

REGUL SYSTEM BWT-P

Regulating system for private family pools



INSTALLATION, OPERATING, AND MAINTENANCE INSTRUCTIONS

To be read carefully and kept for future reference

TABLE OF CONTENTS

1. Important safety notice	4
2. General information	5
2.1 Signs and symbols.....	5
2.2 Storage and transport.....	6
2.3 Guarantee.....	6
3. Nomenclature and technical information	7
3.1 Nomenclature.....	7
3.2 Identification plate.....	9
3.3 Overall dimensions	10
3.4 Technical data.....	11
3.4.1 Technical specifications.....	11
3.4.2 Main functions.....	12
4. Installation and connections	12
4.1 Selecting the installation location.....	12
4.2 Wall mounting procedure	13
4.3 Installing the saddle clamps to hold the probes (“free assembly” version) and the product injection rods	13
4.3.1 Recommended installation – “free assembly” version.....	13
4.3.2 Recommended installation configuration for “pre-assembled” version:	15
4.3.3 Mounting the pipe saddle clamps	15
4.3.4 Mounting the probe housing assembly	16
4.3.5 Mounting the injection kit	16
4.3.6 Mounting the suction kit	17
4.3.7 Mounting the pH and/ or ORP probes	18
4.3.8 Connecting the pH and/ or ORP probes to the REGUL SYSTEM BWT-P box	18
4.4 Commissioning/ Electrical connections	19
4.4.1 General connections	19
4.4.2 Replacing the internal protective fuses.....	20
4.4.3 Specific connections	20
4.5 Filling the tanks with chemicals	27
5. Commisioning and operation of the BWT REGUL SYSTEM-P.....	28
5.1 The programming interface	28
5.2 Main display	29
5.3 User level parameter setting.....	29
5.3.3 Main banner detail.....	29
5.3.4 Setting the date and time	30
5.3.5 Channel display detail.....	30
5.3.6 Channel configuration.....	31
5.3.7 Value input screen.....	32
5.3.8 Programming menu	33
5.3.9 Interface menu	33
5.3.10 Brightness and contrast setting menu	34
5.3.11 Screen protection management menu.....	34
5.3.12 Colour setting menu	35
5.3.13 Code change menu	35
5.3.14 System information menu	35
5.3.15 Installer level settings	36
5.3.16 pH channel parameter setting	37
5.3.17 Oxidising agent channel parameter setting.....	40
5.3.18 Auxiliary channel parameter setting	44
5.3.19 Timer settings	46

5.3.20	General settings	47
5.3.21	Communication settings	48
5.3.22	Advanced parameters	49
5.4	Calibrating the pH and ORP channels.....	50
5.4.1	Automatic calibration of pH and ORP probes (without reagent)	50
5.4.2	Manual calibration of the pH and ORP values (with standard reagents).....	51
5.4.3	Erasing calibration	53
5.5	Calibrating the Chlorine channel	54
5.5.1	Calibrating the probe slope	54
5.5.2	Zero point calibration (if required).....	54
5.5.3	Using the gain multiplier switch.....	54
5.6	Launching regulation and dosing	55
6.	Maintenance	55
6.1	Maintenance of pH and ORP probes.....	55
6.2	Maintenance of the Chlorine probe	56
6.2.1	Removing the probe from the analysis chamber.	56
6.2.2	Replacing the glass beads.....	56
6.2.3	Replacing the Copper counter electrode.....	57
7.	Maintaining the dosing pump tubing	58
8.	Winterizing	59
8.1	Winterizing the probes.....	59
8.2	Winterizing the dosing pumps	59
9.	Accessories	60
10.	Troubleshooting	Erreur ! Signet non défini.

1. Important safety notice

Learn first aide

Commit emergency numbers to memory and display them close to the pool:

- Fire brigade:
- Ambulance :
- Anti-poison centre (**24/24 – 7/7**) :



CAUTION

This appliance may be operated by children aged 8 years and older and persons with reduced physical, sensorial or mental capacities, or lacking experience and knowledge, if they are properly supervised or have been given proper instruction in the safe use of the appliance and have understood the risks entailed. Children should not be permitted to play with the appliance. Cleaning and upkeep to be performed by the user should not be carried out by children without supervision.

CAUTION

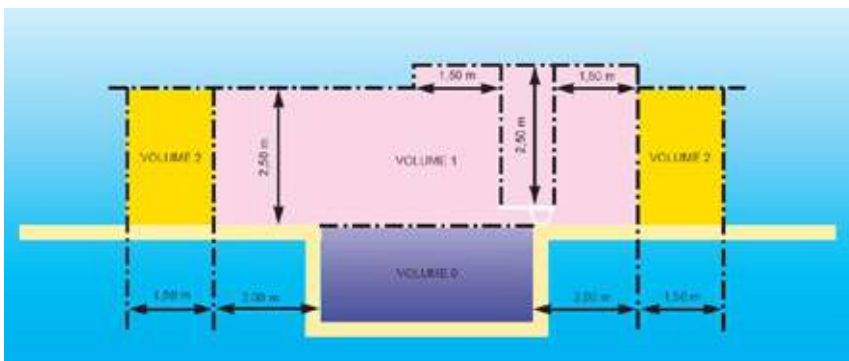
The power supply must be equipped with a means of cutting power to all active poles (live(s) and neutral) upstream from the device, in order to allow the panel to be systematically de-energised prior to any technical intervention. This de-energising means should be located close to the Regul-System P.

CAUTION

In the event that the power cable is damaged, it must be replaced by the manufacturer or their accredited agent.

CAUTION

The REGUL SYSTEM BWT-P must be located at a minimum distance from the pool as specified by the regulations in effect in the country of installation. In France, this distance is 3.5 metre. However, this distance may be reduced to 2.0 metres if the REGUL SYSTEM BWT-P is protected by a 30 mA residual current device (volume 2 below).



Standard NF C15-100, part 7-702.

WARNING

We strongly recommend that you equip your electrical installation with a device to protect is from surges associated with lightning. Damage to electrical and electronic components of the REGUL SYSTEM-P resulting from surges associated with lightning are not covered by any guarantee.

2. General information

The REGUL SYSTEM BWT-P analysing/ regulating system that you have just acquired is composed of high tech equipment, designed and built with care to ensure your comfort and peace of mind. Its ease of use, simplicity and technical sophistication will ensure absolute control over the quality of the water in your pool.

The REGUL SYSTEM-P is designed to regulate the pH and the concentration of disinfectant via the Redox potential (also known as the Oxidation-Reduction potential) in the water in private swimming pools with a volume of between 10 m³ and 120 m³.

WARNING

We strongly advise against using these devices to regulate the treatment of water in spas that are hydraulically independent of a swimming pool.

These devices can also directly regulate the concentration of free Chlorine in the water using an "open cell" amperometric probe instead of the Redox probe. This **is not supplied with the device as delivered**. The amperometric probe is installed in a specific analysis chamber. Only equipment compatible with **REGUL SYSTEM BWT-P** technical characteristics are authorised.

The use of probes or interfaces that do not comply with the technical characteristics set out in this manual is prohibited.

REGUL SYSTEM BWT-P analysers/ regulators are equipped with:

- 2 potentiometric measurement inputs (pH and Redox),
- 1 "remote control" input (slaving filtration),
- 1 water circulation sensor input
- 1 4-20 mA input (temperature or Chlorine)
- 2 end of tank inputs
- 1 self-powered relay output
- 2 pump outputs

REGUL SYSTEM BWT-P is available in 2 forms:

- Pre-mounted on a panel
- Free installation of the assembly

REGUL SYSTEM BWT-P devices offer a choice of 2 regulation modes: proportional (cyclic) or On/Off with hysteresis.


The following instructions contain all the information you need to install, operate and maintain your new equipment.

2.1 Signs and symbols

 Identifies continuous voltage of current

 Identifies alternating voltage of current

 Protective earth

 Functional earth

2.2 Storage and transport

The REGUL SYSTEM BWT must be stored and transported in its original packaging to prevent damage.

Environmental conditions for transport and storage:

Temperature : 0 °C to 60 °C

Air humidity: Maximum 90% without condensation

Non corrosive atmosphere, no solvent fumes

Disposal of packaging:



Components made of paper, cardboard, plastic or any other recyclable material should be brought to a suitable sorting facility.

2.3 Guarantee

The filter is covered by the provisions of legal guarantees as regards compliance and protection against hidden defects.

The PROCOPI- BWT company also offers a sales guarantee which may only be activated if the product was stored, handled, installed, used and maintained in accordance with the instructions set out in this document.

Thus, this product benefits from the following sales guarantee, offered by the BWT company as of the initial date of invoice by PROCOPI-BWT to the client company.

3 years on the regulation unit

NOTA BENE: The probes, mounting kits, injection kits, tubing, standard solutions, end of tank valves are not covered by the manufacturer's commercial guarantee.

3. Nomenclature and technical information

3.1 Nomenclature

	Pre-mounted on the panel Mounted on the panel	Not pre-mounted on the panel To be mounted
1 casing 230 V, 50 Hz, IP 54, with 2 integrated dosing pumps (2.4 litres/hour), and a power cable without plug 1 m long, with a cross section of 3x0.75mm ²		
Wall mounting screw kit	YES for the panel	YES for the casing
pH and ORP probe (max. pressure 3 bar)	Mounted in the analysis chamber	With plastic protection, to be mounted on supports + pipe saddles, 6 m cable.
Filtration circuit analysis chamber with valve and sampling valve	YES, mounted on the panel	NO
2 pipe saddles Ø 50 – ½"	YES, to mount the dosing circuit suction and return	YES, to mount the sensor probe
2 probe housings	NO	YES
2 analysis circuit suction/ return rods	YES	NO
2 product injection rods (disinfectant, pH corrector)	YES	YES
2 pipe saddles Ø 50 – ½" for injection rods	YES	YES
2 suction valves with strainer and ballast (disinfectant tank, pH corrector tank)	YES	YES
4 lengths of tube Ø 4X6 (for each pump: 1 transparent PVC tube 2 m long + 1 white PE return tube 2.5 m long)	YES	YES
pH 7 standard solution	YES	YES
ORP 465 mV standard solution	YES	YES
Roll of Teflon tape	YES	YES
1 power cable without plug	YES	YES

WARNING

Make sure that the probes delivered with this device are compatible with the chemicals used. Refer to the technical notice provided with each probe.

WARNING

Probes are delivered in a watertight winterizing sleeve, filled with Potassium Chloride (KCl). Keep these sleeves and the liquid they contain after the probes have been mounted (dosing chamber of pipe saddle, depending on the version) for subsequent winterizing of the probes.



**HYDRO TOUCH
regulator**



Standard
solutions



pH and ORP
probes



pH and ORP
probe
mounting kit
(free
installation
version)



Product
injection kits



Panel fastening kit



Tank bottom valves



Tubing for dosing
pumps



Panel mounting kit
(free installation
version)

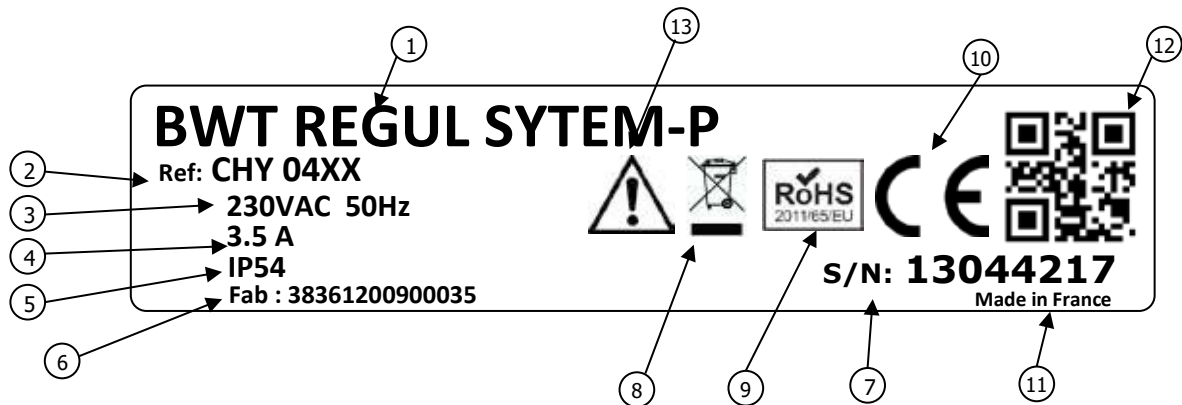


Analysis circuit
suction/
return
rods

Nota bene: End of tank detection floats are available as an option, they are fastened directly to the valves.

COMMENT: available spare parts are listed in the section entitled Accessories.

3.2 Identification plate



① Product model	⑧ Do not dispose of with other waste
② Product reference	⑨ Restriction of use of Hazardous substances
③ Power supply range	⑩ EC certification
④ Maximum current values	⑪ Country of origin
⑤ Casing protection rating	⑫ Manufacturer's encoded identifier
⑥ Manufacturer identifier	⑬ Particular hazard. Read the manual.
⑦ Serial number	



According to the European directive 2012/19/EC, this symbol indicates that as of July 4th 2012 electrical appliances may not be disposed of together with household or industrial waste. According to current regulations, consumers within the European Union are required, as of this date, to return their used devices to the manufacturer, who will be responsible for disposing of them at no extra cost.



According to the European directive 2011/65/UE, this symbol indicates that the **HYDRO TOUCH** device was designed in compliance with restrictions of us of hazardous substances.



According to low-voltage directive (2014/35/UE), the electromagnetic compatibility directive (2014/30/UE) and the RoHS2 directive (2011/65/UE), this symbol indicates that the device was designed in compliance with the aforementioned directives.

3.3 Overall dimensions

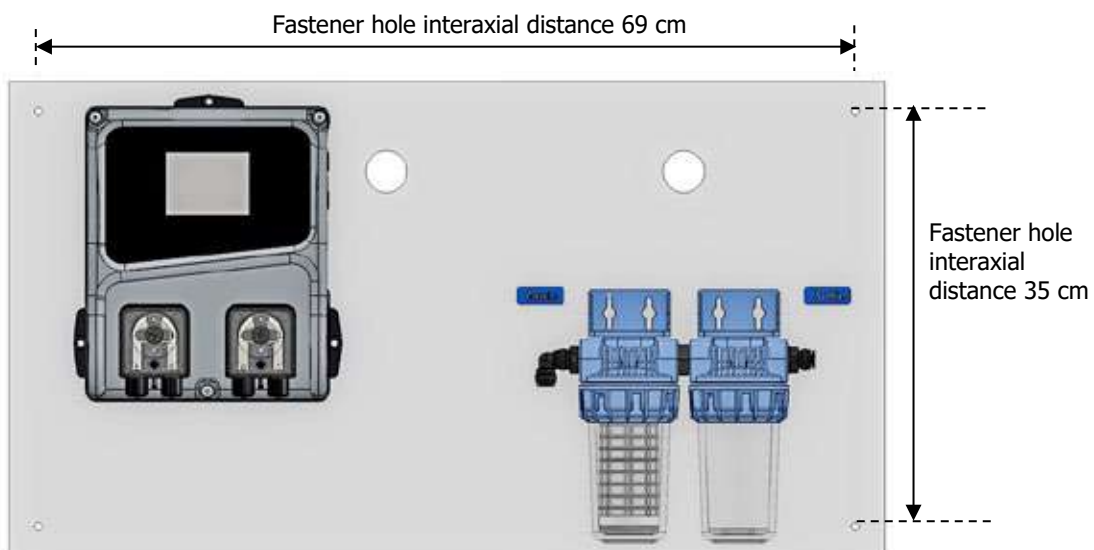
Free installation version:



Depth of the casing = 115 mm

Pre-mounted version:

- Casing dimensions: as per the free installation version
- Panel dimensions: 74 cm x 40 cm



3.4 Technical data

3.4.1 Technical specifications

General specifications		
Type	Specification(s)	Ref(s)
Consumption	800W Max – 3.5A Max	-
Power supply requirements	230VAC +/-10% 50Hz	-
Temporary over-voltages	Accepts temporary over-voltages on the power line	-
Electrical protection	Time delay fuse 250mA 5x20 glass Time delay fuse 3.15A 5x20 glass (self-powered protection relay)	F3 F2
Ambient temperature operating range	0°C to 40°C	-
Maximum operating altitude	2000 m	
Casing material	ABS V0	-
Weight	1.8 kg	-
Screen	LCD touchscreen 320x240 backlit White 3.5 inches	-
Environment		
Storage temperature	0 to 60°C	-
Humidity	Max. 90% no condensation	-
Protection rating	IP 54	-
Product certification	EC	-
Electromagnetic compatibility	EN 61326 electrical equipment for measurement, control and laboratory use in ordinary environments (class B – Domestic use) EN 61000 Electromagnetic compatibility (CEM) Class B interference tests performed according to the standards EN 61326-1, EN 61326-2-6, EN55011 Harmonic tests carried out according to the standard EN 61000-3-2 Flicker tests performed in accordance with EN61000-3-3 Immunity tests performed in accordance with the standards EN 61000-4-2 to EN 61000-4-6, EN61000-4-8, EN61000-4-11 NB : In the presence of an induced field of 45 to 80MHz, pH and ORP measurements can vary by 30%.	-
Inputs		
Measurement inputs	1x potentiometric (pH) 0-14pH. 1x potentiometric (ORP) 0 - +1000mV 1x 4..20mA	PH REDOX TEMP
Slaving to water circulation (« remote control »)	1x contact, remote control, On/Off 1x contact, circulation sensor	SPDT1 SPDT4
Tank bottom	1x contact, tank bottom, pH channel 1x contact, tank bottom, Disinfectant channel	SPDT2 SPDT3
Outputs		
Relays	1x self-powered by the mains line 3.5A / 230VAC	RELAY
Pumps	2x self-powered by the mains line 250mA / 230VAC	PUMP1 PUMP2
Pump types		
Pumps	Peristaltic pumps, 2.4l/h. Tubes resistant to acids, bases and oxidising agents	
Communication		
RS485	1x RS485 communication port	RS485
USB	1x USB slot to connect a USB key	USB

