protection must be cut before any intervention on the device.
- Overvoltage category II (2,500 V peak) electrical device. If necessary, place overvoltage protection equipment before the device.
- The device must be placed close to the electrical cabinet to aid connections (3 m max.).



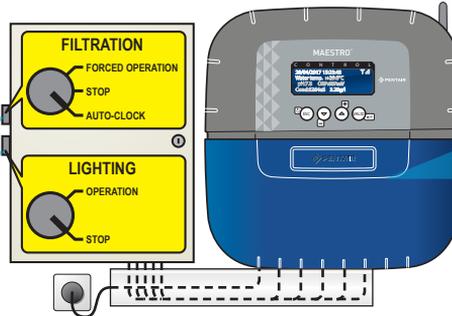
Control center, basis for settings in an existing installation

! - RS-485 connections must remain within the building.

The 3-position interrupters are kept.

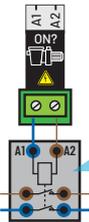
The filtration interrupter makes it possible to rinse the filter using the FORCED OPERATION/STOP positions. If used with MAESTRO, use position CLOCK.

The lighting interrupter remains in STOP position.



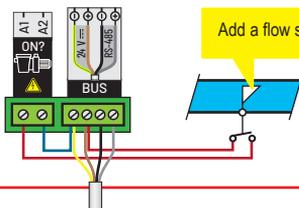
MAESTRO is connected to a classic electrical installation. All of the outlets are dry contacts which are normally open (NO) and can interrupt up to 230 V-10 A (above this, add a contactor).

Basis for connections and settings in an existing installation



MAESTRO needs to obtain information on filtration; a parallel connection is made on the filtration contactor coil at the A1 and A2 terminals. 230 V is present when the filtration runs.

! If a variable speed pump is connected!

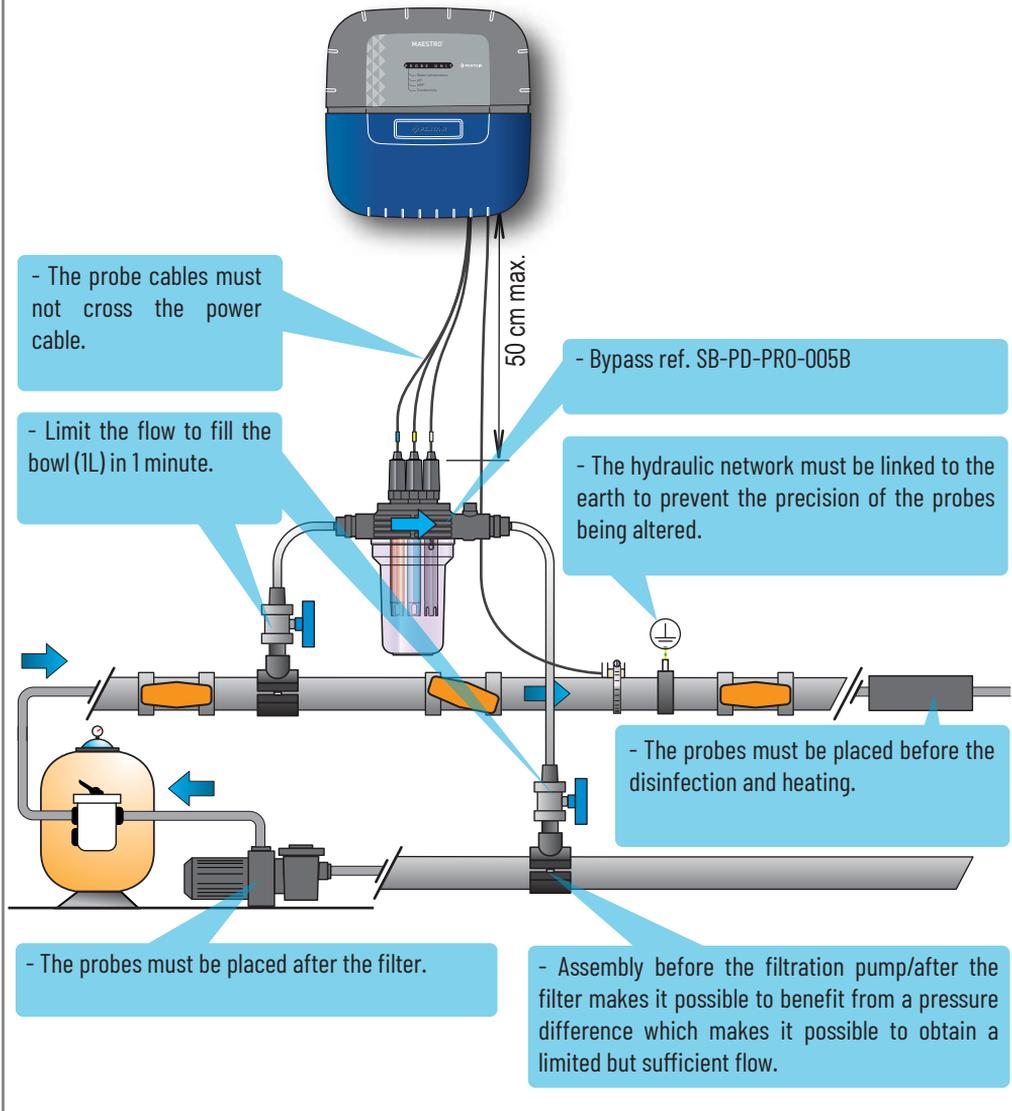


Add a flow switch after the variable speed filtration pump.

Never 230 V on the flow switch!

Hydraulic/electrical installation

- i** MAESTRO probe unit is supplied with a saddle clamp and a cable gland for the temperature probe. However, the 3 other probes should be placed in a bypass which optimises the quality of the measurements and the service life of the probes (rec. ref. SB-PD-PRO-005B).



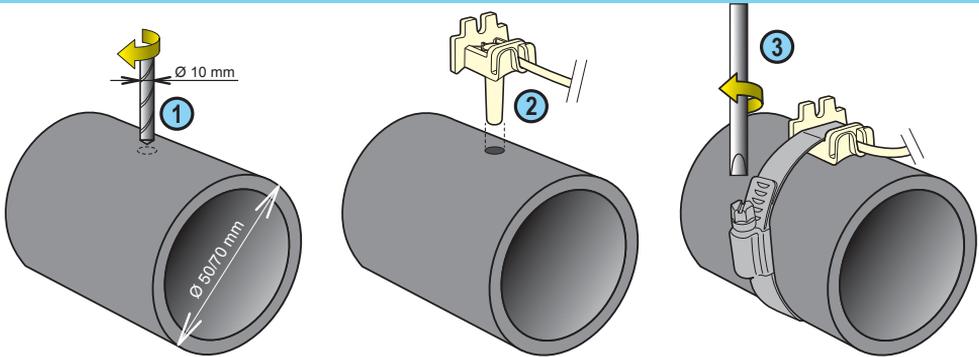
Water and air temperature probes.

- i** MAESTRO is supplied with a temperature probe which is suitable for water. It is possible to mount a second temperature probe for the air temperature used to manage the frost protection process of heated technical rooms.

INSTALLATION OF THE WATER TEMPERATURE PROBE

The temperature probe can be installed outside the bypass in front of the filter of the pump or in front of the filter inlet in order to improve the reading precision.

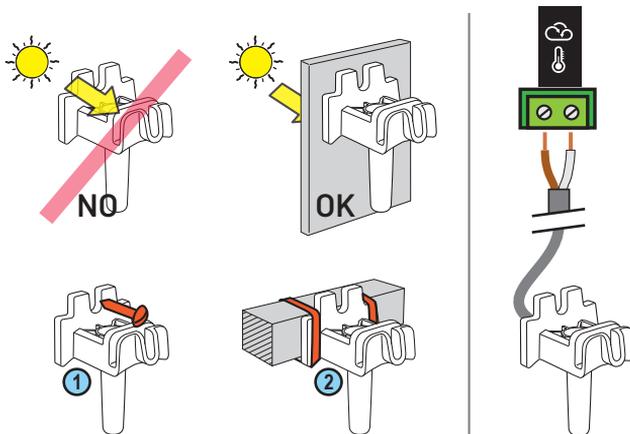
- 1 - Pierce the PVC pipe (diam. 50-70 mm) to a diameter of 10 mm (3/8 inch).
- 2 - Remove the burrs and check the O-ring under the probe.
- 3 - Place the sensor in the hole, then place the clamp band in the groove and tighten.



INSTALLATION OF THE AIR TEMPERATURE PROBE (OPTION)

- If the air temperature probe is connected, it automatically becomes the reference value for the management of the anti-freeze protection. The air temperature probe is placed outdoors, away from direct sunlight so that the measurement is not distorted. It can be easily moved due to its 6 m long cable.

- 1 - Mount it on a wall by using screws.
- 2 - Mount it on a horizontal bar of a grate with a cable tie.



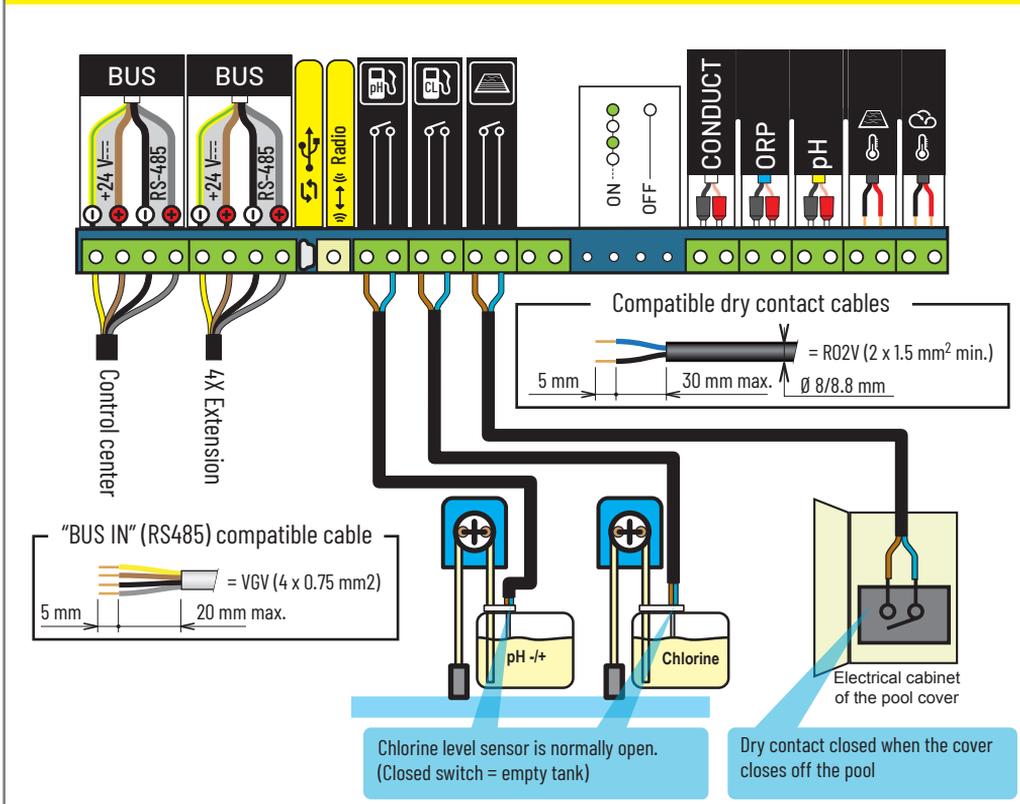
If an air temperature probe is connected, the air temperature information from the radio relay will no longer be used.