3.4.2 Main functions

Main functions		
Function	Specification(s)	Description(s)
Measurement/Regulation channels	Scale for the pH function Scale for the ORP function	Measuring range: 0.00 to 14.0pH Resolution : 0.01 pH Precision : 0.5% Measuring range: 0 to 999mV Resolution : 1mV. Precision : 0.5%
Regulation mode	User's choice, All or Nothing with hysteresis or Linear proportional with cycles	Dosing power for treatment
Set-point	pH : from 0 to 14 pH in 0.01 pH steps ORP : from 0 to 1000 mV in 1mV steps	
Direction	Increasing or decreasing (pH and ORP)	
Alarms	High and low measurement values, sensor faults, daily product dosing duration	Setting alarm thresholds
Closed loop regulation	Remote control of regulation Flow rate compensation	Control on a flowmeter or filtration contact
Operating timers	Programming relays on the timers	8 time slots per day
Calibration	Using a reference device or using calibration reagents. (See accessories)	
Maintenance	Maintenance assistance	Manual control of dosing components for priming the pump

4. Installation and connections

CAUTION

**SYSTEM BWT-P equipment may only be installed and connected by persons duly qualified and specialised for this purpose.
It must be installed in accordance with the safety regulations!**

CAUTION

**Always cut the primary power supply before energising the device or manipulating the outputs.
Never open the device while it is energised!
Maintenance and repair operations by trained and accredited personnel.**

4.1 Selecting the installation location

To ensure the safety of users and correct operation of your **REGUL SYSTEM BWT-P**, please respect the following installation instructions:

- The control panel must be located at a distance from the pool that complies with the regulations in effect in the country of installation.
- The device must be protected against rain and splashing, freezing and direct sunlight.
- The ambient temperature must be between 0 and 40°C .
- Humidity must not be at saturation.
- The installation site must be properly ventilated, to prevent the creation of a corrosive atmosphere or an atmosphere saturated with solvent fumes.
- Choose a location not subject to vibrations, the support surface must be stable and solid, clean and perfectly flat.

In the event that these instructions are not followed:

- The device could be damaged
- Measurements may be falsified
- The guarantee may be void!

WARNING

The REGUL SYSTEM BWT-P panel has a protection rating of IP54, this rating is only guaranteed if the cover is closed, the screws are tightened, and the cables match the diameter of the cable glands!

4.2 Wall mounting procedure

1. Cut the mains power supply.
2. Check that the filtration pump is stopped.
3. Close the valves on the hydraulic circuit and switch the filter valve to "closed".
4. Drill the number of holes required (three \varnothing 8 mm holes for free assembly, four \varnothing 10 mm holes for the pre-mounted version) referring to the interaxial distances indicated in §2.3
5. Tap bushings into the holes using a hammer.
6. Begin fastening the device with the upper screws, then the bottom screws, do not tighten fully.
7. Once the screws are all in place, tighten in a crosswise sequence.

WARNING

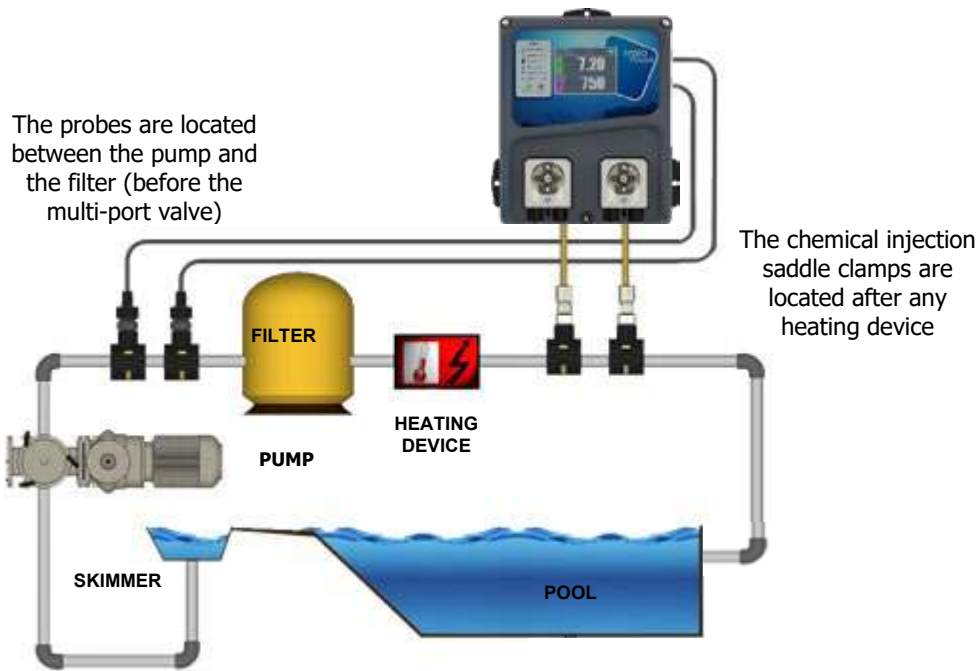
When closing the front cover of the casing, take care not to damage the waterproofing or pull on the cables located between the cover and the printed circuit board !

4.3 Installing the saddle clamps to hold the probes ("free assembly" version) and the product injection rods

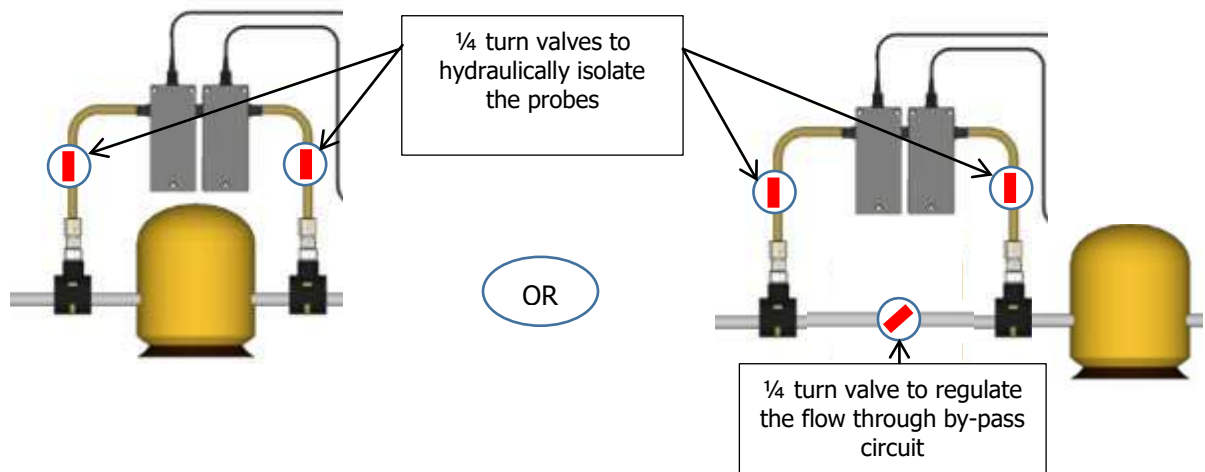
4.3.1 Recommended installation – "free assembly" version

In order to make sure that the values measured by the probes are as representative of the pool water as possible, the probes must be mounted between the pump return port and the filter multi-port valve. In any case they must always be located upstream from any heating devices and upstream from the injection of any chemicals.

Product injection sites must be located downstream from any devices, just before the water is returned to the pool.



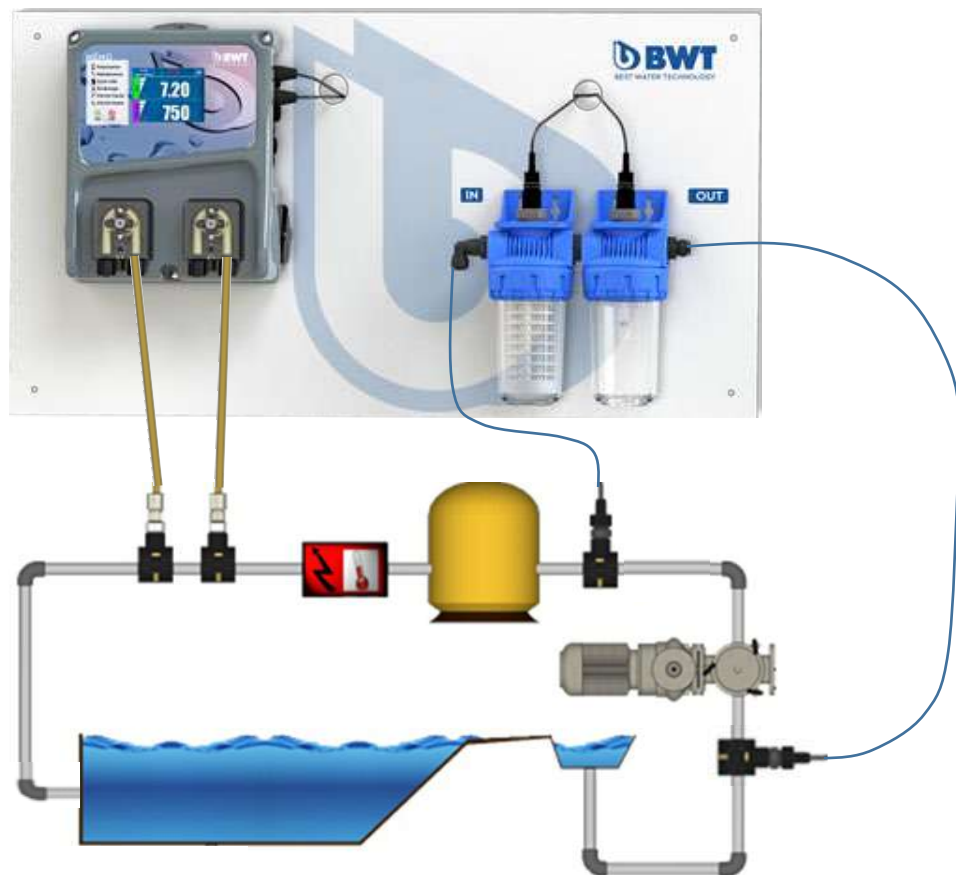
The probe saddle clamps may be installed on a by-pass circuit so that they may be hydraulically isolated to allow faster and simpler dismantling and in order to allow filtration to continue to run (notably during active winterizing)



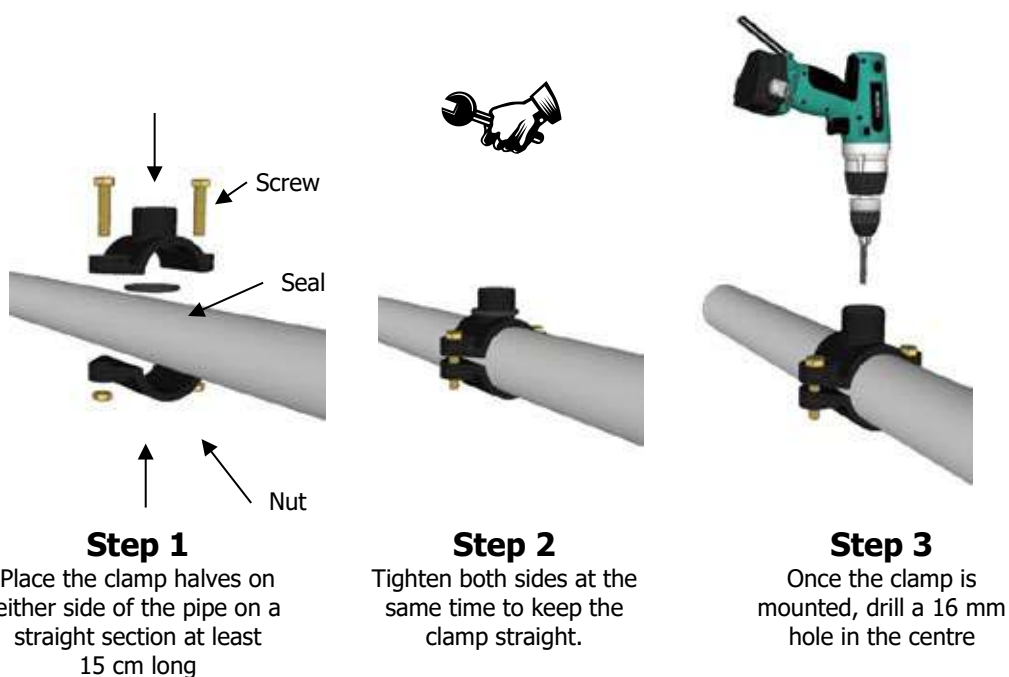
WARNING

If the device is mounted on a by-pass circuit, make sure that the isolating valves are properly open before putting the device in operation.

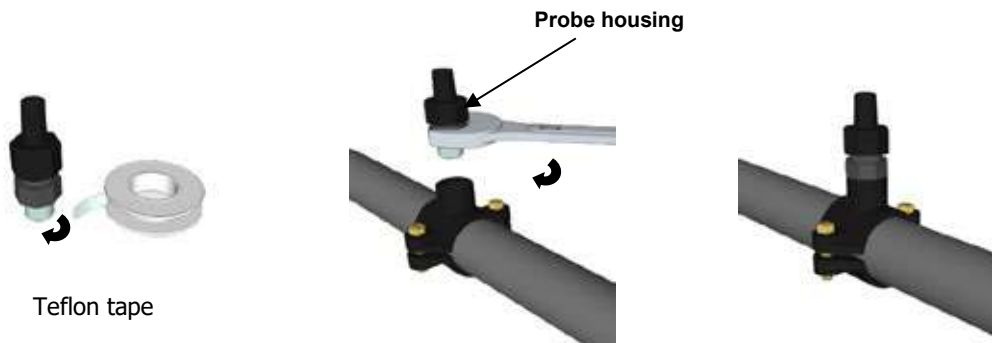
4.3.2 Recommended installation configuration for "pre-assembled" version:



4.3.3 Mounting the pipe saddle clamps



4.3.4 Mounting the probe housing assembly



Step 4

Wrap Teflon around the threading of the probe housing.

Step 5

Mount the probe housing on the clamp. Tighten gently, then use a wrench to finish tightening.

Step 6

The probe housing is mounted. Do not insert the probes until installation is finished.

COMMENT: pH and/or ORP probe may be mounted at +/- 90° with respect to the vertical axis. However, we recommend vertical mounting to facilitate maintenance.

4.3.5 Mounting the injection kit



Step 7

Wrap Teflon around the threading of the union and the injection valve.

Step 8

Screw the union into the saddle clamp.

Step 9

Tighten the injection valve onto the union.



Step 10

Loosen the injection valve nut.

Step 11

Thread the PE tubing through the cap and push it onto the valve cone.

Step 12

Tighten the cap with the PE tubing (white) onto the valve.

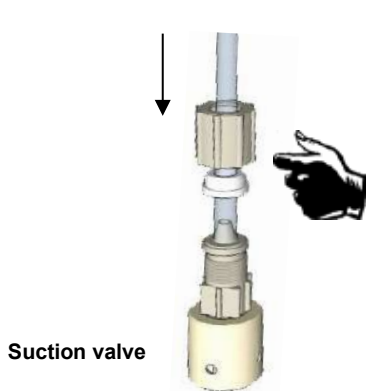


Step 13
Repeat the same procedure on the dosing pump side.

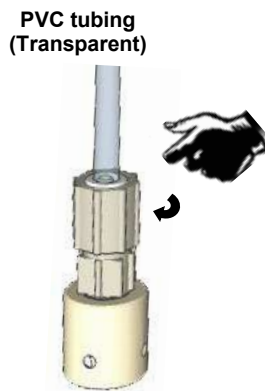


Step 14
Screw the cap with the PE tubing (white) onto the pump.

4.3.6 Mounting the suction kit



Step 15
Unscrew the cap and thread the clear tube through it.



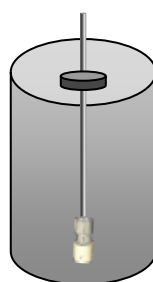
Step 16
Tighten the nut on the cone.



Step 17
Screw the PVC tube (transparent) onto the dosing pump.



Step 18
Tighten the nut on the dosing pump.



Step 19
Place the weighted valve in the bottom of the tank and adjust the depth.



Step 20 (option)
Mount the level sensor and its ballast and adjust it.

4.3.7 Mounting the pH and/ or ORP probes

WARNING

Probes are delicate. They must be regularly maintained and calibrated using the buffer solutions provided with the device. In the event of a fault, there is a risk that excess chemical could be injected and that water quality could be degraded.



Step 21

Remove the probe from its protective sleeve and undo the probe housing nut.



Step 22

Slide the nut onto the probe, making sure that the seal is in place underneath, then insert the probe.



Step 23

Hand tighten the probe housing nut
The probe is ready!

4.3.8 Connecting the pH and/ or ORP probes to the REGUL SYSTEM BWT-P box



Step 24

Present the probe connector



Step 25

Rotate one quarter turn without forcing to lock the connector in position



Step 26

Repeat the procedure for the second probe if necessary

The BNC inputs of the pH and ORP probes of the **REGUL SYSTEM BWT-P** are "high impedance" inputs.

WARNING

BNC connectors must always be kept clean, without any trace of humidity or corrosion.

4.4 Commissioning/ Electrical connections

4.4.1 General connections

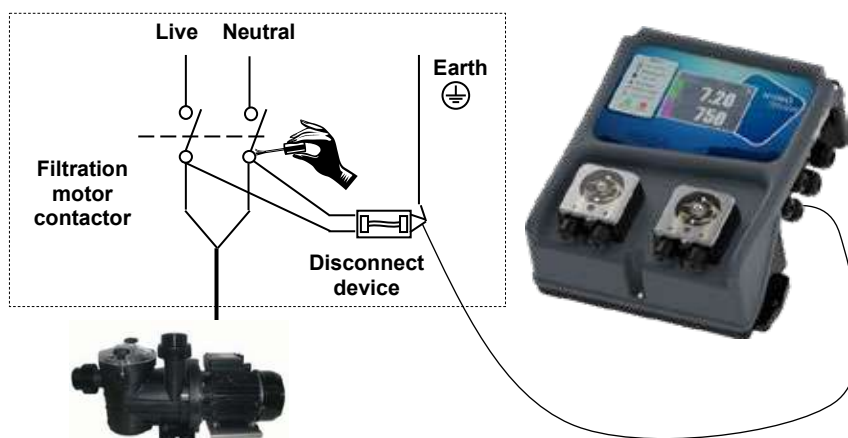
Note: with the exception of the relay output, all the input/output connections are safety extra low voltage (SELV). These voltages are supplied by the device and do not exceed 15 V DC.

CAUTION

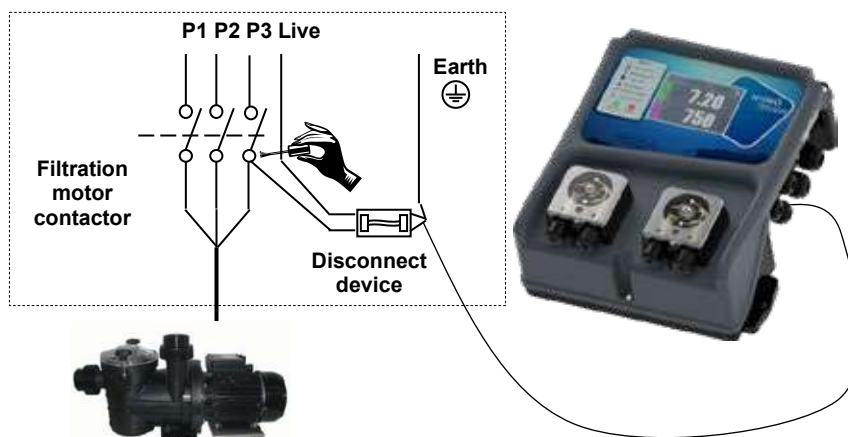
The electrical connection of the REGUL SYSTEM BWT-P casing must be slaved to pool filtration operation.

The "remote control" input may be used for this purposos.
(potential-free input, do not connect 220 V or any other power supply onto this input)

4.4.1.1 Filtration electrical panel, 230V 50Hz 1ph

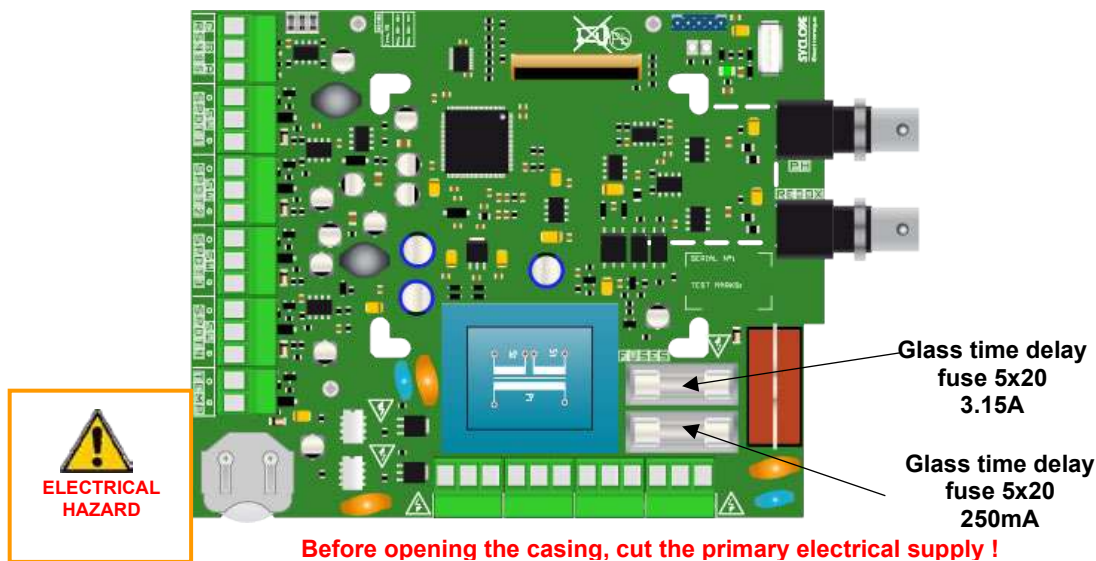


4.4.1.2 Filtration electrical panel, 380V 50Hz 3ph



COMMENT: In both configurations, connect "Neutral and one live" as well as the earth!

4.4.2 Replacing the internal protective fuses



CAUTION

Fuses should only be replaced by a qualified technician.
In the event that the replacement fuse blows after a short time, the source of the problem must be identified and corrected !

Fuse replacement procedure:

1. Cut the primary power supply
2. Identify the fuse to be replaced referring to the diagram above
3. Replace the fuse with an identical fuse
4. Replace the front face and the fastening screws
5. Put the equipment back into operation

4.4.3 Specific connections

4.4.3.1 Connecting a sensor or a contact

The **REGUL SYSTEM BWT** regulator features 4 "remote control" inputs (SPDT1 to 4) that allow other external elements to stop operation of the **REGUL SYSTEM BWT**, notably if power to the filtration pump is cut (SPDT1), if there is a lack of product (SPDT2 and 3), or if no water is flowing through the hydraulic circuit (SPDT4).

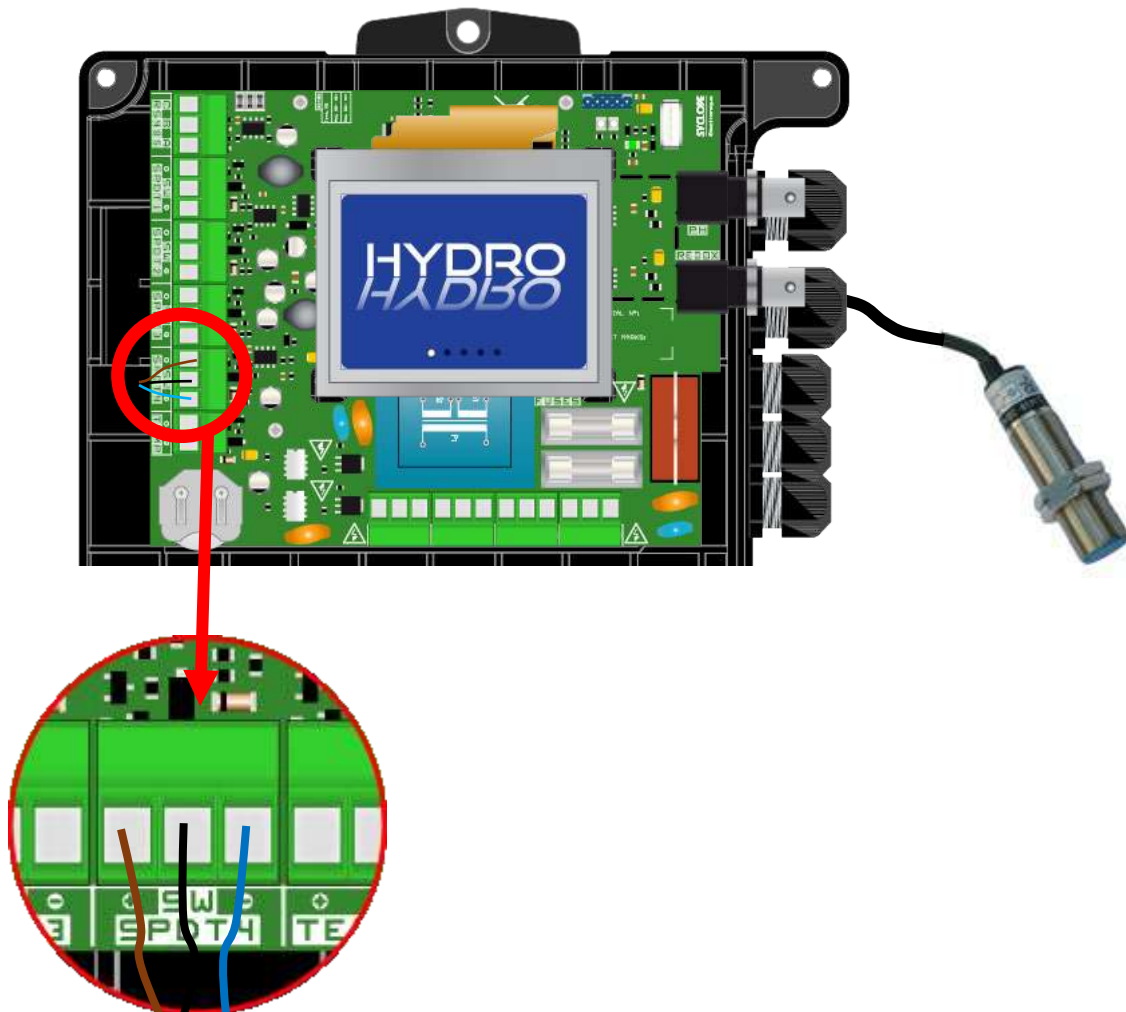
CAUTION

Other than slaving operation of the BWT REGUL SYSTEM to the filtration pump power supply, the device must be connecte , via the SPDT4 output, to a water circulation sensor, because the pump could be powered on and yet fail to generate a flow rate (pump not primed, valves closed, pump capacitor defective, etc.)

COMMENT: The inputs may be programmed to accept a NO (normally open), NC (normally closed) contact. The contact may be a dry contact, an NPN contact or a PNP contact.

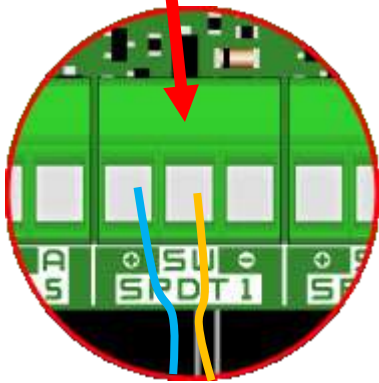
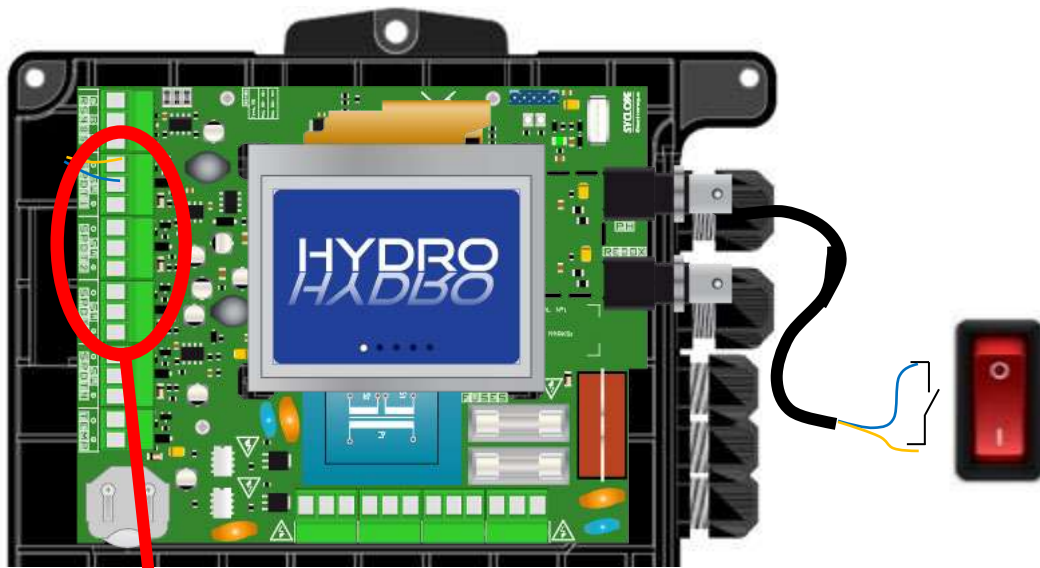
a) Connecting a proximity sensor (**NPN, PNP**) to the **SPDT4 input** to sense the position of the flow sensor float.

1. Cut the primary power supply.
2. Remove the protective sheath.
3. Strip the 7mm from the wires.
4. Pass the cable through the cable gland, then under the printed circuit board.
5. Connect the two power wires, brown to **(+)** and blue to **(-)**.
6. Connect the black contact wire to **(SW)**.
7. Tighten the cable gland to make it watertight.
8. Replace the front face and the fastening screws.
9. Put the equipment back into operation.



b) Connecting a **dry contact** ("flowswitch" type flow sensor **to the SPDT4 input**, or the filtration pump relay **to SPDT1 input**)

1. Cut the primary power supply.
2. Remove the protective sheath.
3. Strip 7 mm from the wires.
4. Pass the cable through the cable gland, then under the printed circuit board.
5. Connect the two contact wires to **(SW)** and **(+)**.
6. Tighten the cable gland to make it watertight.
7. Replace the front face and the fastening screws.
8. Put the equipment back into operation.

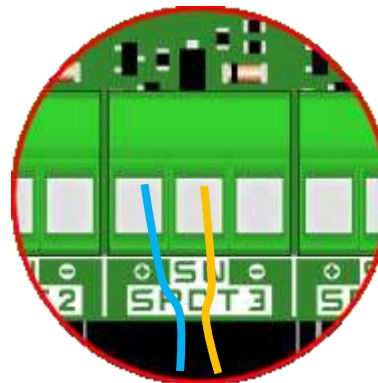
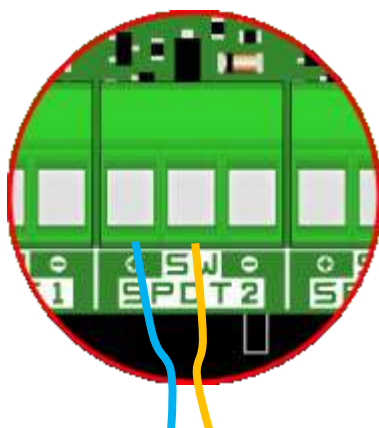


CAUTION

To detect powering up of the filtration pump, you must use a relay generating a dry contact to be connected to the SPDT1 input.

The SPDT2 input is dedicated to the pH end of tank contact.

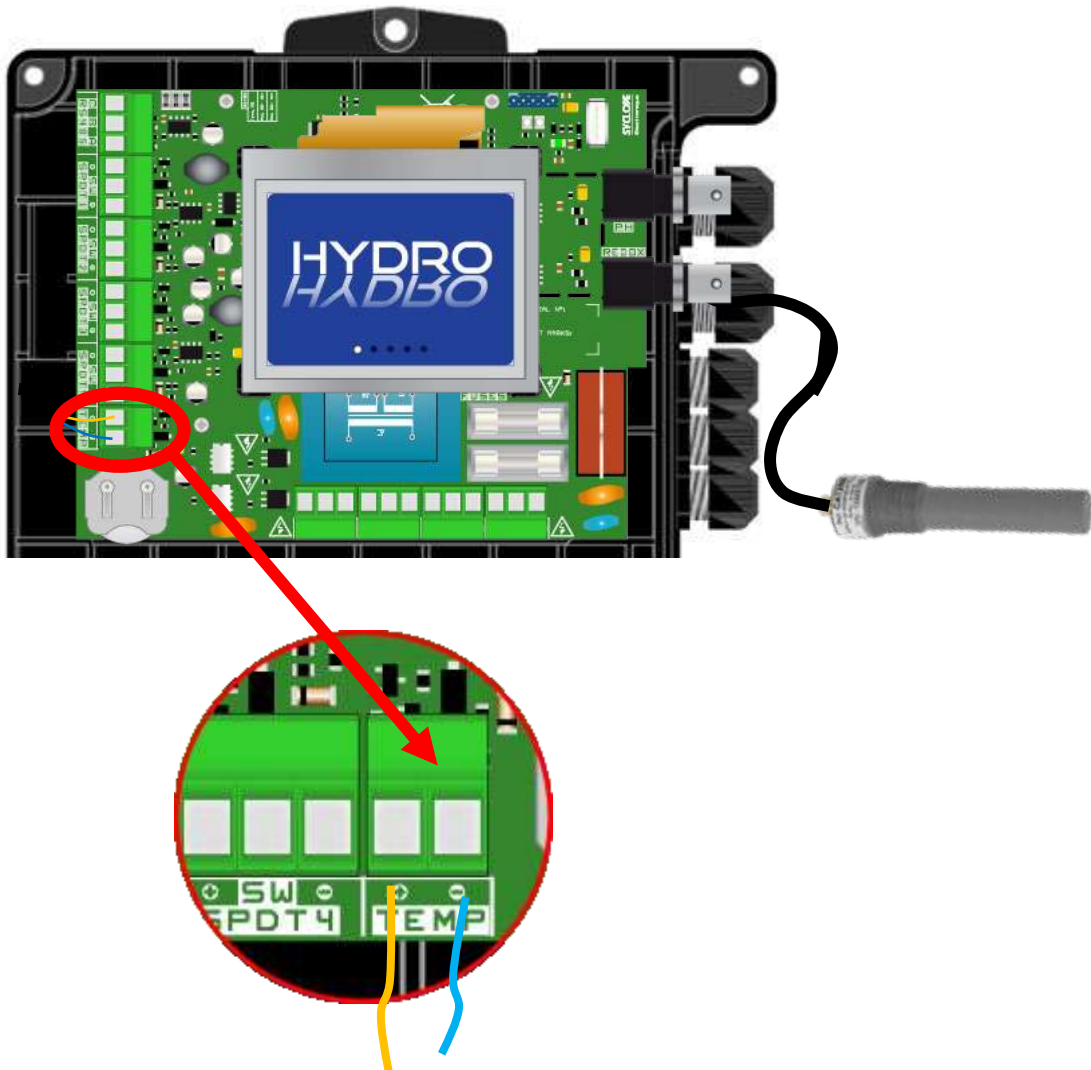
The SPDT3 input is dedicated to the ORP end of tank contact.