Connection of the Probe Unit

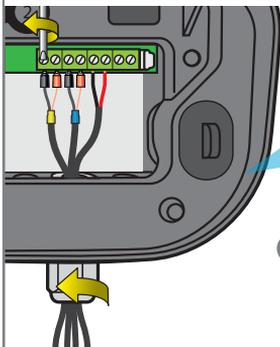
Connection:

- of a low level sensor for liquid chlorine or acid
- of an end position sensor for the pool cover

! - RS-485 connections must remain within the building.



Connection of sensors (pH + ORP + conductivity + temperature)



- 1 - Completely unscrew the strain relief bushing; be careful and do not let the black, flexible seal fall.
- 2 - Pass the 3 cables through the screw and strain relief bushing
- 3 - Connect each pod according to the indicator under each terminal block
- 4 - Tighten using a 2.5 mm/0.5-0.6 Nm slotted screwdriver
- 5 - Securely re-tighten the strain relief bushing by hand

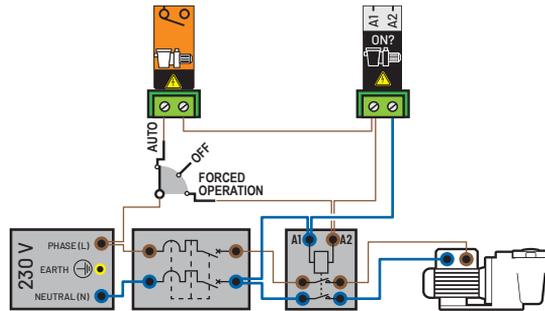
i Only Pentair probes are compatible and guarantee proper functioning of the device.

Control Center, filtration - connection and settings

The filtration pump outlet does not supply any power.

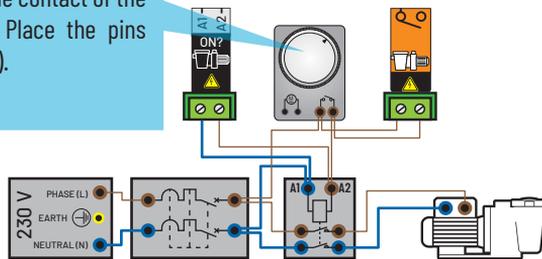
! Assembly for classic pumps only. For the VS pumps, see the Speed FC notice!

New installation:



Existing installation:

Parallel connection with the contact of the filtration programmer. > Place the pins into inactive position (OFF).



||||||| Filtration cannot |
| be controlled |
|||||||

MAESTRO is not able to cut or launch filtration. Check the connections, that the 3-position switch is on Schedule/Auto and the correct connection of A1A2.

||||||| Anti-freezing mode |
| inactif |
|||||||

If the filtration is set to Off, this message displays for a few seconds to inform you that the freeze protection is inactivated and alerts you of the importance of this decision.

||||||| Anti-freezing mode |
| active |
|||||||

The antifreeze mode is active, factory setting +3.0 °C (modifiable in the menu Instal > Filtration).

Control Center, filtration - connection and settings (Cont.)

Select current mode:

Auto = Automatically calculates the filtration length according to the water temperature.

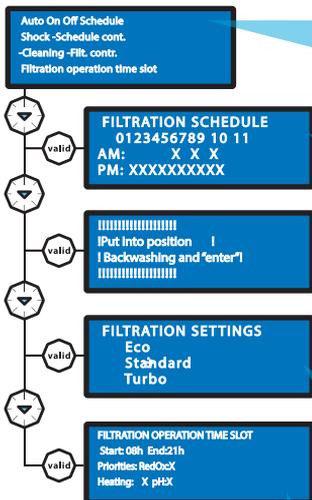
On = Filtration runs 24/7.

Off = The filtration is stopped (attention: the antifreeze mode is inactivated).

Schedule = The filtration runs during each time period selected in the menu "Schedule Settings" (see below)

Shock = The SHOCK function triggers 24 hours of forced filtration and electrolysis. This function can be useful after the pool has been used by many visitors and when the pool temperature is high. At the end of Shock mode, MAESTRO returns to Auto mode.

Settings menu > Filtration menu :



Filter cleaning assistance: Washing > Filtration stop > Put into washing position + "enter" (position the 6-way valve to Wash then press Valid) > Washing in progress > Filtration stop > Put into rinsing position + "enter" (position the 6-way valve to Rinse then press Valid) > Rinse in progress > Filtration stop > Put into Filtration position + "enter" (position the 6-way to Filtration then press Valid).

This setting increases or decreases the filtration time to compensate for the size of the pump and/or activity in the swimming pool. Factory settings: Turbo = +30%, Eco = -30% (can be modified in the Instal. menu).

This menu gives you control of the filtration start and end time, to control the level of noise linked to your pool (filtration noise), for the sake of the neighbourhood. By default, leave Stop on Auto. By ticking one of the priorities, you accept that this controls filtration outside of the authorised time periods (because this equipment needs to work when the filtration is working). If necessary, the filtration is re-started in 1-hour cycles until the desired set point is obtained. In Auto mode, MAESTRO calculates the filtration finish time.

Control Center, connection and configuring a 230-V disinfectant dosing pump at the "Electrolyser" outlet.

The electrolyser outlet is valid for any type of disinfection. It is a dry contact and does not supply any voltage.

1 - Connect the cables in accordance with the diagram.
2 - Access the secured Install menu of MAESTRO (on the Menu Settings, press Esc and Valid at the same time for 3 secs).

> **Select Other** to indicate that disinfection will not be carried out by an electrolyser.

In the Disinfect. sub-menu :

> **Modify injection time** (Number of seconds/15 min) if necessary

> **Modify max. daily volume** (number of litres for a 1L/h pump) if necessary.

3 - Via Menu Settings > pH/Disinfect/Temp > Disinfectant:

> **Select Auto** to automatically control the RedOx function.

> **Select Off** to fully cut the pump supply.

> **Select Set point** to modify the RedOx value to be achieved in Auto mode (700 mV factory setting).

> If required, selecting Priming and pressing Valid. manually starts the connected pump.

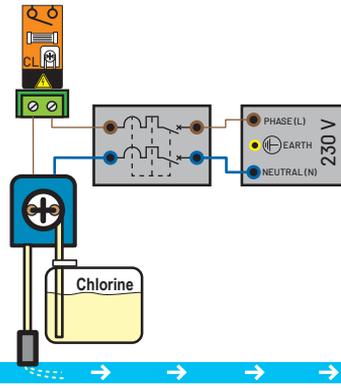
Disinfectant is injected after filtration, after the heat pump and after the probes.

|||||
| Product tank |
| RedOx correct, empty |
|||||

Only if connected to a MAESTRO probe unit or 4X extension. The liquid chlorine tank is empty. > Fill the tank with liquid chlorine.

|||||
| Max daily | | RedOx
control |
|||||

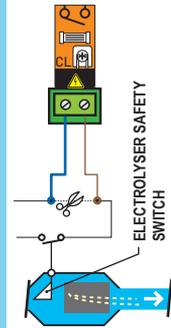
MAESTRO needs to use more disinfectant than authorised in the max. daily volume menu (factory setting 0.5 L/day, modifiable, see below). The message is automatically deleted at midnight.



Control Center, connection and configuration of an electrolyser.

The electrolyser outlet does not supply any power.

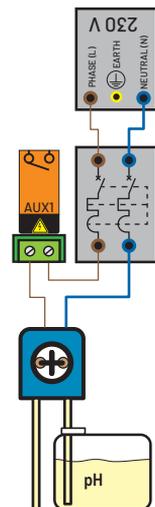
- 1 - Connect the safety switch (flow switch or 3rd electrode of the electrolyser) in series, in accordance with the diagram.
- 2 - Access the secured Install menu of MAESTRO (on the Menu Settings, press Esc and Valid at the same time for 3 sec).
 - > Select Electrolysis to signify that the disinfection is done by an electrolyser.
 In the Disinfect. sub-menu :
 - > Modify min. temperature (stopping of the electrolyser if the temperature has been reached) if necessary
- 3 - Via Menu Settings > pH/Disinfect/Temp > Disinfectant:
 - > Select Auto to automatically control the RedOx function.
 - > Select Off to fully cut the electrolyser supply.
 - > Select set point to modify the RedOx value to be achieved in Auto mode (650 mV factory setting).



Control Center, connection and configuring a 230V pH corrector injection pump to AUX1.

The Aux1 outlet is a dry contact and does not supply any voltage.

- 1 - Connect the cables in accordance with the diagram.
- 2 - Access the secured Install menu of MAESTRO (on the Menu Settings, press Esc and Valid at the same time for 3 sec):
 - > Access Aux1 and select YES in pH mode.
 - > If specific settings are required, access pH:
 - > Injection time = Duration of each injection sequence of the pH corrector performed every 15 minutes by the pH pump (15 s factory setting)
 - > Min. temperature = temperature below which the pH corrector is not injected.
 - > Volume days Max = maximum authorised volume of injection of pH regulator (for a flow pump of 1 L/h) to safeguard against potential overdosing.
- 3 - Via Menu Settings > pH/Disinfect/Temp > pH:
 - > Select pH+.pH- /Choice of pH+.pH-, and select the corrector type (pH+ or pH-).
 - > Select Set point and configure the desired value.
 - > If required, selecting Priming and pressing Valid. manually starts the connected pump.



The pH corrector is injected after filtration, the heating pump, and the probes.

```

!!!!!!!!!!!!!!!!!!!!
! pH regulation !! max
! daily !
!!!!!!!!!!!!!!!!!!!!
    
```

MAESTRO needs to use more pH corrector than authorised in the max. daily volume menu (factory setting 0.5 L/day).

```

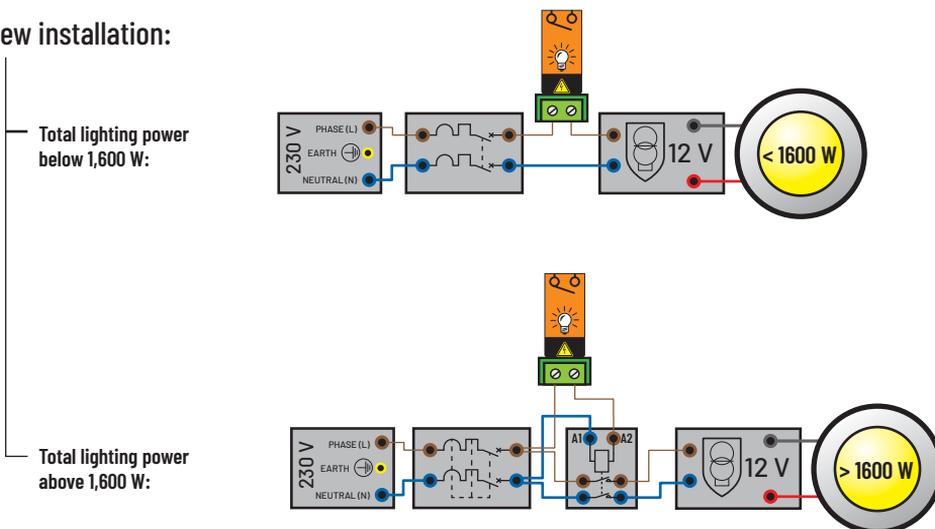
!!!!!!!!!!!!!!!!!!!!
! Product tank !
! pH correct. empty !
!!!!!!!!!!!!!!!!!!!!
    
```

Only if connected to a MAESTRO probe unit or 4X extension. The pH corrector tank is empty. > Refill the pH corrector tank.

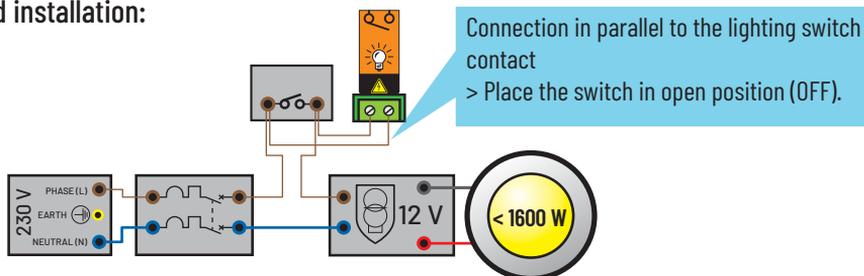
Control Centerconnection and configuration of lighting.

The lighting outlet is a dry contact and does not supply any voltage.

New installation:



Old installation:



- 1 - Connect the cables in accordance with the diagram.
- 2 - Via Menu Settings > Menu Lighting:
 - > Select manual for access to lighting via remote control.
 - > Select Schedule and set the time periods in the schedule setting sub-menu.
 - > Select off to permanently cut the lighting.

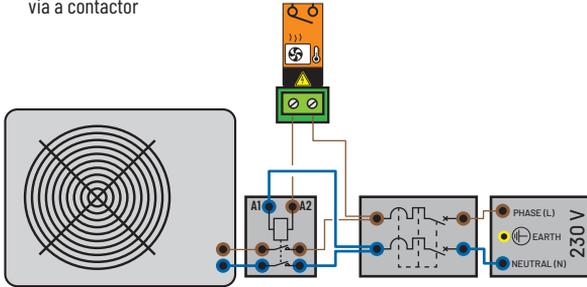


On the remote control, a short press = ON / OFF, a long press = colour change (according to the type of spotlight installed).

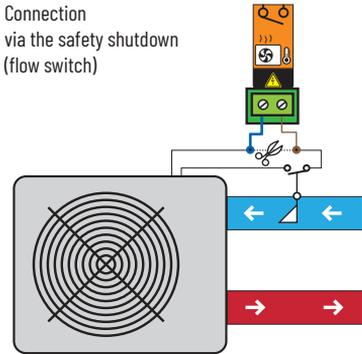
Control center, connection and configuring a heat pump.

i The Heating pump outlet is a dry contact and does not supply any voltage.

Connection
via a contactor



Connection
via the safety shutdown
(flow switch)



- 1 - Connect the cables in accordance with the chosen diagram.
- 2 - Set the heating pump to its own maximum temperature set point (MAESTRO will manage the set point value to be achieved)
- 3 - Via Menu Settings > Temperature:
 - > Select Auto to ensure that the temperature is controlled automatically.
 - > Select Off to permanently cut off the heating pump.
 - > Select Set point to change the target value to be achieved. To change to °F, Menu Settings > Language.

MAESTRO, other alert messages.

i The meaning of different displays.

```
|||||
!Filtration to OFF !
! in the menus !
|||||
```

You try to launch filtration but the position is OFF in the filtration menu

```
||||| Check
! control !
|||||
```

> Calibrate the pH probe, see p 36.

```
||||| Filter needs to !
! be cleaned !
|||||
```

The filter must be cleaned. > Launch a filter backwash procedure.

```
|||||
! Loss of connection !
! problem !
|||||
```

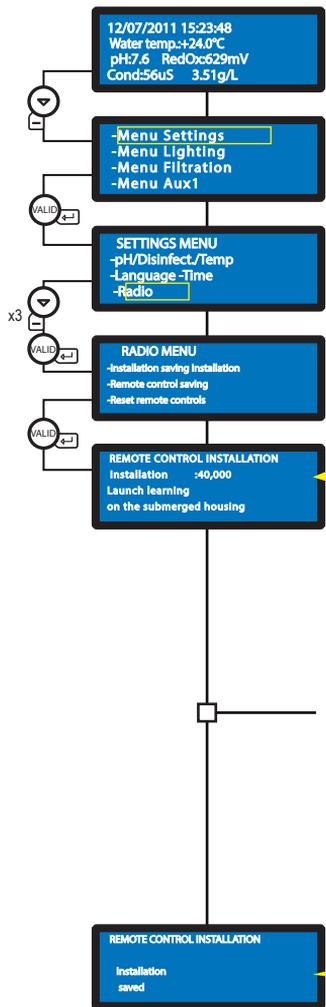
MAESTRO is no longer connected to the radio network.
> Check the antenna of MAESTRO and the status of the radio relay (position, batteries). A remote antenna is available as an option.

```
|||||
! Bus connection !
! faulty !
|||||
```

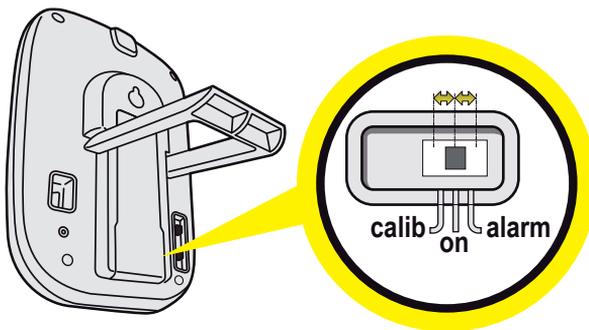
> Check the connection of all devices connected to the BUS.

Pairing of a MAESTRO C.C. to an existing installation

i This procedure makes it possible to link a MAESTRO C.C. to a MAESTRO P.U. following any device changes. The devices are all initially paired to each other. MAESTRO will therefore take the paired MAESTRO P.U values into account to manage the equipment in the technical room.



The menu asks to launch learning on the submerged housing. It can be launched from the indoor display in a simpler way by performing a switch cycle (on the bottom of the indoor display): ON > CALIB > ON.

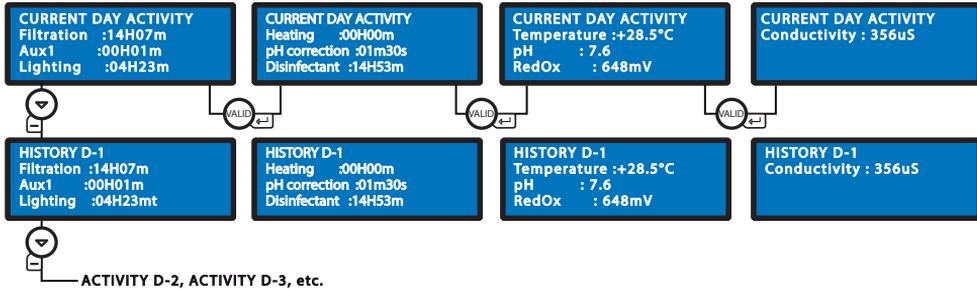


MAESTRO C.C. is now paired to MAESTRO P.U.

History menu

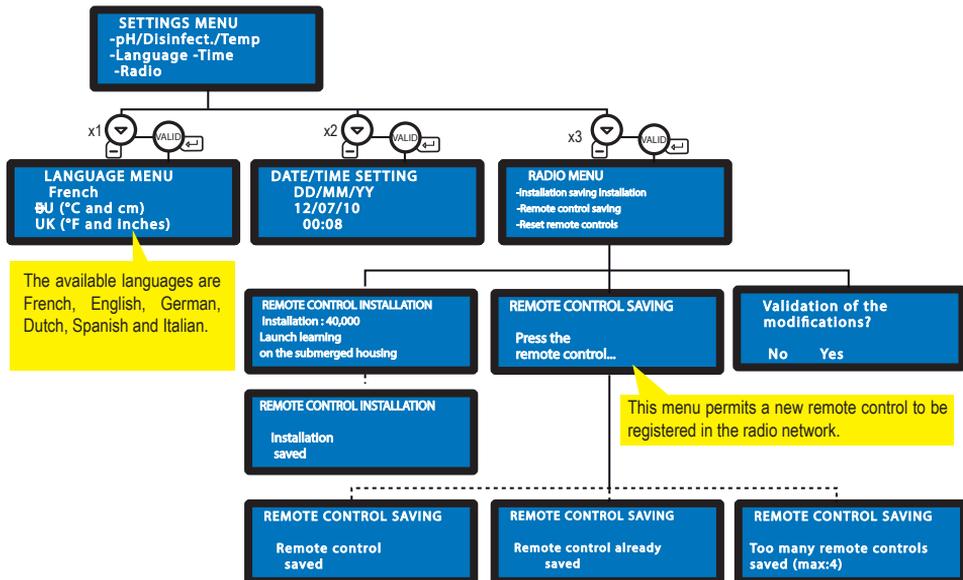
i This menu makes it possible to find the daily activity (over the last 64 days) of each connected piece of equipment.

- 1- Access the secured MAESTRO current day activity menu by pressing Valid. for 4 sec:
 - >> Access 4 pages of the current day activity by pressing Valid
 - > Access Activity D-1 by pressing - (bottom arrow) then Valid to view the 3 other pages
 - > Access Activity D-2 by pressing - (bottom arrow) then Valid to view the 3 other pages.



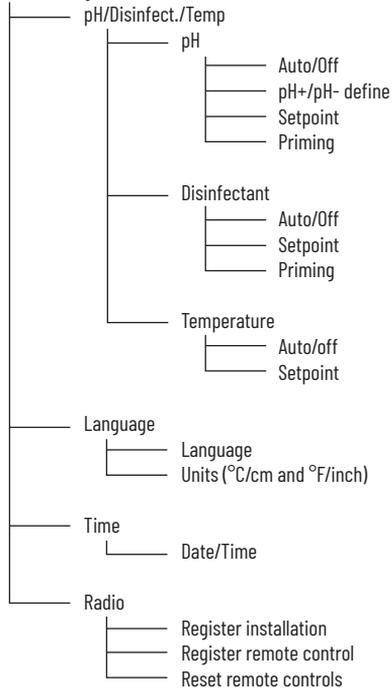
Internal menu

i These menus permit the internal MAESTRO parameters to be modified.