4.4.3.2 – Connecting the 4...20mA input

a) Temperature connection

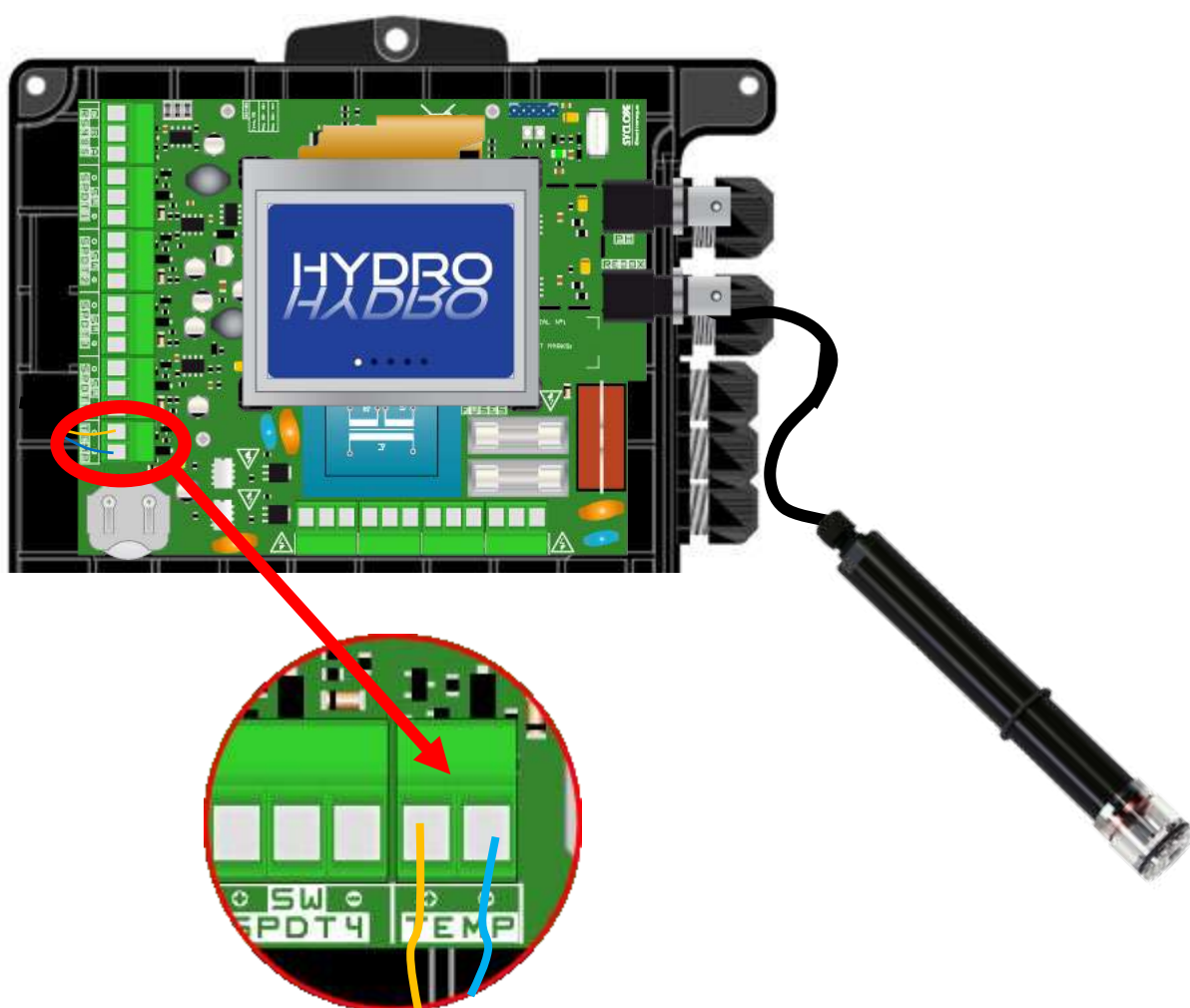
1. Cut the primary power supply.
2. Remove the protective sheath.
3. Strip 7 mm from the wires.
4. Pass the cable through the cable gland, then under the printed circuit board.
5. Connect the two wires.
6. Tighten the cable gland to make it watertight.
7. Replace the front face and the fastening screws.
8. Put the equipment back into operation.



b) Connecting the Chlorine probe (probe not provided)

BWT REGUL SYSTEM can be fitted with an "open cell" amperometric probe to measure the free Chlorine concentration directly in mg/l (**not supplied with the device**). This probe is connected to the printed circuit board in place of the temperature probe if any (one or the other).

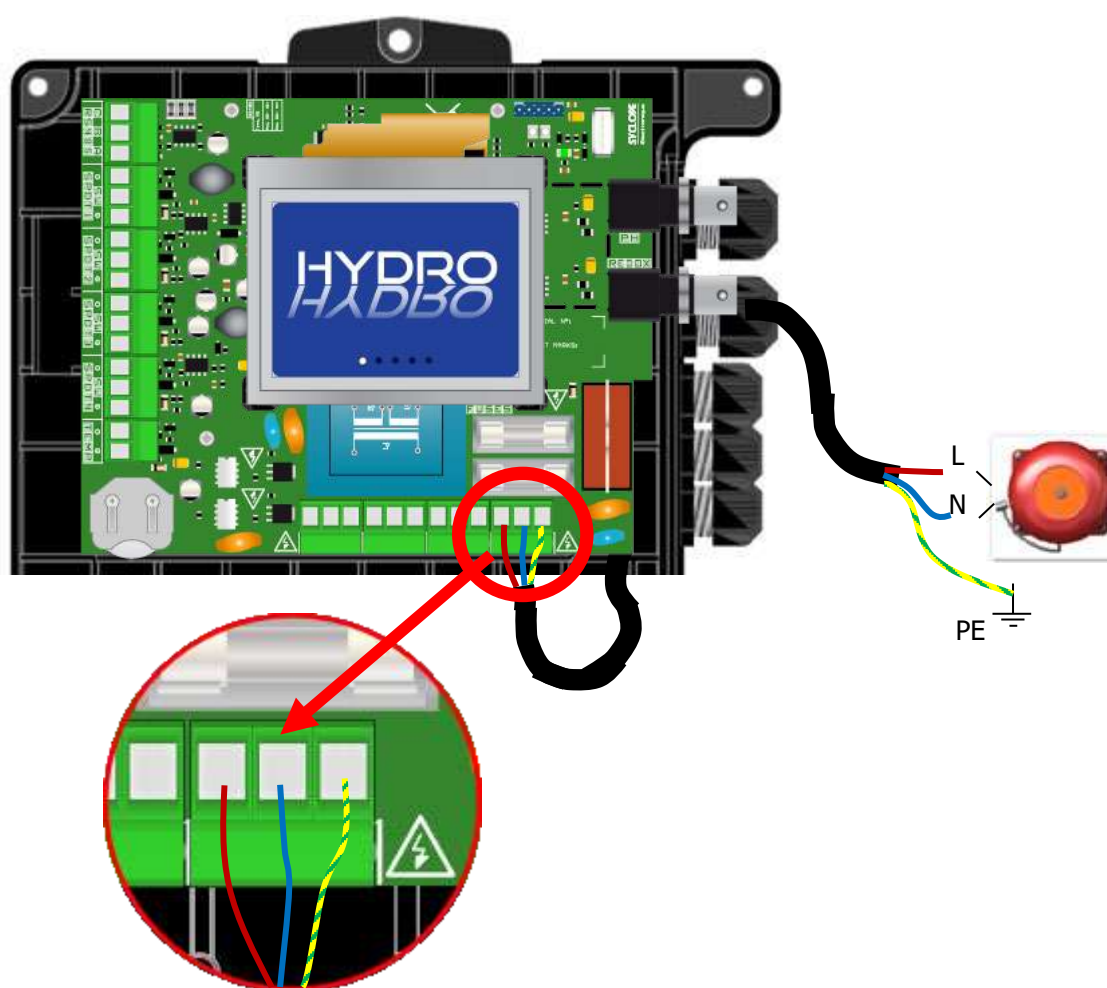
1. Cut the primary power supply.
2. Remove the protective sheath.
3. Strip 7 mm from the wires.
4. Pass the cable through the cable gland, then under the printed circuit board.
5. Connect the two wires.
6. Tighten the cable gland to make it watertight.
7. Replace the front face and the fastening screws.
8. Put the equipment back into operation.



4.4.3.3 – Connecting the self-powered relay

The self-powered relay (mains power supply) is either used in timer mode, or to send technical alarms to a visual alarm (light) and/or sound alarm (buzzer, ringer, etc.).

1. Cut the primary power supply.
2. Use a 3-strand cable with a minimum cross section of **1.5mm² minimum** to make connections.
3. Remove the protective sheath.
4. Strip 7 mm from the wires.
5. Pass the cable through the cable gland, then under the printed circuit board.
6. Connect the earth wire to PE.
7. Connect live wire to L
8. Connect the neutral wire to N.
9. Tighten the cable gland to make it watertight.
10. Replace the front face and the fastening screws.
11. Put the equipment back into operation



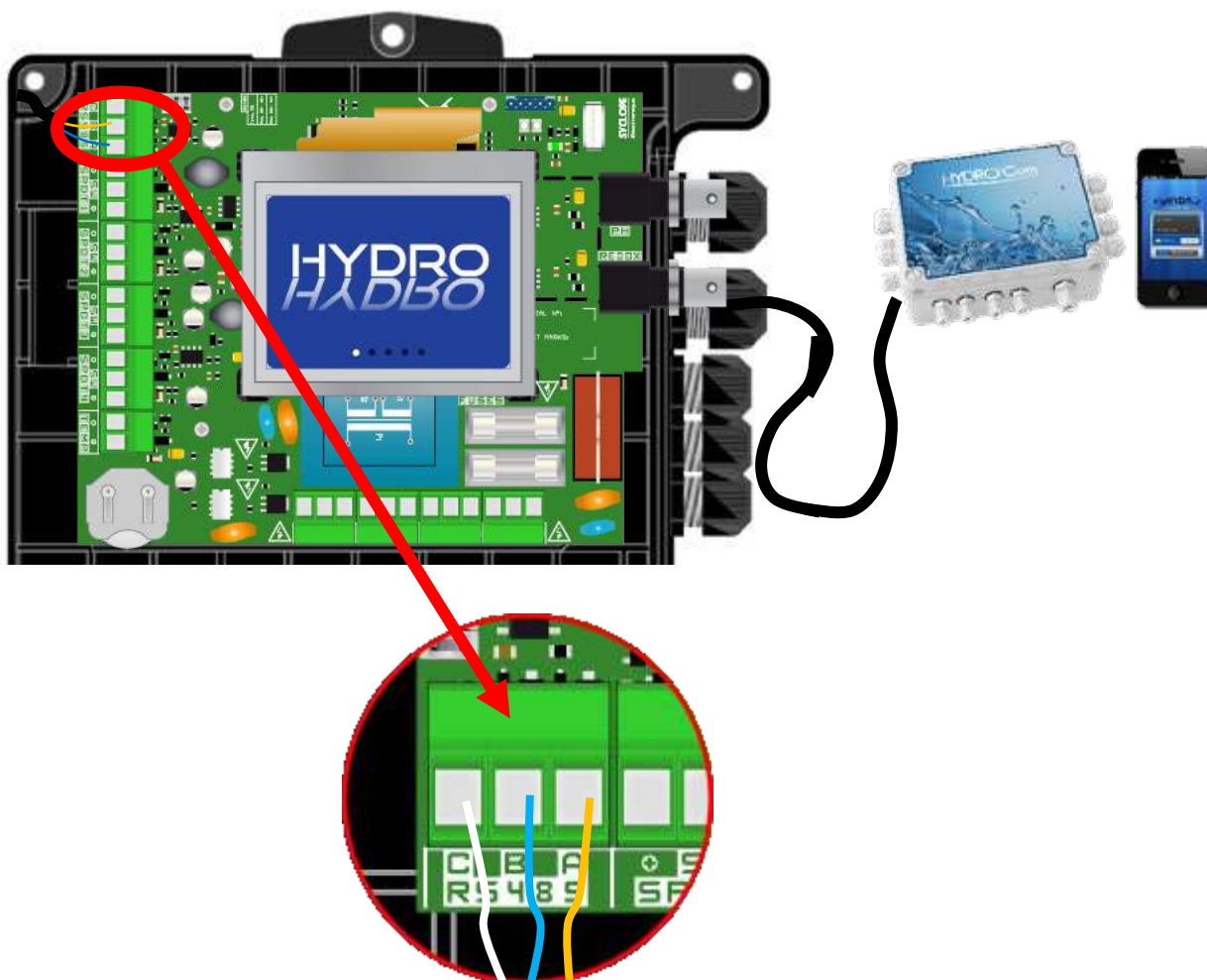
WARNING:

These relays switch the live coming from the device's mains power supply. Neutral is permanent and not switched. Therefore take care not to invert the live and neutral wires. To avoid risk of electrocution make sure the device is switched off before you make the electrical connections.

4.4.3.4 – Connecting the RS485 communication port

The **REGUL SYSTEM BWT** features a RS485 communication port to connect it to **HYDROCOM** to save the measurement values, alarms and the various device states.

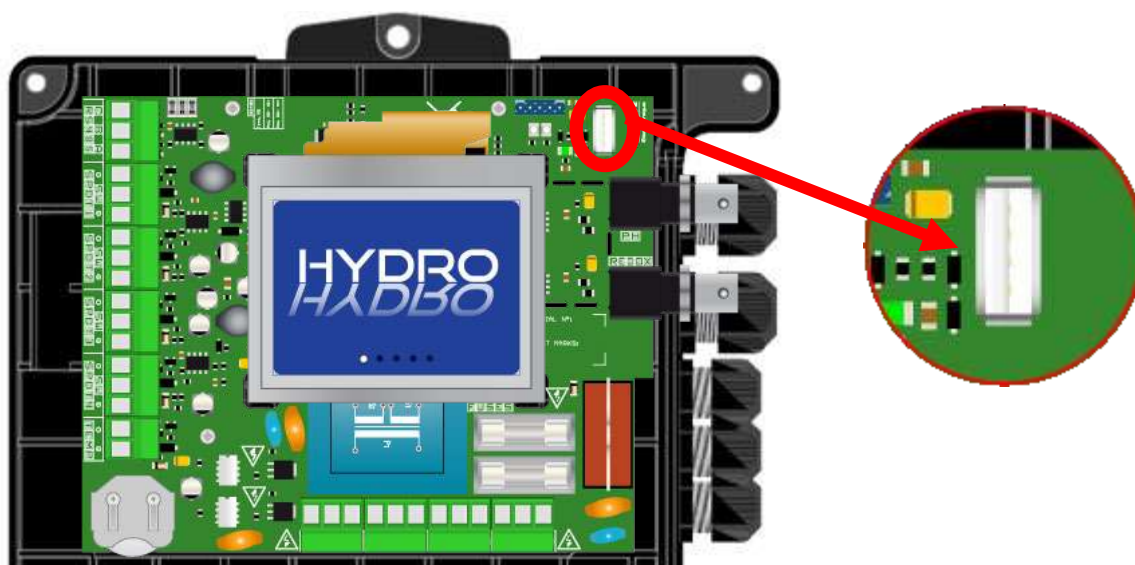
1. Cut the primary power supply.
2. Remove the protective sheath.
3. Strip 7 mm from the wires.
4. Pass the cable through the cable gland, then under the printed circuit board.
5. Connect wire A to **RS485** (A).
6. Connect wire B to **RS485** (B).
7. Connect wire C to **RS485** (C).
8. Tighten the cable gland to make it watertight.
9. Replace the front face and the fastening screws.
10. Put the equipment back into operation.