Navigation menus (1/2)

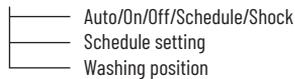
- Menu Settings



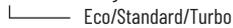
- Menu Lighting



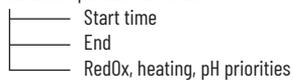
- Filtration Menu



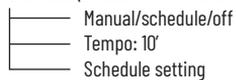
- Filtration setting



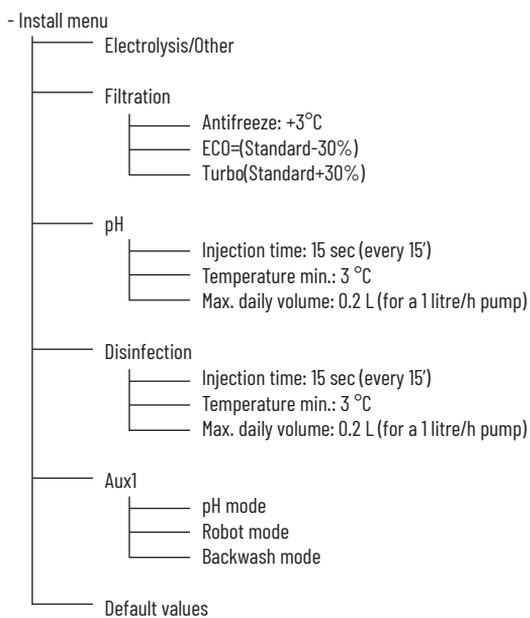
- Filtration operation time slot



- Menu Aux1 (invisible if AUX1 is set to pH or backwashing mode)

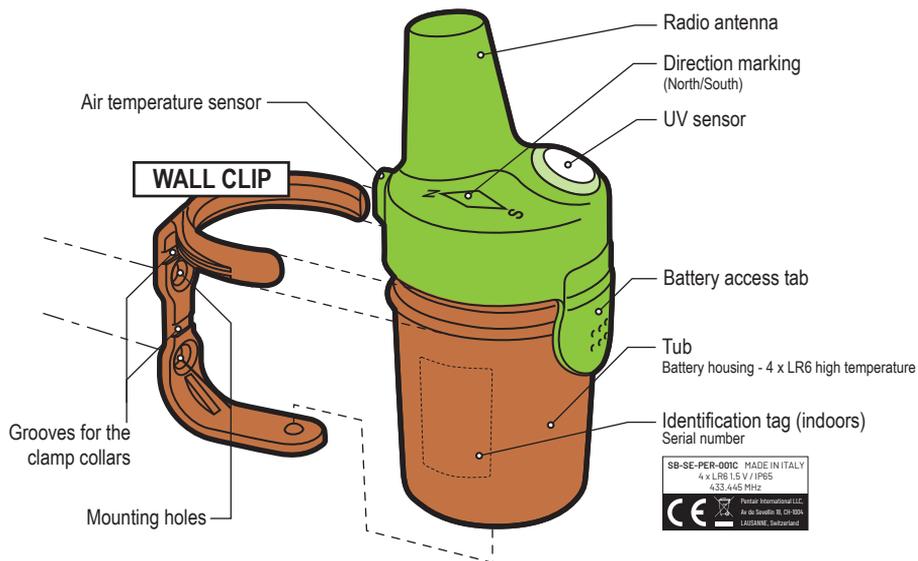


Navigation menus (2/2)

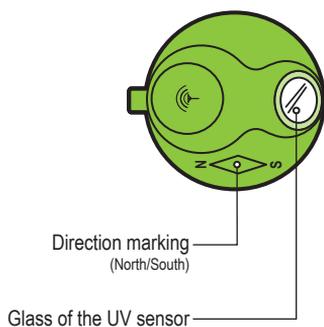


RADIO RELAY - description

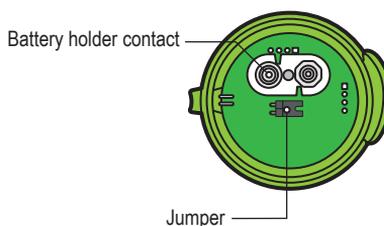
i This element is necessary to relay the radio waves between the technical room and the home. It measures the UV index as well as the outdoor temperature. With its forms and natural colours designed for outdoors, it can be placed in the garden (in a vegetable bed or on its clip, screwed to a wall). The battery autonomy is around 1 year. If there is a large distance or a garden with a great deal of elevation, one or several radio relays can be added (see p30).



VIEW FROM ABOVE



VIEW FROM BELOW
OPEN



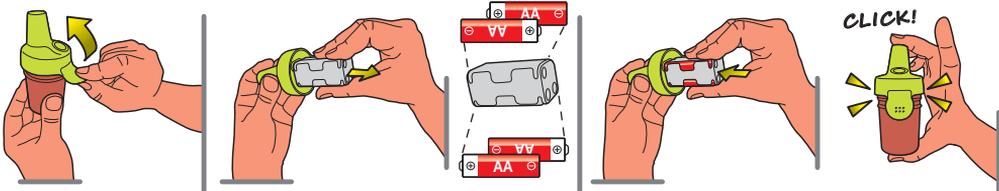
 T° ext / UV = ON The outdoor temperature and UV index are transmitted	 T° ext / UV = OFF The outside temperature and UV index are not transmitted (required to add a radio relay, see p30).
--	---

RADIO RELAY - installation of batteries (4xLR6 - 1.5 V)

i The service life of the batteries supplied is more than a year (depending on the conditions of use).

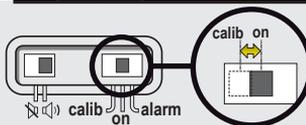
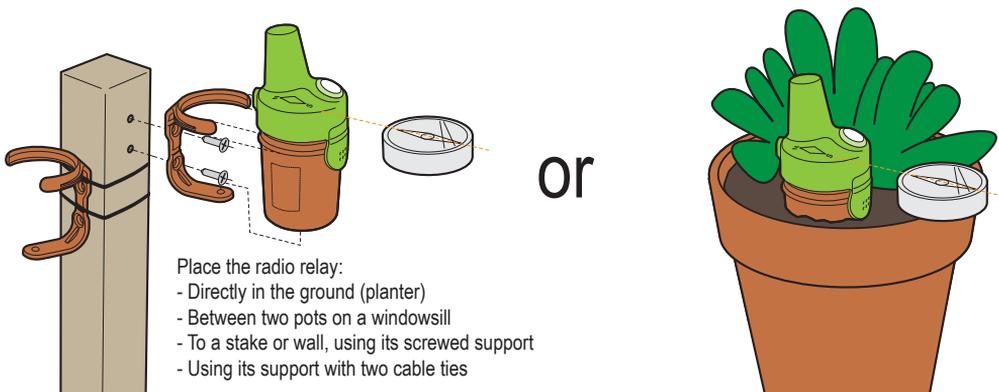
! Since the radio relay is exposed to very high heat, using high-quality alkaline batteries resistant to temperatures up to +70 °C (for example DURACELL PROCELL) is necessary

- 1 - Remove the pot by pulling the tab
- 2 - Pull the battery holder
- 3 - While respecting the polarities indicated on the battery holder, place the 4 alkaline AA/1.5 V, non-rechargeable, high temperature-resistant batteries supplied
- 4 - While respecting the polarities, put the battery holder back into place. The red led flashes
- 5 - Replace the pot and check that it has been correctly put into place.



RADIO RELAY - Installation

i The radio relay should be placed at a height (on a wall, pole), far from any metallic objects (iron fences, zinc gutters) and directed towards the south (see the marking). Perform tests (reading of the radio signal strength on the display, move the CALIB switch to the bottom to refresh the information) before permanently mounting it. If there is a very large distance between the pool and the house, several radio relays can be added (as an option).



"Refreshing" the display of data by positioning the switch on "CALIB" then changing it back to "ON" (at the back of the display) makes it possible to see - after 10 seconds - the radio force signal on each positioning test of the radio relay.

INDOOR DISPLAY - Presentation

i The remote indoor display provides information on all the parameters (updated every 15 minutes) of the water quality and comfort (temperatures, UV).

Intended for internal use, pre-programmed alerts make it possible to check the chemical balance of the water at a glance without needing to perform cumbersome analyses at the edge of the tank.

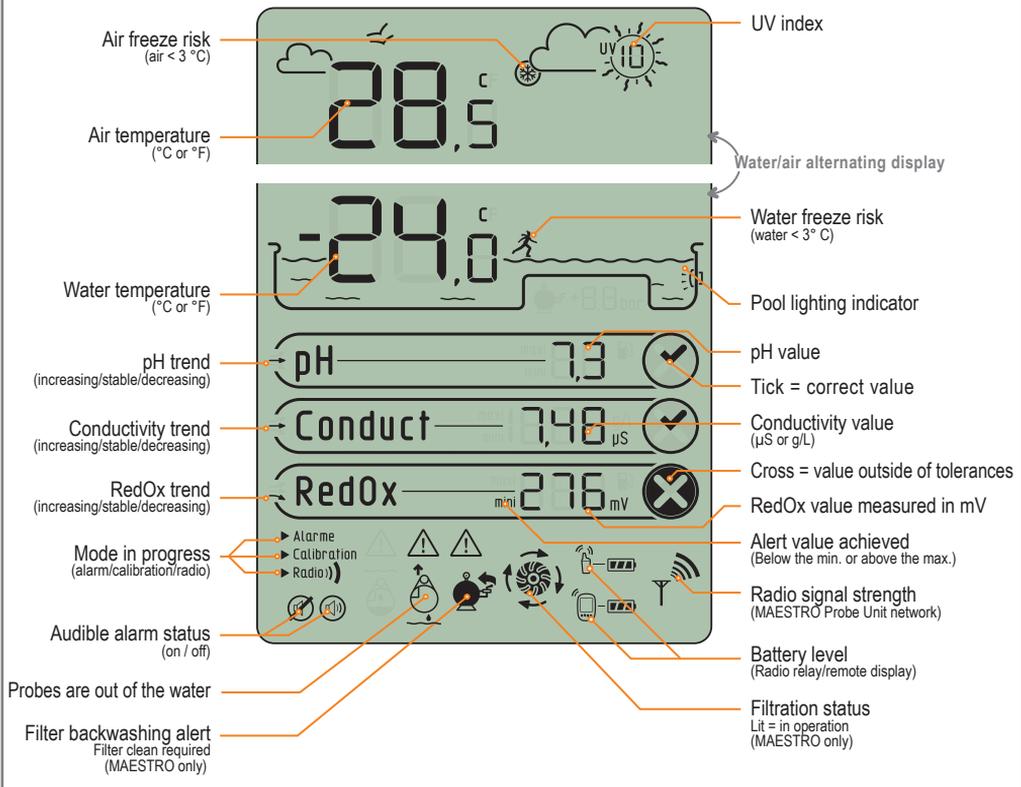
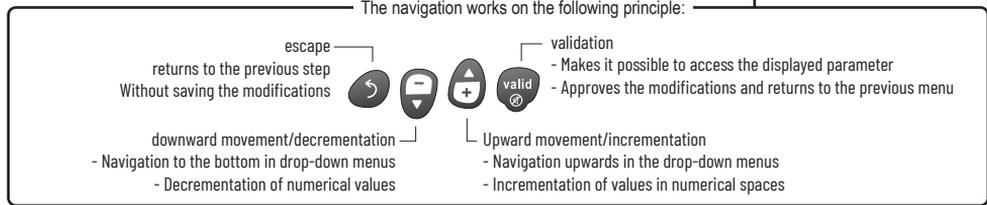
Moving the signal may cause a loss of signal. If it remains out of range for more than 1 hour, all the information is deleted.

The remote display can be used:

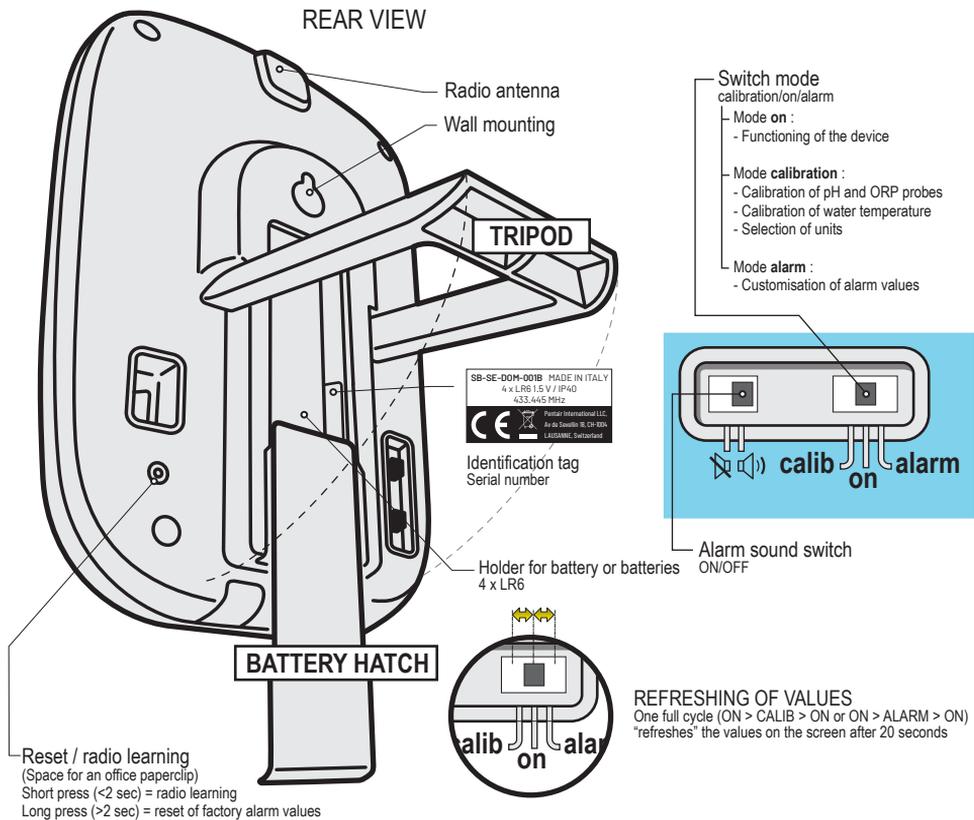
- Placed on its tripod
- Mounted to a wall (after testing the signal range)



The navigation works on the following principle:



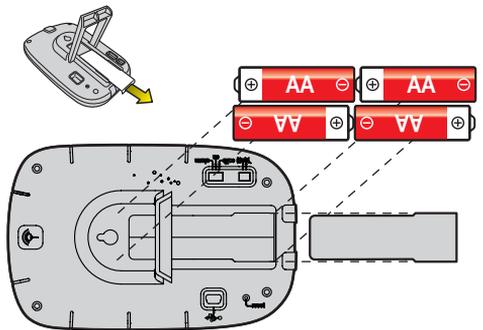
INDOOR DISPLAY - Presentation



The display is intended for internal use. Do not expose to sun or rain. Exposure to sunlight (UV) or rain may cause irreversible damage.

INTERNAL DISPLAY - installation of batteries (4xLR6 - 1.5 V)

- > Raise the tripod then remove the battery cover
 - > Insert new alkaline batteries (4xAA - 1.5 V), respecting the polarity indicated on the battery holder.
 - > Check the battery power level of the indoor display on the screen and replace the battery cover.
- Note:** - Changing the batteries does not erase the alarm value customisation.



INDOOR DISPLAY - reading and intervention following a message



e.g.: The air temperature is 28.5 °C



e.g.: The water temperature is 24.0 °C

Temperatures

The indoor display provides the following, alternating values (in °C or °F, see p23):

- The air temperature accompanied by a symbol
- The water temperature accompanied by a symbol



i Respecting the north-south direction of the radio relay improves the measurement precision of the air temperature. If the installation includes two radio relays, it is the one which has the jumper set to ON which will provide these values, see p21. In case of difference between the displayed temperature value and the reference value supplied by a standard device, this difference can be addressed via the "calibration" menu, see p34.



The air temperature is -2.5° C



The water temperature is 0.5° C

Freeze risk detection (water and air)

- The frozen water symbol shows, if the water temperature is below +3 °C (37.4 °F). There is a risk of ice formation; intervention is necessary to avoid damage to the pool and to the hydraulic installation.

> **Active wintering:** Force the pump to combat formation of ice; the probes can therefore remain in the water. This frost protection function is automatic when MAESTRO is coupled to the MAESTRO probe unit.

> **Passive wintering:** Remove the probes from the bypass and replace the canisters on the probes to conserve them. The indoor display will then show values measured in the water of the protective canisters.

i For more details, see the chapter on the wintering of your pool.

- The frost symbol linked to air temperature shows, if the temperature measured by the radio relay is below +3 °C (37.4 °F).

The UV level (not guaranteed, for information)

The UV level is supplied for information only to raise awareness of skin exposure risks between 11am and 3pm).

i Incorrect exposure of the radio relay (which includes the sensor) to the sun can falsify the UV index value. Respecting its north-south direction is mandatory to obtain a reliable measurement which is meaningful between 11am and 3pm (daylight saving time).
- If the installation includes two radio relays, it is the one which has the jumper set to ON which will provide this value, see p21.

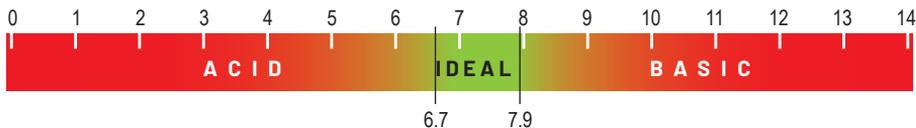


- UV < 3: sunglasses, hat
- UV 4 to 6: sunglasses, hat, Protection Index (IP) 30 sunscreen
- UV 7 at 8: sunglasses, hat, Protection Index (IP) 50 sunscreen, no exposure between 12pm and 4pm
- UV 9 and +: risk of burning, cover up, Protection Index (IP) 50+ sunscreen

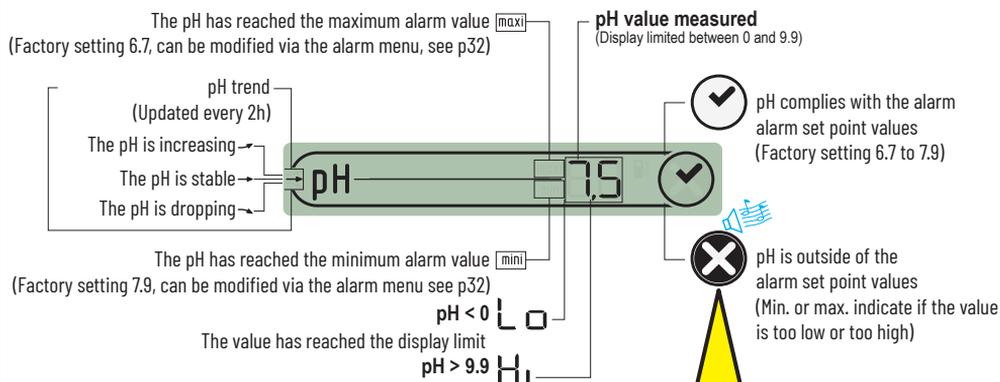
Consult your dermatologist to find out about risks linked to your skin type.

INDOOR DISPLAY - pH reading

- i** The pH is a scale (without any units) measuring the acidity (0 to 7) or the alkalinity (7 to 14) of the pool. The pH is the concentration of the hydrogen ions. For a swimming pool, the ideal pH which is generally advised is close to 7.3 (to be confirmed by your swimming pool supplier according to your installation).
 Note: the precision of the pH measurement is very closely associated with regular pH probe maintenance. Checking for any contamination regularly (see p33) and calibrating it before the summer season (see p36) are recommended.



- i** The factory set points of the upper and lower pH alarms are 6.7 and 7.9. These values can be modified via the alarm mode (see p. 32).



⚠ A TOO HIGH OR LOW pH IRRITATES SKIN

> Ensure that:

- The probe bottle has been removed from the pH probe (see p08)
- The pH probe was calibrated less than 6 months ago (see p36)
- The pH probe is not dirty (see p39)

> Manual control: select "pH-" or "pH+" product according to the type of pH deviation.

> Automatic regulation: check the correct operation of the material

- i** If the pH value is high or low, check if an air bubble at the bottom of the pH probe is resulting in a bad measurement. Shake the pH probe (as for a mercury thermometer) so that any air bubbles rise up by the centrifugal force.

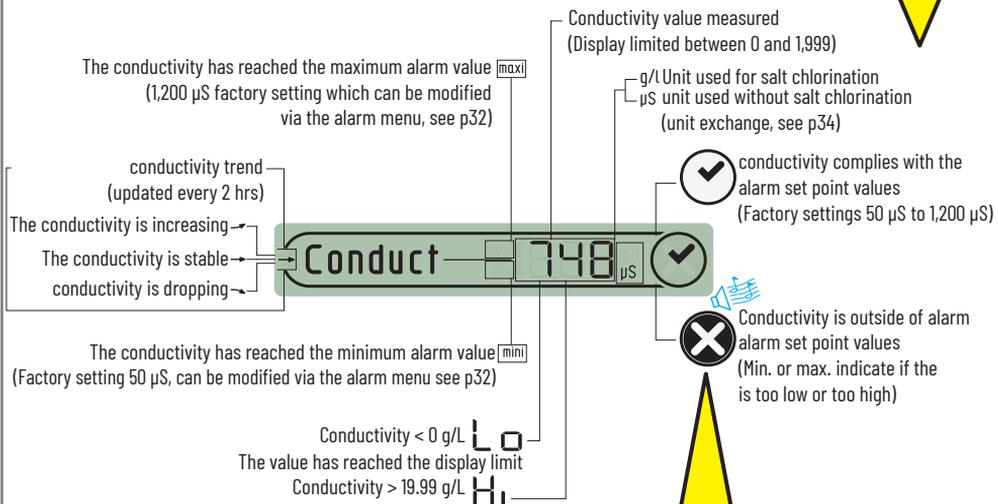
INDOOR display - Conductivity reading

i Ability of the water to permit passage of an electrical current; the conductivity is proportional to the concentration of dissolved minerals (which partially come from water treatment products).
The μS value reveals "the age of your pool's water".