4.4.3.5 – Connecting a USB key

BWT REGUL SYSTEM-P features a USB port to connect a memory key. This key allows you to install updates of your product.

1. Cut the primary power supply.
2. Connect the key.
3. Put the equipment in operation.
4. Wait until the update is complete.
5. Cut the primary power supply.
6. Remove the key.
7. Replace the front face and the fastening screws.
8. Put the equipment in operation.



WARNING: Updates must be carried out by a qualified technician!

4.5 Filling the tanks with chemicals

WARNING

Pool chemicals are noxious and corrosive. They should only be handled according to the instructions provided on their labels and their MSDS (personal protective equipment, etc.). Never mix two concentrated chemical products.

Comment: Once products are "ready to use" in their container, drop the tank bottom valve directly into the container.

5. Commissioning and operation of the BWT REGUL SYSTEM-P

Once the hydraulic connections and electrical connections are made and the various measurement and regulating components have been connected, your BWT REGUL SYSTEM-P is ready to be put into operation.

1. Power the device on.
2. Make sure that everything is running properly, that the unit is on and that other elements of the installation have not been disturbed.

BWT REGUL SYSTEM-P does not automatically launch dosing and injection of the treatment chemicals upon powering on. A time-out is required first for "polarisation" of the probes (programmable). Next, it injects product if the pH and ORP values measured deviate from the setpoint values saved by the user.

Sensors and probes are fragile! Handle them with care.

WARNING

Upon commissioning and once a month, use a colorimetric test kit or buffer solutions to check the various parameters measured by the probes and displayed by the device. Correct the measured value(s) if necessary.

▲ See the "Calibration" paragraph

WARNING

To ensure that the measurements delivered by the sensors and probes of the devices are representative of the pool water, the water must circulate through the pipes where the sensors and probes are installed.

CAUTION

Never inject pool chemicals into the pipework while water is not in circulation or the pipe is not filled with water. The mixing of concentrated pool chemicals could lead to violent chemical reactions that could damage the installation or cause harm to people nearby.

5.1 The programming interface

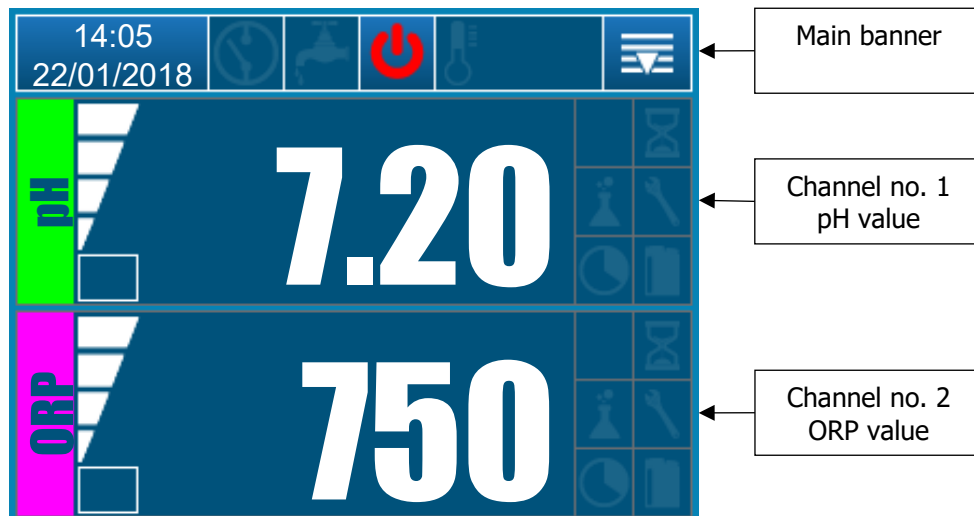
The **REGUL SYSTEM BWT-P** features a 3.5" touch screen. Activate the controls by touching the dedicated zones on the screen.

REGUL SYSTEM BWT-P features two programming levels:

- The user level provides access to REGUL SYSTEM BWT-P's basic settings.
- The installed level provides access to all the REGUL SYSTEM BWT-P's settings to modify all the device's parameters. This level is protected by an access code.

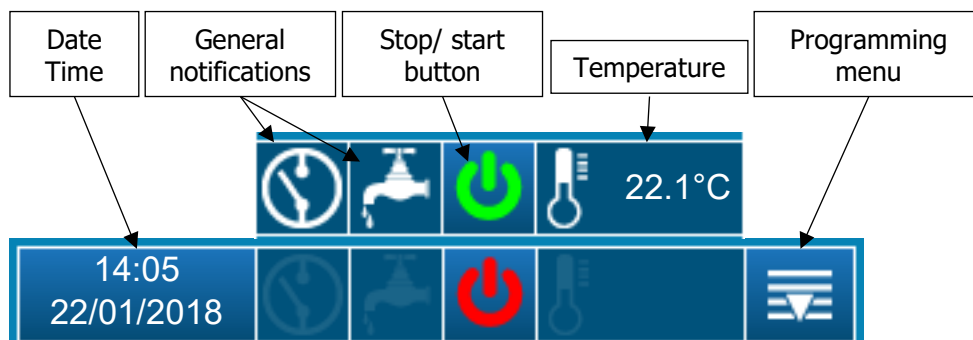
5.2 Main display

As soon as your device is energised, the start-up screen is appears showing the **REGUL SYSTEM BWT-P** logo. Next, the main screen appears, displaying the parameters measured.



5.3 User level parameter setting

5.3.3 Main banner detail



14:05
22/01/2018

This button is used to set the date and time.
Press it to open the setting menu.



When this icon is displayed, the remote control input (slaving the device to filtration) is in alarm = filtration pump is energised.



When this icon is displayed, the circulation input is in alarm = no water flow



REGUL SYSTEM BWT-P is on (green coloured icon) – Press to stop the device



REGUL SYSTEM BWT-P is off (red coloured icon) – Press to start the device.

22.1°C

This icon displays the temperature if it is set up in the parameters.



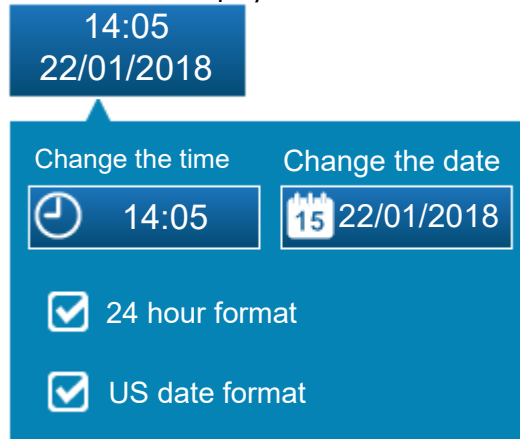
Press this button to access the programming menu to set the device parameters. Press to open the menu.

5.3.4 Setting the date and time

14:05
22/01/2018

Touch the date and time field to adjust these settings.

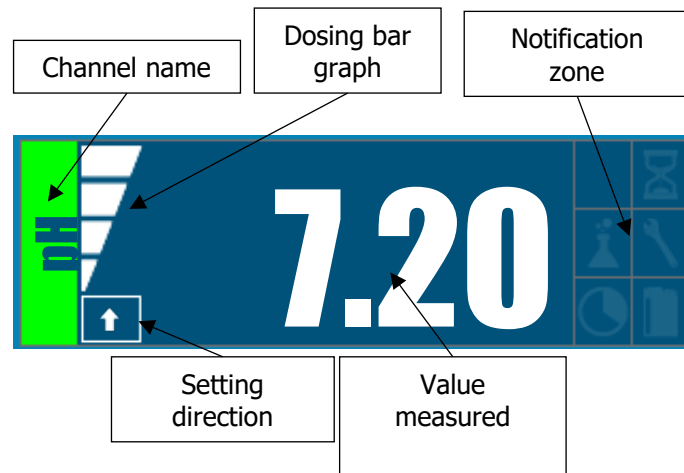
- Uncheck the "24 hour clock" box, to switch to the 12 hour clock version.
- Check the "US data format" to display the date in the format mm/dd/yyyy.



COMMENT: *The REGUL SYSTEM BWT-P time is set when the screen is closed by pressing the date and time field.*

COMMENT: *If the time programming screen closes by itself because it times out, the set time will not be saved.*

5.3.5 Channel display detail



This icon shows the direction of regulation set for the channel: up arrow = regulation allowing the parameter value to be increased. Down arrow: regulation allowing the parameter value to be decreased.



This icon indicates the current dosing percentage of the channel. In this example, dosing is set at 75%.



This icon is displayed when the "low value" alarm is active.



This icon is displayed when the "High value" alarm is active.



This icon indicates whether probe polarisation is active = time delay for the probe measurement to stabilise upon start up of the device, or after disconnection-reconnection of the probe.



This icon shows whether the overdosing alarm (upper and lower alarm thresholds exceeded) is active.



This icon is displayed if maintenance or calibration of the sensor or probe is required..



This icon is displayed if a timer is active.



This icon is displayed if an end of pool chemical tank alarm is active.



Value measured



Value below the measurement scale



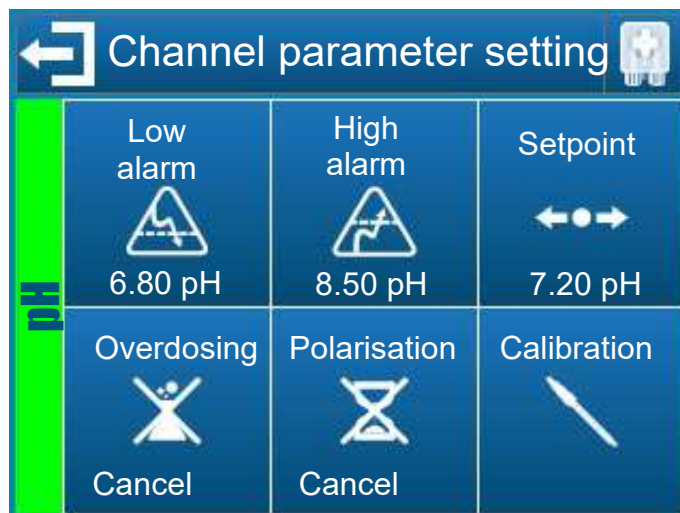
Value cannot be measured



Value above the measurement scale

5.3.6 Channel configuration

COMMENT: To display this screen, touch the desired channel on the main screen.



This button allows you to exit the screen and validate the new parameters for the selected channel.



This button is used to prime the pump for the selected channel.



This button is used to set the low alarm threshold for the selected channel.



This button is used to set the high alarm threshold for the selected channel.



This button is used to set the setpoint for the selected channel.



This button is used to cancel the overdosing alarm if need be (= maximum daily injection volume programmed is overshoot) for the selected channel.

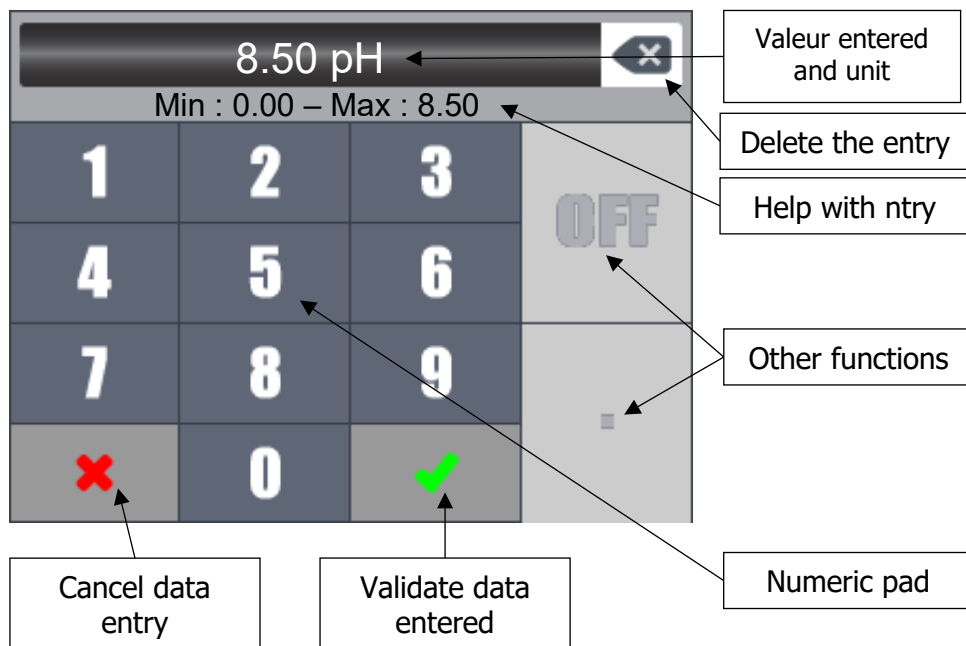


This button is used to cancel the activation of a polarisation time out if need be.



This button is used to perform calibration of selected channel.
Ref. chapter 5.4

5.3.7 Value input screen



COMMENT: Depending on the values to be entered some keys may be greyed because that are not valid for the selected parameter.


COMMENT: If the value entered is outside the measurement scale, upon validation, the data entry help zone will be displayed in red to warn you of the input error.

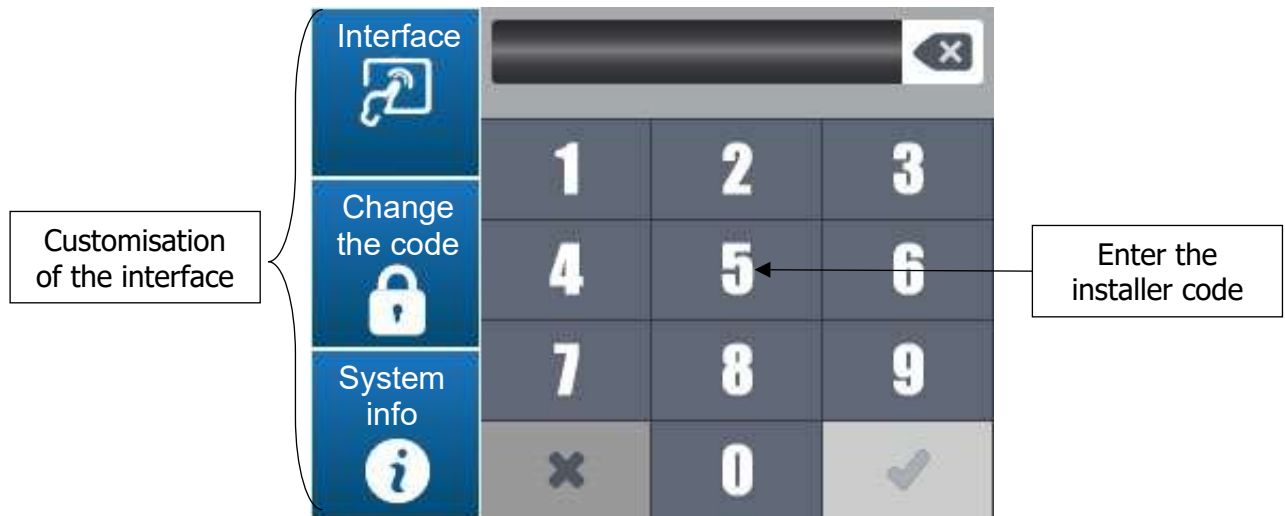


The "OFF" key is used to deactivate a function, for example: deactivate a timer.

The "AM/PM" key is used to set a 12 hour clock timer.

5.3.8 Programming menu

COMMENT : Press the  key on the main screen to display this screen.

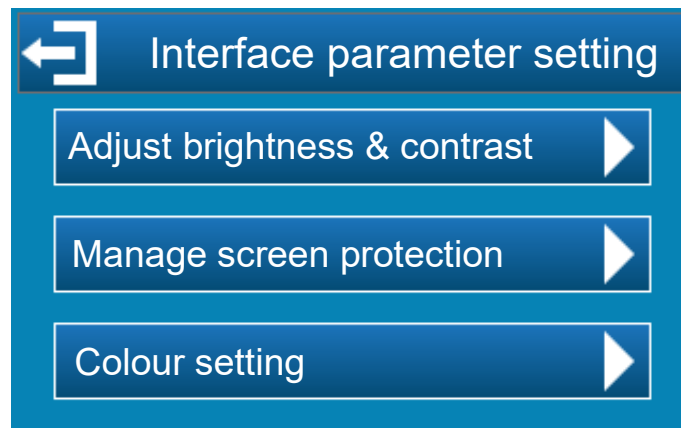


5.3.9 Interface menu

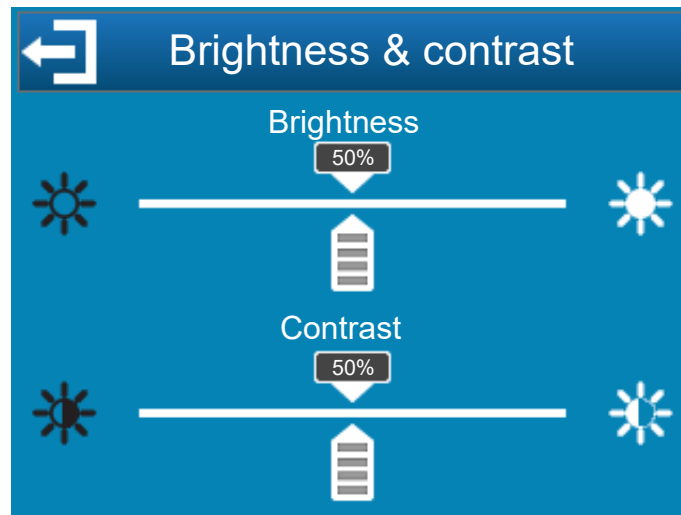


This button is used to open the REGUL SYSTEM BWT-P interface configuration screen.

Touch it to display the following screen.



5.3.10 Brightness and contrast setting menu

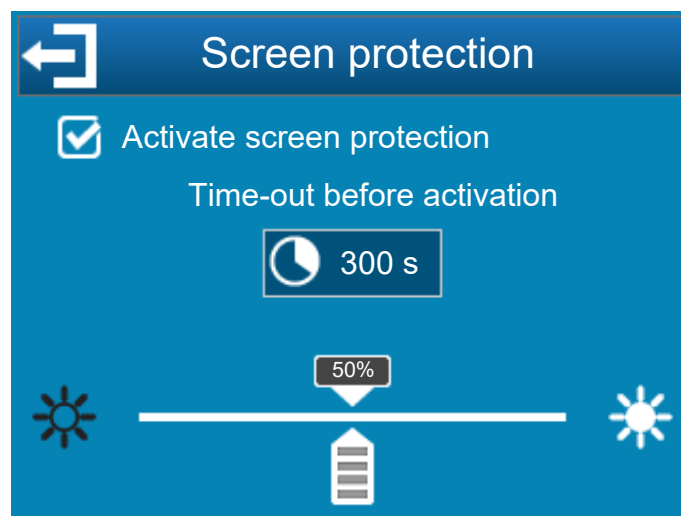


Brightness: this key is used to adjust the screen brightness between 10 and 100%.



Contrast: this key is used to adjust the screen contrast between 10 and 100%.

5.3.11 Screen protection management menu



Activate screen protection: Tick this box to activate the screen protection function, you then have access to the screen protection parameters.



Time-outs: Time-out before activation of screen protection. This corresponds to the time lapsed without any action on the screen.

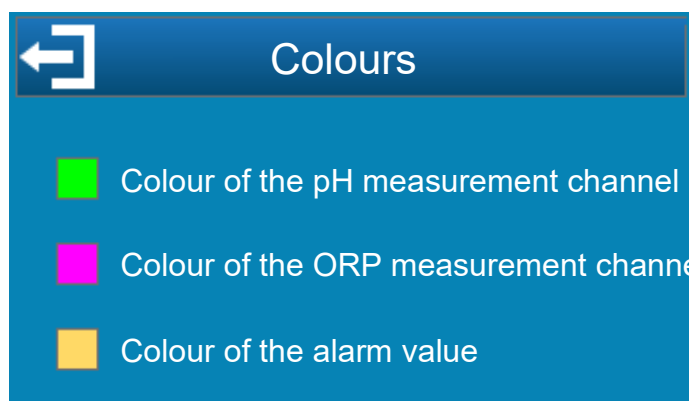


Backlight brightness: This button is used to adjust the backlight brightness as required.

COMMENT: When screen protection is triggered, simply touch the screen to restore the display.

5.3.12 Colour setting menu

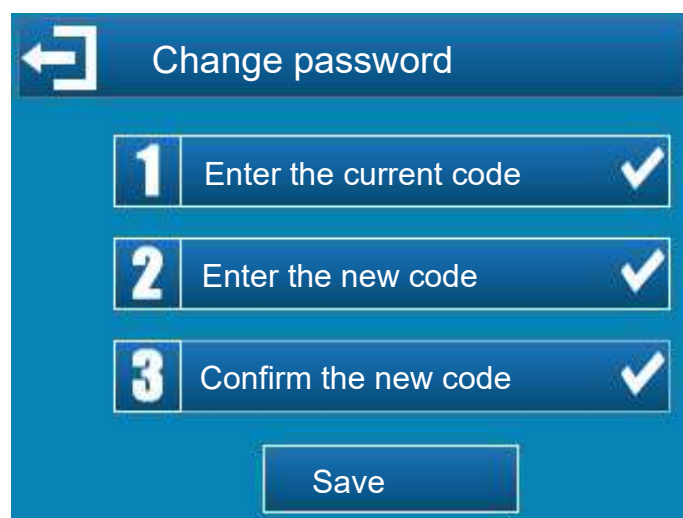
This menu allows you to configure the colour of the measurement channels and the colour of the alarm indicating a problem with a measurement.



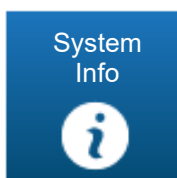
5.3.13 Code change menu

The BWT REGUL SYSTEM-P main menu is protected by an installer code. The default code is "1234". The code can be changed in three steps:

1. Enter the current code
2. Enter the new code
3. Confirm the new code

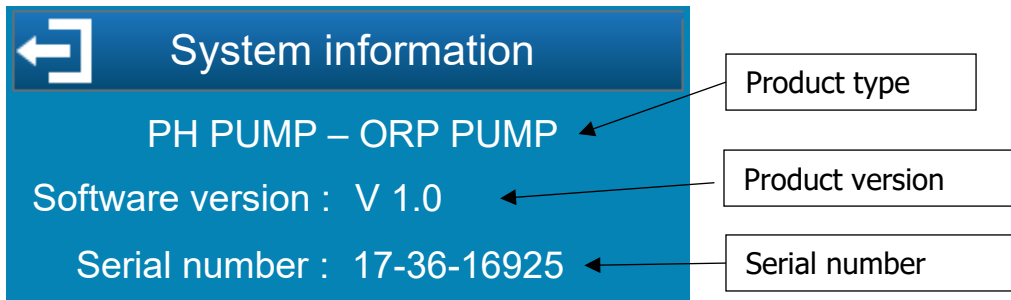


5.3.14 System information menu



This key opens the BWT REGUL SYSTEM-P information screen.

Press this key to display the following screen.



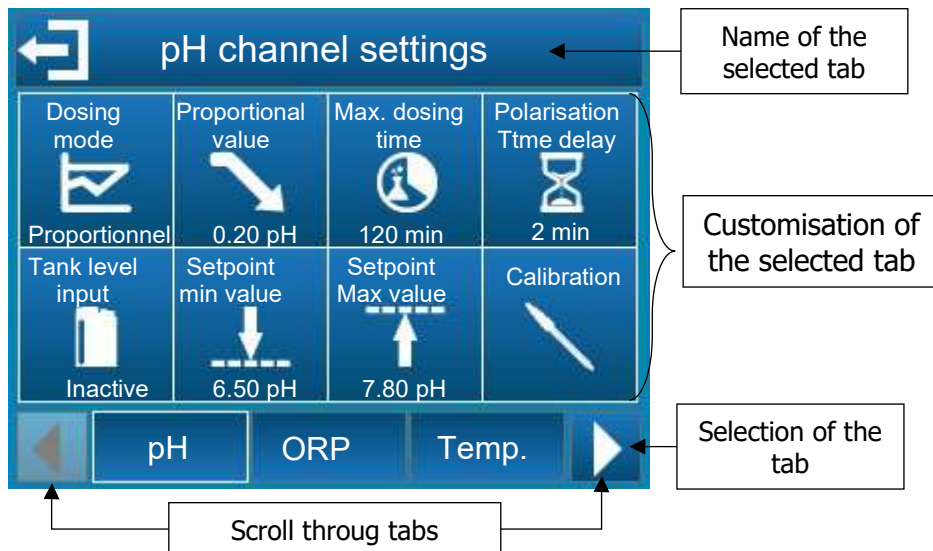
This window provides information about the product type and version. This information will be useful for any communications with your supplier/ installer.

The serial number is identical to that shown on the label affixed to the outside of the BWT REGUL SYSTEM-P casing.

5.3.15 Installer level settings



After entering the installer code, the configuration screens are displayed.

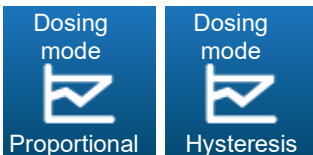
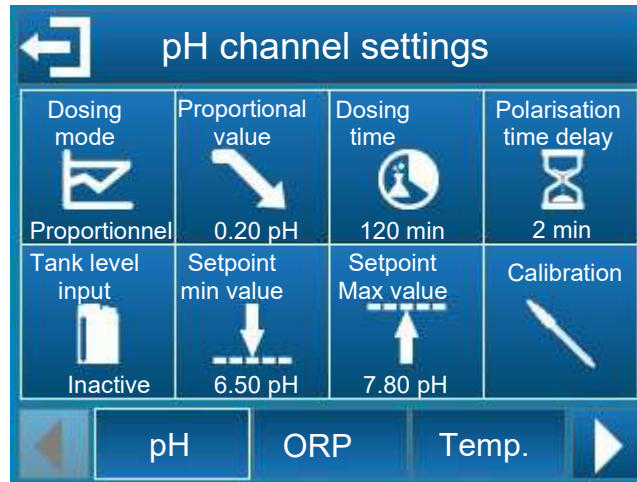


The available tabs are as follows:

pH	Setting the pH channel parameters (regulation type, tank level, etc.).
ORP	Setting the ORP channel parameters (regulation type, tank level, etc.).
Temp.	Setting the Temperature channel parameters (display, unit, etc.).
Timers	Setting the timer parameters (start and end time).
General	Setting the general regulator parameters (Remote input, flowrate input, etc.).
Com	Setting the regulator communication parameters (speed, parity, etc.).
Advanced	Setting the advanced regulator parameters (language, parameter reset, etc.).

5.3.16 pH channel parameter setting

- a) Configuration: This screen is used to set the parameters associated with pH measurement .



These keys are used to choose the pH regulation mode: proportional mode or hysteresis mode.

- In proportional mode, the injection flowrate of the product used to correct the pH value of the water is linearly proportional to the deviation of the measured value from the programmed pH setpoint.
- Hysteresis mode is an ON/OFF type of regulation. The hysteresis value is the difference between the programmed setpoint and the actual water pH value measured, as of which injection of the correction product is activated.

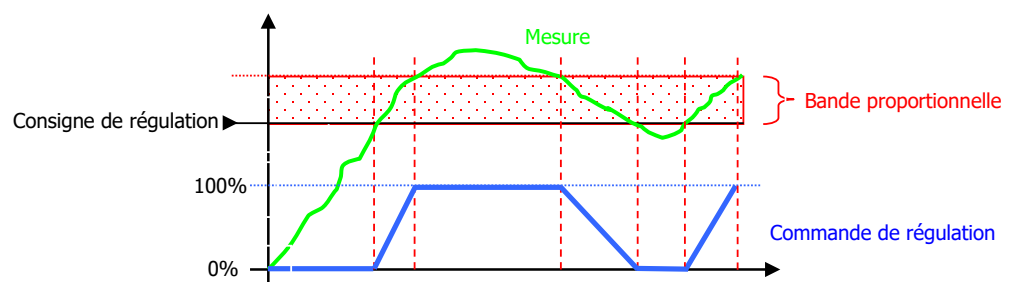
In "descending" mode, when the pH measurement is higher than the setpoint by more than this hysteresis value, the correction product dosing pump is activated.

In "Ascending" mode, when the pH measurement is lower than the setpoint by more than this value, the product dosing pump is activated.

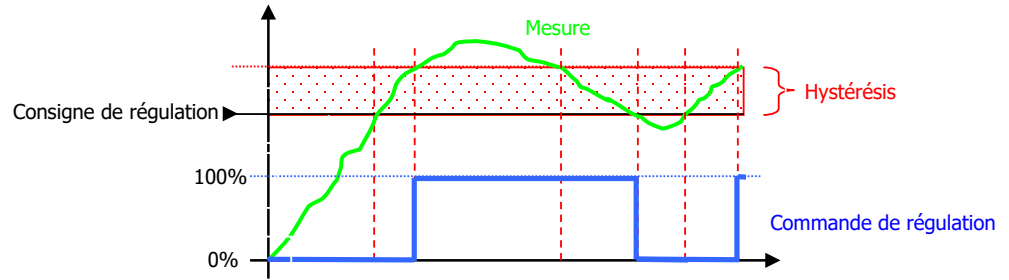


When the pH dosing direction is in descending mode, this key is used to select the proportional band value (if proportional mode is selected) or the hysteresis mode (if hysteresis mode is selected).

- In proportional mode, if the difference (measurement - setpoint) is greater than or equal to the proportional band, the product injection flowrate is 100%. If this difference falls below the proportional band, the injection flowrate varies linearly between 0 and 100%. Thus, by playing on the proportional band value, the injection flowrate can be increased or decreased for the same deviation from the setpoint.

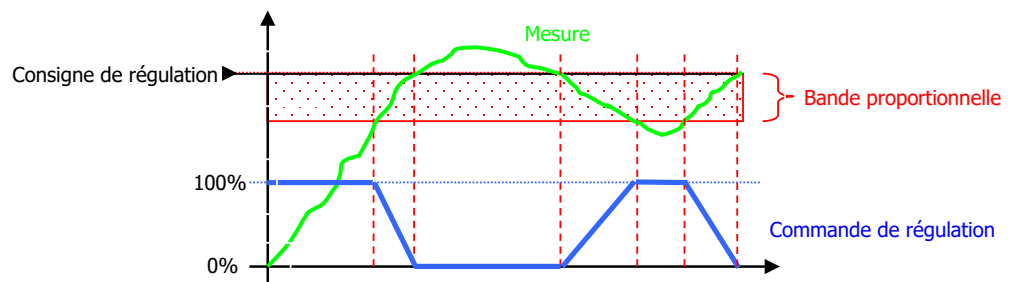


- In hysteresis mode, as soon as the difference (setpoint – measurement) rises above the hysteresis value the regulation flowrate is set to 100%.

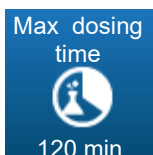
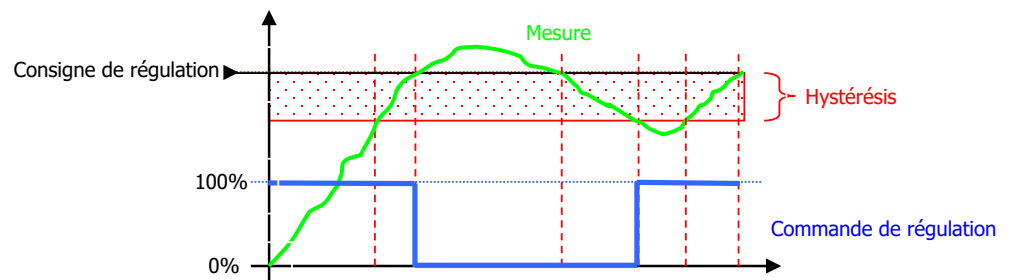


If the pH dosing direction is in ascending mode, this key is used to select the proportional band value (if proportional mode is selected) or the hysteresis value (if hysteresis mode is selected).

- In proportional mode, if the difference (setpoint – measurement) is greater than or equal to the proportional band, the product injection flowrate is set to 100%. If this difference falls below the proportional band, the injection flowrate will vary linearly between 0 and 100%. Thus, by playing on the proportional band value, the injection flowrate can be increased or decreased for the same deviation from the setpoint.



- (In hysteresis mode, as soon as the difference (setpoint – measurement) rises above the hysteresis value the regulation flowrate is set to 100%.




This key is used to enter the maximum daily injection duration for the pH corrector. The max duration can be set to between 0 (deactivated or OFF) and 1440 minutes. If the pump activation duration exceeds this value on any day, the symbol ⓘ is displayed on screen, and dosing is stopped. It can only restart after the corresponding alarm is cancelled by the user.



This key is used to set the time delay before which the pH value measured by the probe is taken into account, it can be between 0 and 480 minutes. This time delay allows the value measured by the probe to stabilise and delays start up of regulation and the processing of alarms, upon start-up of the BWT REGUL SYSTEM-P or following disconnection of the probe. During this phase, the symbol ⓘ is displayed on the main screen.



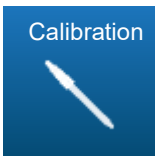
This key is used to activate or deactivate the "End of tank" input. The contact direction may be selected, NO or NC. When the level in the treatment product tank approaches the bottom of the tank, the symbol  is displayed on the main screen to warn that product should be added or that the tank should be replaced.



This key is used to set the maximum pH setpoint that may be selected by the user.



This key is used to set the minimum pH setpoint that may be selected by the user.