$\mu\text{S}/\text{g/L}$ correspondence : $1,000 \mu\text{S} = 0.63 \text{g/L}$ and $1 \text{g/L} = 1,587 \mu\text{S}$

Conductivity at 25 °C ($\mu\text{S}/\text{cm}$)	Estimated hardness (FH)	Classification of water hardness
< 300	< 17	Soft water
Between 300 and 550	Between 17 and 30	Hard water
Between 550 and 950	Between 30 and 55	Very hard water
> 950	> 55	Extremely hard water

The conductivity unit (μS or g/l) is selected by the calibration mode/unit change (see p34).
If the display uses μS as a measurement unit and the value exceeds 1,999 μS , it will automatically switch to g/l .
In France, water from the tap generally has a conductivity of between 300 and 600 μS .



Conductivity in a salt chlorination tank (in g/l)

> Conductivity is too low (according to the type of electrolyser): add salt up to the value indicated by your electrolyser.

> Conductivity is too high (according to the type of electrolyser): replace the pool water (emptying and filling) until the desired value is obtained

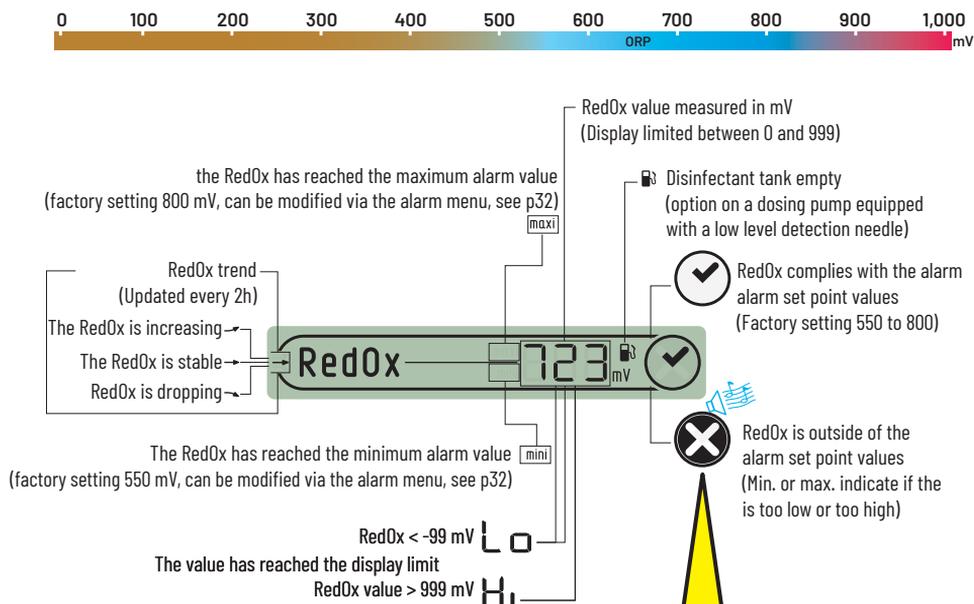
Conductivity in a pool without salt chlorination (in $\mu\text{S}/\text{cm}$)

> The conductivity is too high (> 1,200 μS , default alarm value can be modified): replace the pool water (empty and refill) until a value below 1,200 μS is obtained. Water conductivity above 1,200 μS is called "buffered", treatments become ineffective.

i A conductivity value of zero (or close to zero) is a sign that air is present in the cable gland tube.

INTERNAL display - RedOx reading

i Disinfectant concentration level (chlorine, bromine, active oxygen, etc.) present in the pool. Keeping within 650 mV and 750 mV is recommended for this 'disinfection power' measurement. The oxidation reduction potential indicates the oxidiser quality present in the water. It is the result of the disinfectant quantity/pollution quantity ratio.



⚠ A RedOx WHICH IS TOO HIGH IRRITATES SKIN AND MAY DAMAGE PARTS OF YOUR POOL. A RedOx WHICH IS TOO LOW MAY BE A HYGIENE HAZARD

> Ensure that:

- The probe bottle has been removed from the RedOx probe (see p08)
- The RedOx probe is not dirty (see p39)

> Manual control: > Add the disinfectant (chlorine, bromine, active oxygen, etc.) until the desired value is reached.

> Automatic control: > Check the correct operation of the material with your pool builder.

INDOOR DISPLAY - reading and intervention following a message

- ▶ Alarme
- ▶ Calibration
- ▶ Radio))



Sound disabled



Sound activated

RELAIS RADIO



INDOOR DISPLAY



Full batteries

Batteries are OK

Low batteries/change

HS batteries to be changed, risk of running out



Operating modes

The alarm (see p32) and calibration modes (see p34) correspond to the switch position on the back of the indoor display.

Radio mode signifies that the radio is in learning mode for a new element in the MAESTRO network.

Activation/deactivation of sound

On the indoor display, a sound alert for the different alarms as well as a discreet beep button are available.

This pictogram illustrates the activation and deactivation of the sound which can be accessed by a switch located on the back of the indoor display.

Radio relay/indoor display battery level

- The battery level displayed under the pictogram represents each element concerned.

The battery service life is greater than 1 year but may vary depending on weather conditions and use.

> As soon as the level is at 'low batteries', the batteries should be changed: (radio relay: 4 X LR6/indoor display: 4 X LR6), see p38.

Batteries may contain dangerous substances. They should not be thrown into the bin, opened, thrown into fire or recharged, as there is a risk of explosion. Handle a leaking battery with gloves. Remove the batteries if the device is not used for an extended period of time.

MAESTRO probe unit radio signal strength

The radio network range of the MAESTRO Probe Unit network depends on the geographical location of the indoor radio relay (a long distance, if the pool is elevated in relation to the house and the presence of a surrounding wall are detrimental), the house materials (reinforced concrete and metal buildings are detrimental) and support of the radio relay (metal pegs or galvanised rainwater downpipes are detrimental).

If the network signal remains low or non-existent after tests of different location configurations of the radio relay, place a second radio relay between the technical room and the indoor display to optimise the signal strength (perform tests before mounting elements). Adding an element to the radio network means that it will be subject to the learning process (see p30).



Very strong

Strong

Average

Low

Very low

RADIO MODE - Add a radio relay and/or indoor display

i The elements which constitute a MAESTRO set are paired with a unique radio code which prevents any risk of interference with other MAESTRO units (in the vicinity) as a factory setting.

In an existing MAESTRO system, this RADIO mode makes it possible to add:

- A second relay radio to compensate for difficult situations in terms of radio range (elevation, very long distances, etc.)
- A second indoor display ("No. 2") to benefit from a second source for reading your pool information.



> Briefly (0.5 sec) press "reset".

⚠ A long press (>4 sec until the beep) resets the alarm values.

> The indoor display then shows the values.

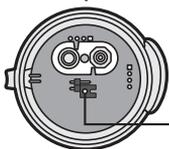
▶ Radio !!

i Starting the radio relay or an indoor display triggers the recognition/automatic learning of a radio code.

NEW RADIO RELAYS No. 2

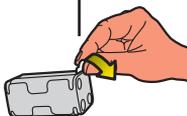


> Remove the pot by pulling the tab

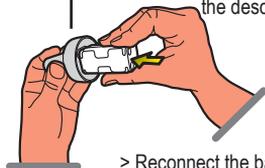


> Place the jumper in the OFF position to prevent the ext. temp. values and UV index of radio relay No. 1 from being distorted, see p21.

OFF



> Remove the insulating film from the batteries Or place the supplied batteries in accordance with the description on p26



> Reconnect the battery unit



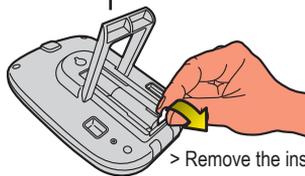
CLICK!

The red LED flashes
> Replace the pot

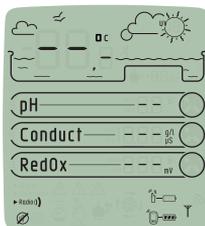
NEW DISPLAY No. 2



> Remove the battery hatch



> Remove the insulating film from the batteries



> Indoor display No. 2 goes into radio learning mode

> Indoor display No. 2 displays the same values as indoor display No. 1

> Replace the battery cover

i If the alarm values of display No. 1 have been personalised, they must be transferred to display No. 2 to obtain identical alarm messages.

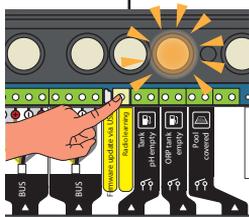
RADIO MODE - Re-learning of the original indoor display

i The elements which constitute a MAESTRO set are paired with a unique radio code which prevents any risk of interference with other MAESTRO units (in the vicinity, several pools close together, etc.) as a factory setting.

If the original display is lost or replaced, this RADIO mode makes it possible to recognise it in the existing MAESTRO network.

> Press "radio learning".

> The orange LED lights, the probe unit then emits a learning radio code for 5 min.

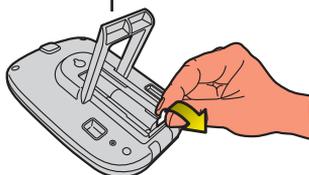


i - The start-up of the indoor display triggers the recognition/automatic learning of a radio code.

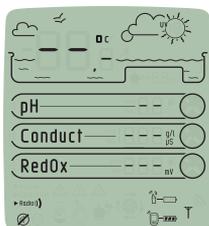


New replacement indoor display

> Remove the battery hatch



> Remove the insulating film from the batteries



> The indoor display goes into radio learning mode

> The indoor display shows the values.

> Replace the battery cover.

> Replace the flexible blue cover on the probe unit.