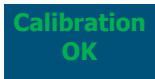
This key is used to calibrate the pH measurement.

b) Calibration

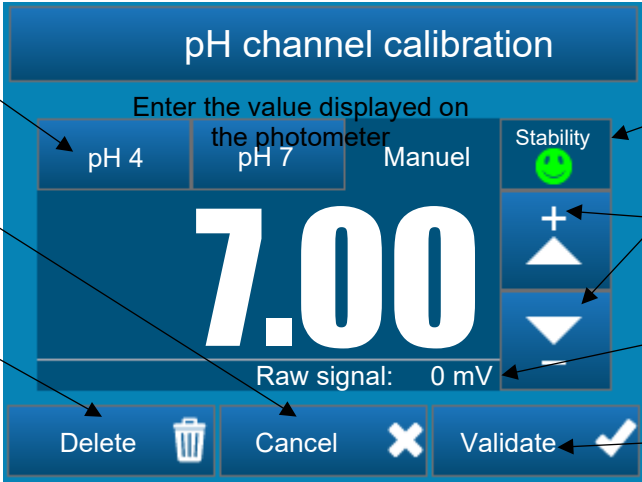
Cf. § 5.4 Calibrating the pH and ORP channels



Improper calibration (outside calibration limits)



Calibration correct and validated



The image shows a screenshot of the "pH channel calibration" screen with several callout boxes explaining its components:

- Manual calibration or with a standard:** Points to the "Manual" button.
- Information on measurement stability:** Points to the "Stability" indicator (a green smiley face).
- Used to enter the value of the calibration standard:** Points to the "+" and "-" buttons.
- Shows the raw signal value:** Points to the "Raw signal: 0 mV" display.
- Used to validate the calibration in progress:** Points to the "Validate" button (checkmark icon).
- Deletes the calibration in progress:** Points to the "Delete" button (trash can icon).
- Deletes calibration and use factory settings:** Points to the "Cancel" button (X icon).

5.3.17 Oxidising agent channel parameter setting

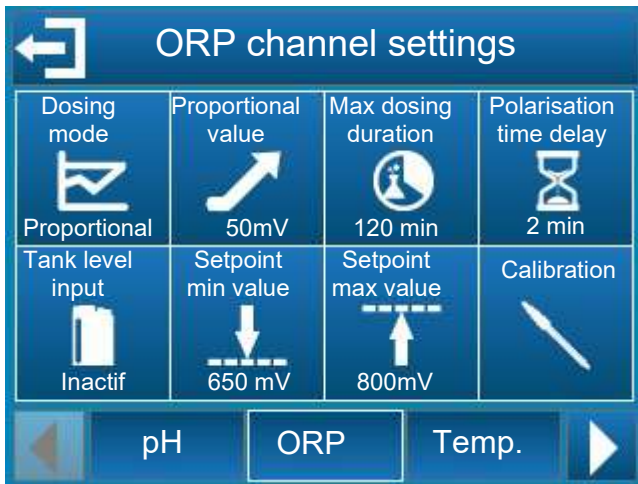
pH/ ORP versions of the device are delivered with a ORP probe.

For it to function as a pH/Chlorine version, you must equip it with an open cell amperometric probe (not supplied).

pH/ORP version

Configuration

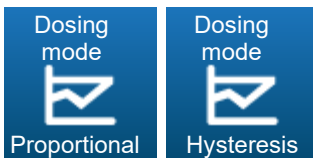
This screen is used to set the parameters associated with the ORP measurement.



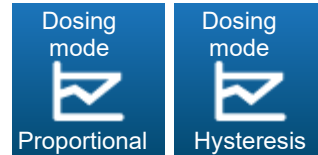
pH/Chlorine version

Configuration

This screen is used to set the parameters associated with the Chlorine measurement.



This key is used to select the ORP regulation mode to proportional mode or hysteresis mode.



This key is used to select the Chlorine concentration regulation mode to proportional mode or hysteresis mode.

➤ In proportional mode, the injection flowrate of disinfectant into the water is linearly proportional to the difference between the measured value and the programmed ORP value.

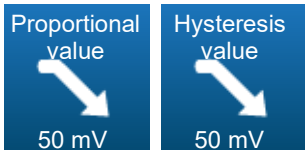
➤ Hysteresis mode is an ON/OFF type of regulation. The hysteresis value is the difference between the programmed setpoint and the actual water ORP value measured, as of which injection of the disinfectant product is activated.

In "ascending" mode, if the measurement is below the setpoint by more than the hysteresis value, the disinfectant product injection pump is activated. If the difference (setpoint – measurement) is less than the hysteresis value, the pump remains off.

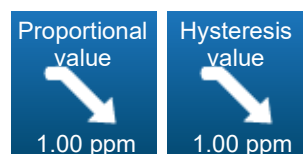
➤ In proportional mode, the injection flowrate of disinfectant into the water is linearly proportional to the difference between the measured value and the programmed free Chlorine value.

➤ Hysteresis mode is an ON/OFF type of regulation. The hysteresis value is the difference between the programmed setpoint and the actual concentration of free Chlorine measured, as of which injection of the disinfectant product is activated.

In "ascending" mode, if the measurement is below the setpoint by more than the hysteresis value, the disinfectant product injection pump is activated. If the difference (setpoint – measurement) is less than the hysteresis value, the pump remains off.



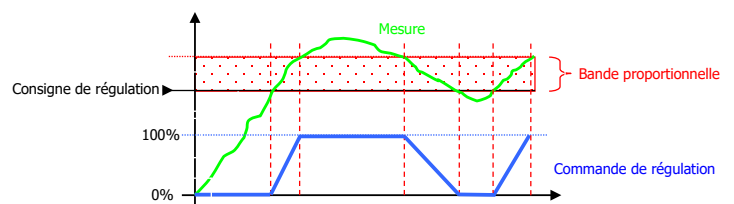
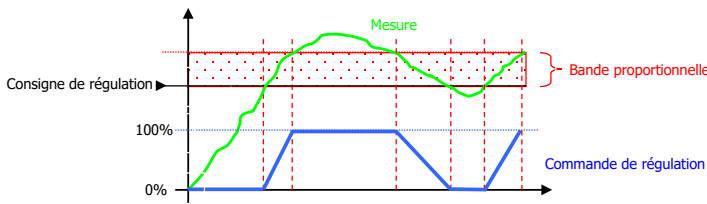
If the ORP channel dosing direction is set to descending mode, this key allows you to select the proportional band value or the hysteresis value, depending on the regulation mode selected.



If the Chlorine channel dosing direction is set to descending mode, this key allows you to select the proportional band value or the hysteresis value, depending on the regulation mode selected.

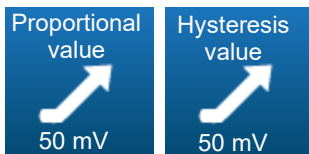
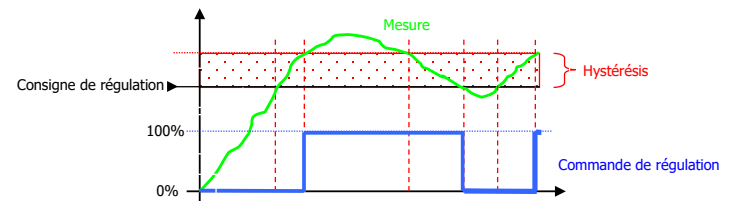
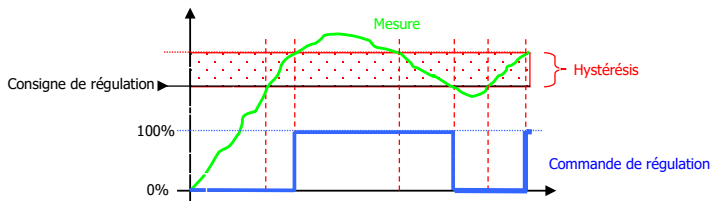
- In proportional mode, if the difference (measurement – setpoint) is greater than or equal to the proportional band, the regulation demand is 100%. Reducing the proportional band value, increases the dosing command for the same measurement value.

- In proportional mode, if the difference (measurement – setpoint) is greater than or equal to the proportional band, the regulation demand is 100%. Reducing the proportional band value, increases the dosing command for the same measurement value.

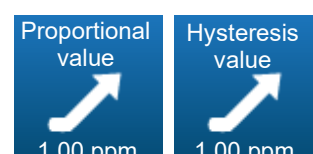


- In hysteresis mode, as soon as the difference (measurement – setpoint) rises above the hysteresis value, the regulation demand is 100%.

- In hysteresis mode, as soon as the difference (measurement – setpoint) rises above the hysteresis value, the regulation demand is 100%.



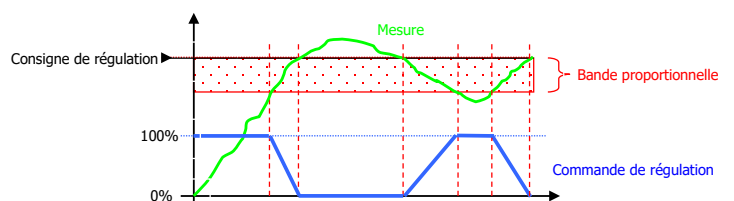
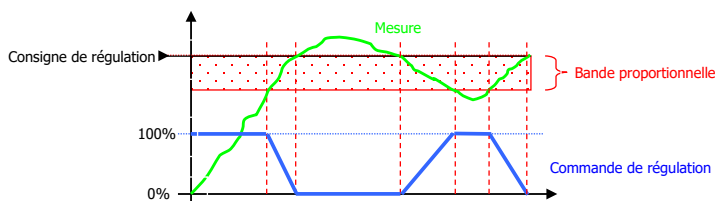
If the ORP channel dosing direction is set to ascending, this key allows you to select the proportional band value or the hysteresis value, depending on the regulation mode selected.



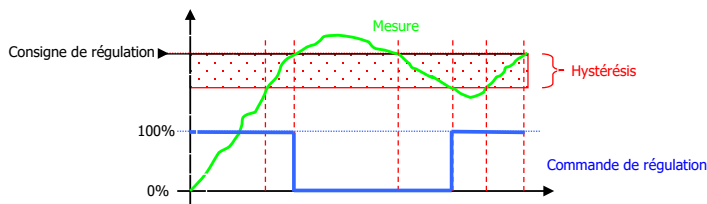
If the ORP channel dosing direction is set to ascending, this key allows you to select the proportional band value or the hysteresis value, depending on the regulation mode selected.

- In proportional mode, if the difference (setpoint – measurement) is greater than or equal to the proportional band, the regulation demand is 100%. Reducing the proportional band value, increases the dosing command for the same measurement value.

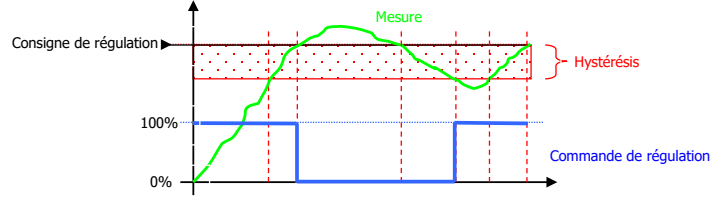
- In proportional mode, if the difference (setpoint – measurement) is greater than or equal to the proportional band, the regulation demand is 100%. Reducing the proportional band value, increases the dosing command for the same measurement value.




- In hysteresis mode, as soon as the difference (setpoint-measurement) rises above the hysteresis value, the regulation demand is 100%.

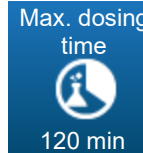


- In hysteresis mode, as soon as the difference (setpoint-measurement) rises above the hysteresis value, the regulation demand is 100%.




This key is used to set the maximum run time for the pump associated with the ORP probe. The max run time may be set between 0 (deactivated or OFF) and 1440 minutes.

If the pump run time exceeds this duration, the dosing pump stops and will only start again after the user intervenes to cancel the alarm. During this phase the symbol  is displayed on the main screen.




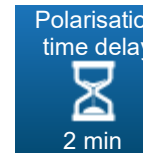
This key is used to set the maximum run time for the pump associated with the Chlorine probe. The max run time may be set between 0 (deactivated or OFF) and 1440 minutes.

If the pump stops and will only start again after the user intervenes to cancel the alarm. During this phase the symbol  is displayed on the main screen.




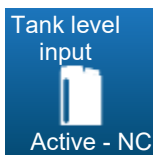
This key is used to set the ORP probe time delay on start-up to between 0 and 480 minutes.

This time delay is used to delay activation of regulation and processing of alarms following start up of the device or disconnection of the probe. During this phase the symbol  is displayed on the main screen.




This key is used to set the Chlorine probe time delay on start-up to between 0 and 480 minutes.

This time delay is used to delay activation of regulation and processing of alarms following start up of the device or disconnection of the probe. During this phase the symbol  is displayed on the main screen.




This key is used to activate or deactivate the "end of tank" input. The contact direction can be selected, either NO or NC.

If this input is detected the symbol  is displayed on the main screen.



This key is used to activate or deactivate the "end of tank" input. The contact direction can be selected, either NO or NC.

If this input is detected the symbol  is displayed on the main screen.



This key is used to set the maximum setpoint for the ORP channel that may be selected by the user.



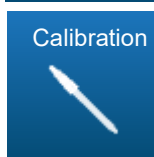
This key is used to set the minimum setpoint for the ORP channel that may be selected by the user.



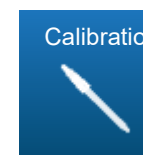
This key is used to set the maximum setpoint for the Chlorine channel that may be selected by the user.



This key is used to set the minimum setpoint for the Chlorine channel that may be selected by the user.



This key can be used to calibrate the ORP probe input.



This key can be used to calibrate the Chlorine probe input.

a) Calibration

Cf. § 5.6 Calibration of the pH and ORP channels

ORP channel calibration

Enter the value displayed on the photometer

465 mV Manual

480

Raw signal: 480 mV

Stability

Information on measurement stability

Used to enter the value of the calibration standard

Shows the raw signal value

Used to validate the calibration in progress

Manual calibration or with a standard

Deletes the calibration in progress

Delete calibration and use factory settings

Delete

Cancel

Validate

Calibration ERROR Improper calibration (outside calibration limits)

Calibration OK Calibration correct and validated

Cf. § 5.7 Calibration of the Chlorine channel

Chlorine channel calibration

Water circulation active, wait 15min for stabilisation

offset Slope

5.00

Raw signal: 12.00 mA

Stability

Information on measurement stability

Used to enter the value of the calibration standard

Shows the raw signal value

Used to validate the calibration in progress

Manual calibration or with a standard

Deletes the calibration in progress

Delete calibration and use factory settings

Delete

Cancel

Validate

Calibration ERROR Improper calibration (outside calibration limits)

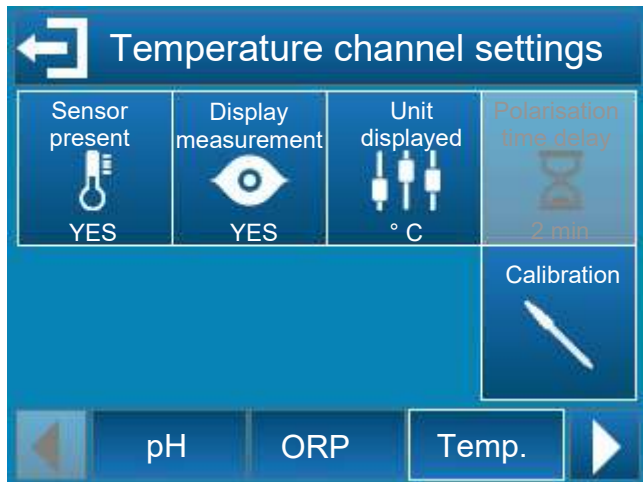
Calibration OK Calibration correct and validated

5.3.18 Auxiliary channel parameter setting

pH/ORP version


Configuration

This screen is used to set the parameters associated with the Temperature measurement.

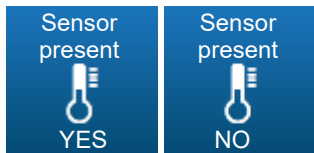
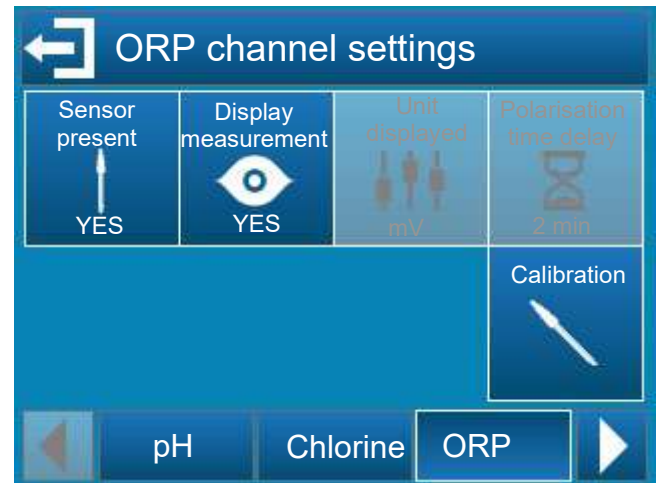


pH/Chlorine version

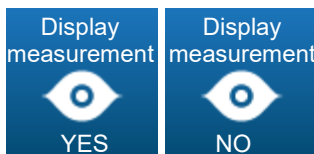
Configuration

 The temperature tap is replaced by the ORP tab if you activate the Chlorine option in the Advanced tab.

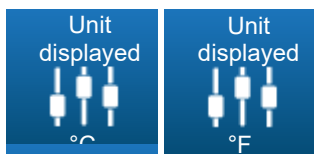
This screen is used to set the parameters associated with the ORP measurement



This key is used to activate or deactivate the temperature measurement.



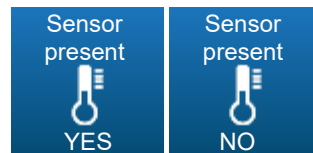
This key is used to either display or mask the temperature measurement in the main banner.