ALARM MODE - Modification of the alarm set point values

This mode makes it possible to modify the set point value of:

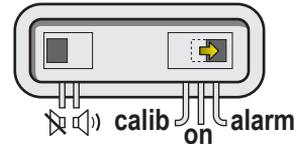
- The upper pH alarm (factory setting 7.9)
- The lower pH alarm (factory setting 6.7)
- The upper conductivity alarm (factory setting 1,200 μS)
- The lower conductivity alarm (factory setting 50 μS)
- The upper RedOx alarm (factory setting 800 mV)
- The lower RedOx alarm (factory setting 500 mV)

► Alarme

► Calibration

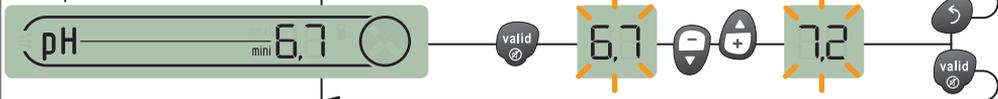
► Radio)))

> Put the switch in Alarm mode
(on the back of the indoor display)

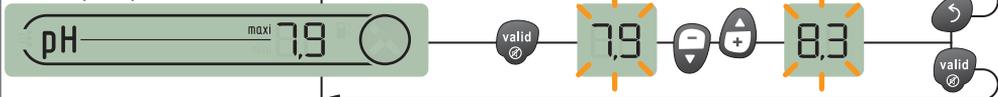


! All these values remain saved when the batteries are changed.

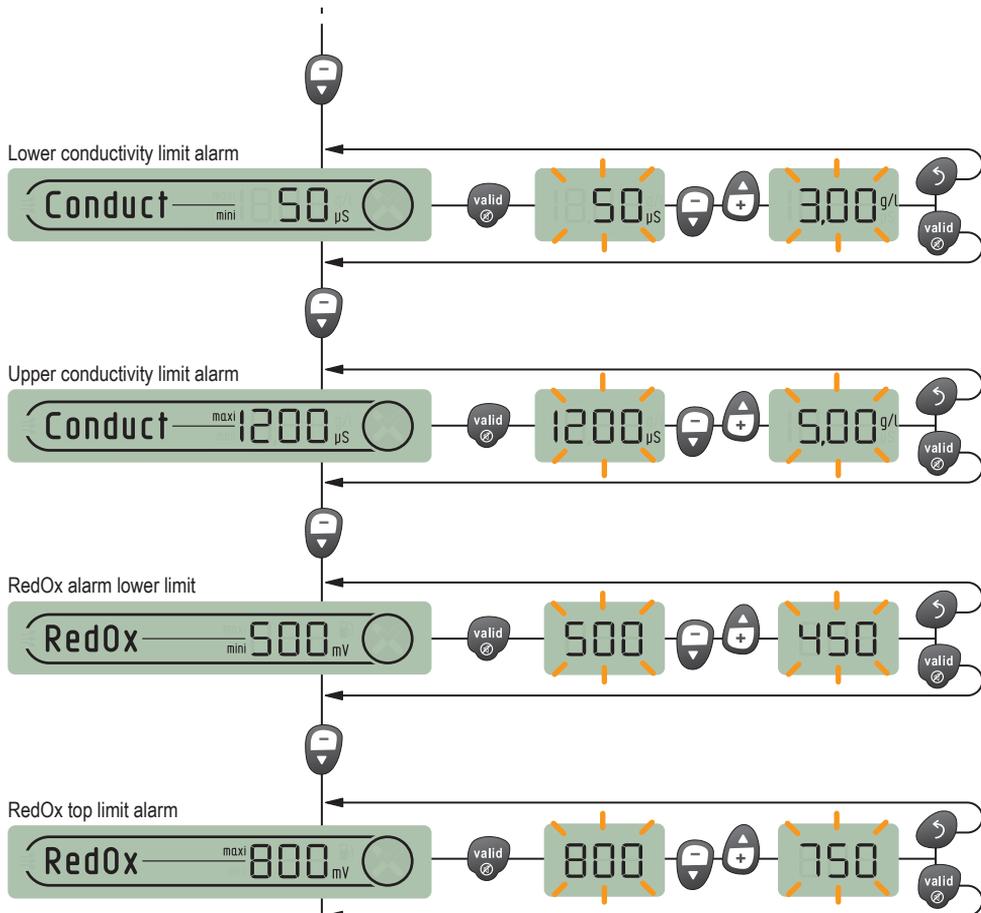
pH alarm lower limit



pH top limit alarm



ALARM MODE - Modification of the alarm set point values



> Put the switch back in ON mode



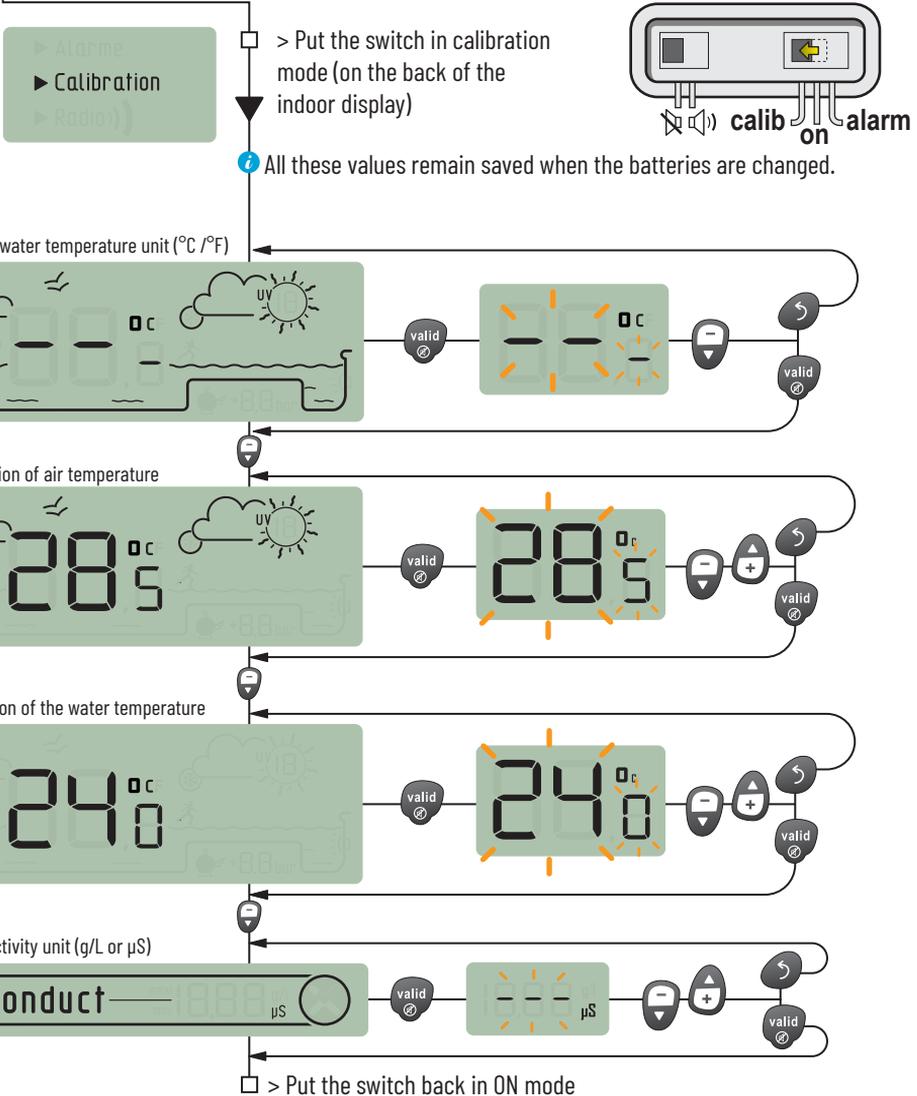
Reset of factory parameters

? To reset all the device values to the factory settings, press "reset" for 4 sec with a paperclip on the back of the indoor display. The operation is validated by a long beep.

CALIB MODE - Change of units & voluntary correction of values

i Despite calibration of the measurement sensors, a value may be out of step with another measurement marker (usual thermometer, etc.). For this, you have the option of voluntarily correcting some values.

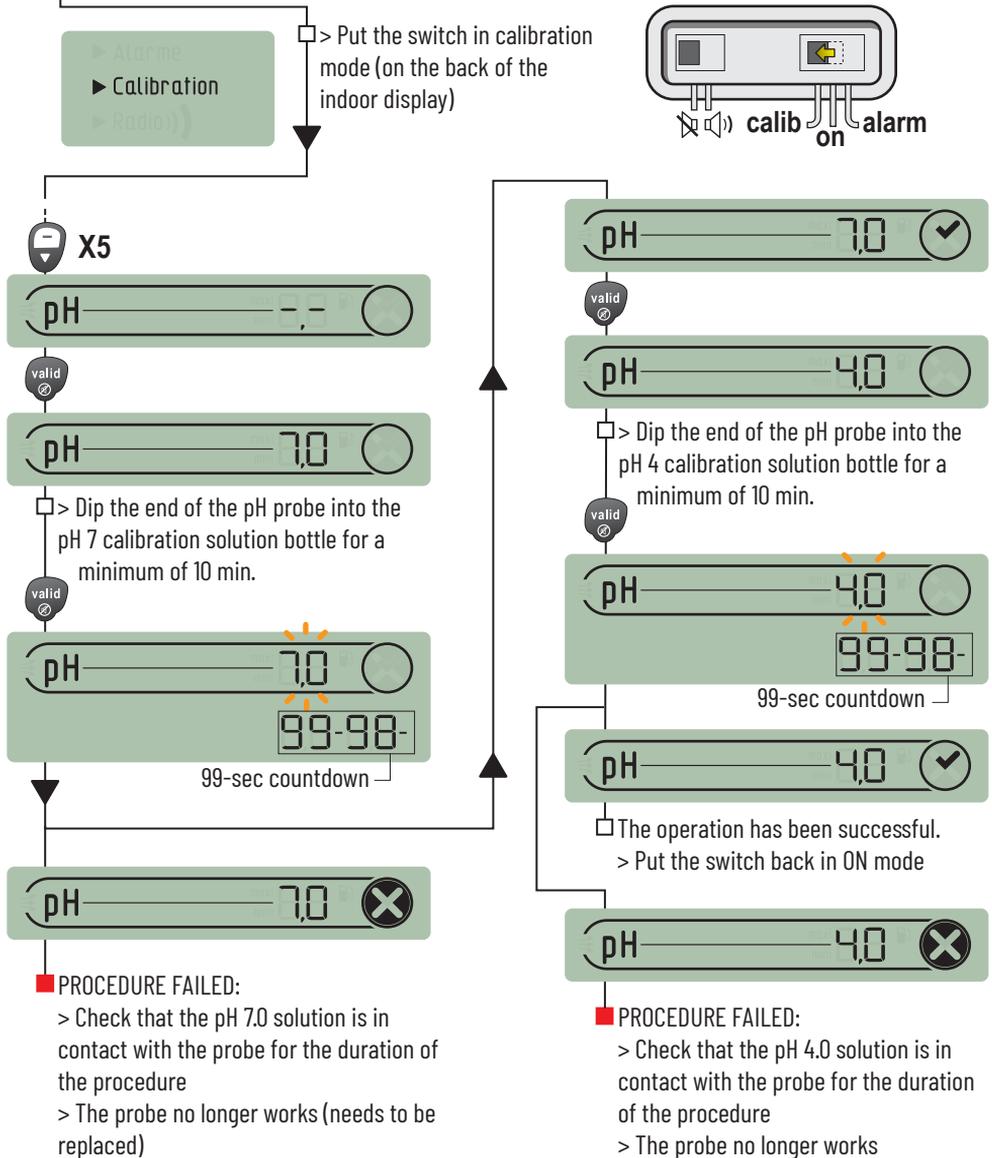
- This mode makes it possible to modify the units of:
 - The air and water temperature (factory setting °C)
 - The water height (factory setting: cm)
 - The conductivity (factory setting: μS)
- This mode makes it possible to correct the measured values of the air and water temperature.



CALIBRATION MODE - Calibration of a pH sensor

i Due to its nature, a pH probe needs to be regularly re-calibrated (ideally before the season). If this has been forgotten, a "probe check" message will appear on the screen of the Control Center. The Pentair pH probe is available as a spare part from your Pentair dealer.

For this operation, equip yourself with the pH probe, the indoor display and the supplied pH4 and pH7 calibration bottles.
Since the pH depends on the temperature, this procedure needs to be performed in the shade (25 °C/77 °F).



MAINTENANCE - Cleaning of the pH or ORP probe.

- i** Deposition of scale or suspended elements in the pool may occur. The probes are fragile measuring parts, they need to be carefully cleaned. In particular, do not scratch the platinised surfaces of the electrodes of the conductivity probe.

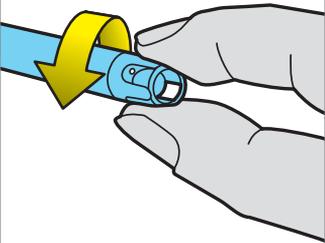


- Protective glasses and gloves must be worn for these cleaning operations.

Physical cleaning of the probe if there is an object present in the protective cage:

Depending on the probe environment, organisms may grow and disrupt the measurement. It then becomes necessary to physically clean the end of the probe (pH or ORP).

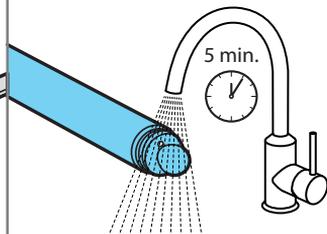
- 1** Carefully unscrew the cage by hand



- 2** Using a toothbrush which has been dipped into white vinegar, gently brush the end of the probe until the foreign substance is fully removed.



- 3** Rinse the end of the probe for 5 minutes generously under running water.



- 4** Carefully tighten the protective cage.

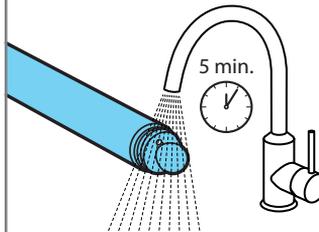
- 5** Calibrate the pH probe.

Chemical cleaning of the probe (no element is present in the protective cage):

- 1** Dip the end of the probe into white vinegar for at least 10 minutes.



- 2** Rinse the end of the probe for 5 minutes generously under running water.



- 3** Calibrate the pH probe.



MAINTENANCE - Wintering of MAESTRO (Water T° < +3.0 °C)

- i** - Active wintering: the forced operation of the pump prevents the formation of ice on the surface.
- Passive wintering: drop in the water level under the backflow buses, purges of pipes, installation of wintering floats, installation of a pool cover...

Active wintering of the pool

The probes can remain in place until a water temperature greater than or equal to +3 °C / +37 °F. If the temperature is greater than or equal to +3 °C / +37 °F., there is a risk of the pH and RedOx probes becoming irreversibly damaged. > Ensure that the water temperature is kept above +3 °C / +37 °F (activation of filtration), MAESTRO includes this frost protection function (modifiable via the menu install > filtration).

Precautions and maintenance of the radio relay and indoor display

i Since the radio relay is placed outside, the appearance of deposit marks is completely normal. The indoor display is intended exclusively for internal use. Exposure to sunlight (UV) or rain may cause irreversible damage.

- > Do not subject the device to shock or forces which could alter its functioning or limit the service life of the device.
- > Do not submerge the device in water.
- > Clean the exterior with a microfibre or sponge. Do not use solvents, abrasives or acid.
- > Radio relays: Clear and clean the layer of any contamination obstructing the glass (leaves, stains, etc.).



TECHNICAL SUPPORT

Your official Pentair distributor will support you with any information needed for optimal use of your MAESTRO. Answers to FAQs are available at <http://www.domotique-piscine.eu/faq>. You can ask your questions to the following email address: techsupport.poolemea@pentair.com

SPARE PARTS (ref)

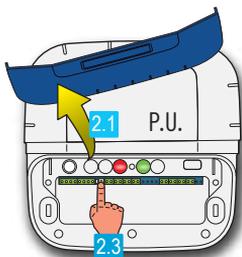
i The original parts required to maintain your Pentair device are available from your dealer.

Item code SB	Designation	Diagram
INTP-5210	500-mm pH probe and pH4 & pH7 calib. sol.	
INTP-5220	500-mm RedOx Star probe	
INTP-5230	500-mm long glass conductivity probe	
SB-PD-PRO-004B	6-m water or air temperature probe	
SB-PF-DOM-001A	Indoor display only	
SB-PF-PER-001C	Radio relay only	
INTP-HOLD-1	Probe holder bowl: constant flow for better measurement precision. 4-m transparent tube, 3 probe holders, 2 clamp collars, 2 taps.	
INTP-5240	3-m remote magnetic antenna (Advised for technical rooms which disrupt the radio)	

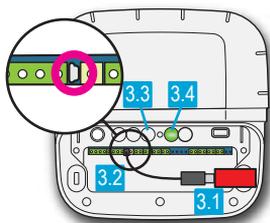
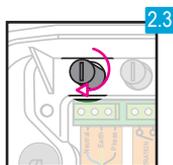
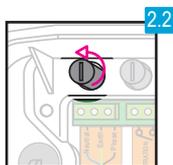
MAESTRO probe unit: How to update the internal firmware



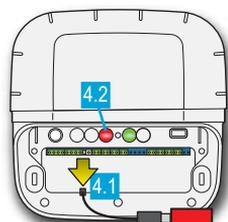
- 1.1 - Unzip the MAESTRO Probe UnitXXX.zip file to obtain the Pxxxo.bin. file.
- 1.2 - Copy the Pxxxo.bin file to the main folder of the USB stick formatted to FAT 16 or FAT 32.



- 2.1 - Remove the flexible blue cover of the Control Center and the Probe Unit.
- 2.2 - Cut the supply of the control center via the 1-A 230-V fuse using a flat screwdriver to unscrew the fuse holder (half turn), wait 5 sec.
- 2.3 - On the Probe Unit, press and hold the "radio learning" button, then on the Control Center, re-connect the supply (screw the 1A fuse back in), the red and green LEDs flash.

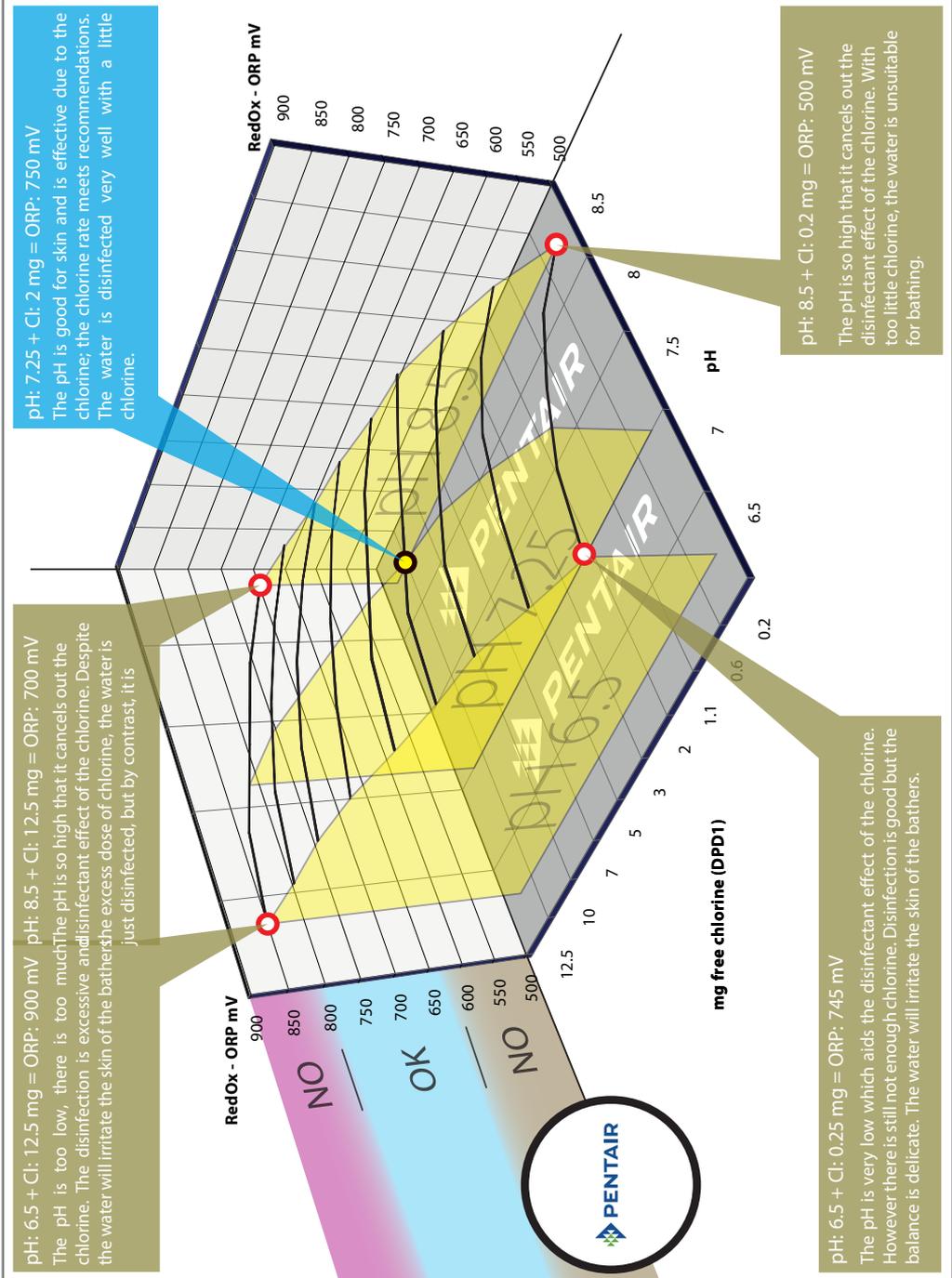


- 3.1 - Connect the USB stick to the end of the USB cable
- 3.2 - Connect the USB cable supplied to the mini USB connector of the MAESTRO probe unit.
- 3.3 - The red LED goes out.
- 3.4 - Wait for the green LED to remain lit for 5 sec.



- 4.1 - Unplug the USB stick
- 4.2 - The red LED flashes for 40 sec then goes out.
- 4.3 - The green LED continues to flash

Variations in the RedOx (ORP) according to the pH and the chlorine rate in water without a stabiliser at a temperature of 18°C.





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