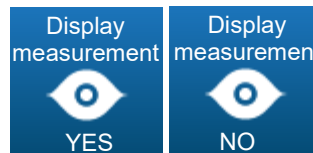
This key is used to select the measurement unit °C or °F.



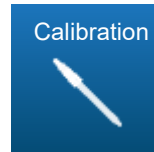
This key is used to calibrate the temperature input.



This key is used to activate or deactivate the temperature measurement.



This key is used to either display or mask the temperature measurement in the main banner.



This key is used to calibrate the ORP input.

a) Calibration

Temperature channel calibration

Enter the pool temperature value

Manual

Stability

20.0

Raw signal: 12.00 mA

Buttons: Delete (trash icon), Cancel (X icon), Validate (checkmark icon)

Annotations:

- Information on measurement stability (points to Stability icon)
- Used to enter the value of the calibration standard (points to + button)
- Shows the raw signal value (points to Raw signal: 12.00 mA)
- Used to validate the calibration in progress (points to Validate button)
- Deletes calibration and uses factory settings (points to Delete button)
- Cancels the calibration in progress (points to Cancel button)

Status Indicators:

- Calibration ERROR** (Red box): Improper calibration (outside calibration limits)
- Calibration OK** (Green box): Calibration correct and validated

ORP channel calibration

Enter the value displayed on the photometer

Manual

Stability

465 mV

480

Raw signal: 480 mV

Buttons: Delete (trash icon), Cancel (X icon), Validate (checkmark icon)


Annotations:

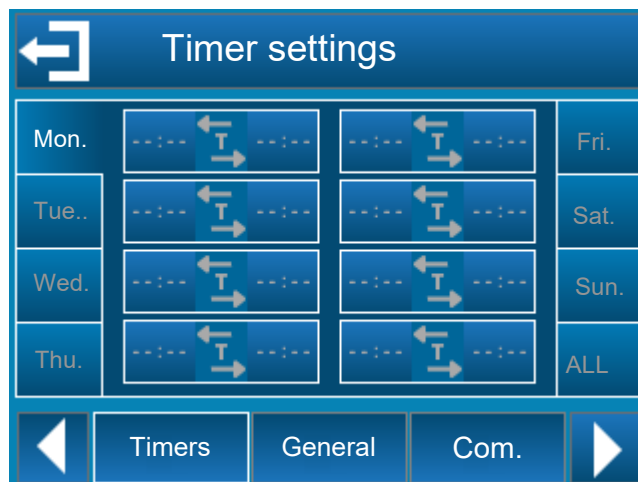
- Information on measurement stability (points to Stability icon)
- Used to enter the value of the calibration standard (points to + button)
- Shows the raw signal value (points to Raw signal: 480 mV)
- Used to validate the calibration in progress (points to Validate button)
- Deletes calibration and uses factory settings (points to Delete button)
- Cancels the calibration in progress (points to Cancel button)
- Manual calibration or with a standard (points to 465 mV input field)

Status Indicators:

- Calibration ERROR** (Red box): Improper calibration (outside calibration limits)
- Calibration OK** (Green box): Calibration correct and validated

5.3.19 Timer settings

This screen is used to set operating time slots for the ancillary relay. If a time slot is active, a timer symbol  is displayed in the notification bar.



You can programme up to 8 daily time slots for each day of the week, or up to 8 weekly time slots.

To set a time slot, programme the start time and end time.



The time slot is deactivated.



The time slot start time has been set but it is not yet active.



The time slot is active. In this example, the start time is 14:00, the end time is 16:00.

COMMENT:

The minimum length of a time slot is 1 minute. The maximum length of a time slot is 24 hours.

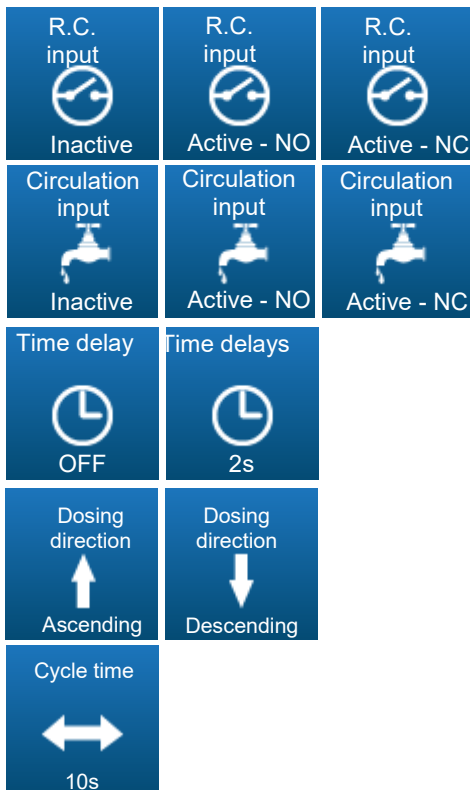
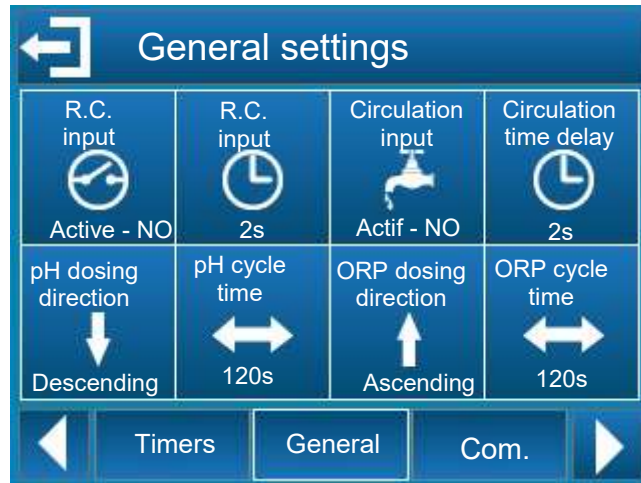
5.3.20 General settings

This screen is used to set the "remote control" contact parameters, "circulation input", the dosing direction for the pH and Redox channels as well as the cycle times for the pumps associated with the pH and ORP channels.



CAUTION:

The Remote Control (RC) and Circulation inputs are designed to accept PNP or NPN type proximity sensors or state contacts.



This key is used to activate or deactivate the "remote control" input. It is also used to select the contact direction, NO or NC.

This key is used to activate or deactivate the "circulation" input. It is also used to select the contact direction, NO or NC.

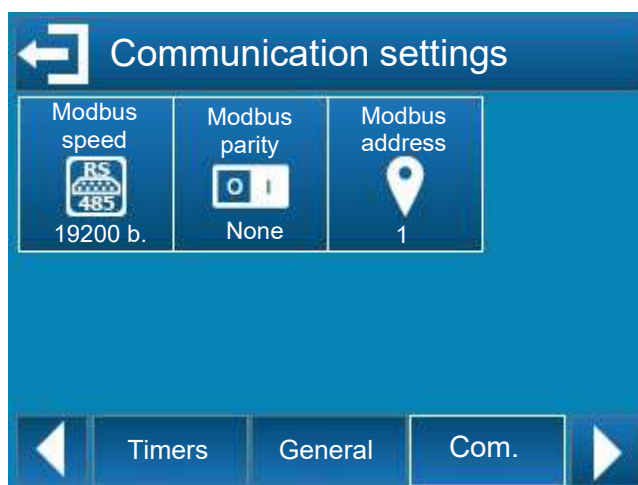
This key is used to set the contact debounce time. To deactivate this time delay, set it to "OFF". This time delay can be set to up to 240s.

This key is used to set the channel dosing direction. The dosing direction can be "ascending" or "descending".


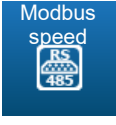

This key is used to set the dosing pump cycle time. The time can be set to between 10 and 1800 s.

5.3.21 Communication settings

This screen is used to set the RS485 communication bus parameters.



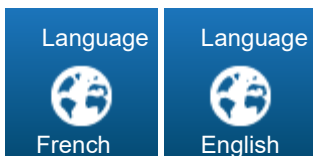
You may modify the communication speed, the parity and the Modbus address (slave ID) by clicking on each key.

<p>Address</p> <p>Modbus address</p> 	<p>Slave address 1...247</p>
<p>Speed</p> <p>Modbus speed</p> 	<p>Baud rate :</p> <p>300 1200 2400 4800 9600 19200 38400 57600 115200</p>
<p>Parity</p> <p>Modbus parity</p> 	<p>Serial communication parity None, Uneven, Even</p>

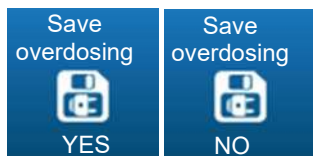
5.3.22 Advanced parameters

Software version <2.00

This screen is used to set the device's advanced parameters.



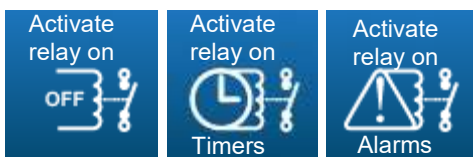
This key is used to select the system language.



This key is used to activate or deactivate the daily overdosing alarm if the current is cut.



This key is used to activate or deactivate shut down of dosing in the event that the regulator experiences a technical alarm (High or low measurement alarms).



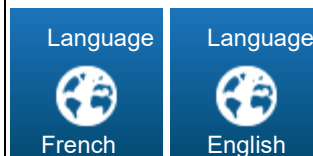
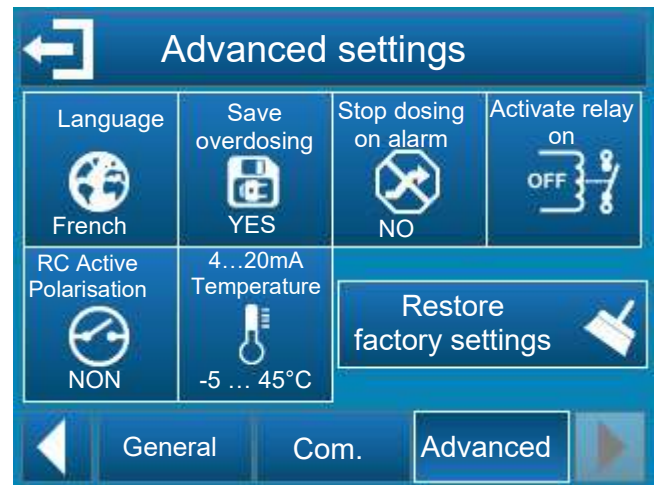
This key is used to deactivate the self powered relay or associate it with an alarm or a timer.



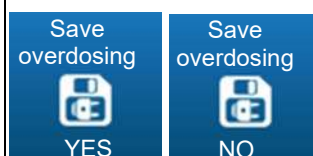
This key is used to reset all device parameters to factory settings.

Software version >2.00

This screen is used to set the device's advanced parameters.



This key is used to select the system language.



This key is used to activate or deactivate the daily overdosing alarm if the current is cut.



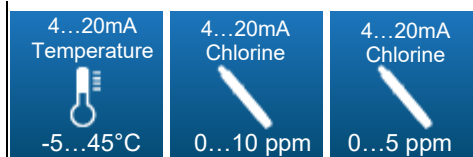
This key is used to activate or deactivate shut down of dosing in the event that the regulator experiences a technical alarm (High or low measurement alarms).



This key is used to deactivate the self powered relay or associate it with an alarm or a timer.



This key is used to activate or deactivate polarisation via the Remote Contact.



This key is used to dedicate the 4...20mA input to either Chlorine 0...10 ppm or 0...5 ppm.



This key is used to reset all device parameters to factory settings.



This key is only available as of version **2.04**. It means that the relay acts as a timer but does not stop when you enter the programming menu.

COMMENT: After reset the device starts up automatically.

COMMENT: Calibration values will be deleted so all probes will need to be recalibrated.

5.4 Calibrating the pH and ORP channels

5.4.1 Automatic calibration of pH and ORP probes (without reagent)

Automatic calibration of the pH or ORP probes does not require liquid standards. Before starting calibration, measure the pH and/ or the redox potential using reference equipment (Calibrated photometer to measure the actual pool water value to compare it to the displayed value).

COMMENT: Filtration does not need to be stopped and the probes do not need to be removed from their housing to perform this operation.

COMMENT: If the value is close to +/- 0.1pH, do not perform calibration. The measurement uncertainty of your reagent or your eye cannot resolve this difference.

To automatically calibrate the pH or ORP value, press the measurement channel to be calibrated and then the calibration key (ref. chapter 5.3.6 Channel configuration)

Adjust the value using the  and  keys and validate with the  key.

1. Automatic calibration of the pH value:

WARNING

To automatically calibrate the pH value:

- filtration must be running for several minutes,
- the pH value displayed must be stable,
- the dosing pumps must be off,
- and the actual pH value measured with your reagent or portable device must be recent.

Conditions for performing automatic calibration of the pH value:

- The probes must not be defective or disconnected,
- The pH value displayed must be between 5.5 and 8.5.
- As soon as calibration is complete, the BWT Regul System-P resumes its normal operation and the modified pH is displayed!

2. Automatic calibration of the ORP value:

WARNING

To automatically calibrate the ORP value:

- **filtration must be running for several minutes,**
- **the ORP value displayed must be stable,**
- **the dosing pumps must be off,**
- **and the actual ORP value measured with your reagent or portable device must be recent.**

Conditions for performing automatic calibration of the ORP value:

- The probe must not be defective or disconnected,
- The ORP value displayed must be between 200mV and 900mV,
- As soon as calibration is complete, the BWT Regul System-P resumes its normal operation and the modified ORP is displayed!

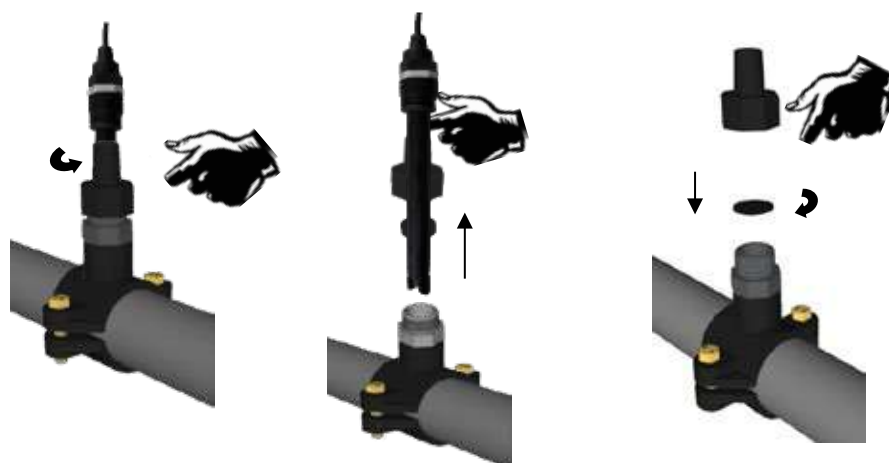
5.4.2 Manual calibration of the pH and ORP values (with standard reagents)

To calibrate the pH or ORP probe with liquid standards, the probe to be calibrated must be removed from their housing.

Before performing this operation, filtration must be stopped and the probe to be calibrated must be replaced with a cap.

Step 1

Stop filtration and close the isolation valves



Step 2

Unscrew the probe housing nut by hand.

Step 3

Withdraw the probe from its housing and remove the seal and nut from the rod.

Step 4

Replace the probe with a rubber disc and screw the nut with seal onto the probe housing.

Step 5

Open the valves and put filtration back into operation



Step 6

Rinse the probe with clear water, do not use excessive pressure. Remove any impurities.

Take care not to break or damage the sensitive tip.

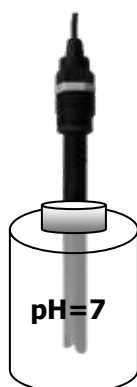
Put it down carefully before calibration.

3. Calibration of the pH value:

WARNING

To calibrate the pH probe, you must start with the pH 7 liquid standard.

COMMENT: In pools, calibration with the pH 7 standard may be sufficient. Check that after this operation the pH displayed by the regulator corresponds to the actual pH of your pool. If they do not correspond, perform a complete calibration using the pH=4 liquid standard.




Step 7

Immerse the probe in the pH= 7 standard reagent.

Wait for the reading on the BWT RegulSystem-P to stabilise. Once the value has stabilised, continue as follows.

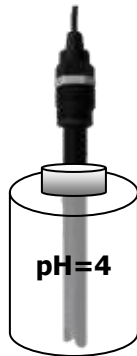
Step 8

To calibrate the pH 7 value, touch the pH measurement channel, and then the calibration key (see chapter 5.3.6 Channel configuration). Select the pH 7 tab, and validate using the  key.



Step 9


Rinse the probe carefully with clean water before proceeding with the pH = 4.00 calibration.



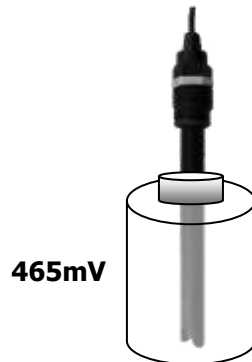
Step 10

Immerse the probe in the pH= 4 standard reagent. Wait for the reading on the BWT RegulSystem-P to stabilise. Once the value has stabilised, continue as follows.

Step 11

To calibrate the pH 7 value, touch the pH measurement channel, and then the calibration key (see chapter 5.3.6 Channel configuration). Select the pH 7 tab, and validate using the  key.


4. Calibration of ORP 465mV :



Step 12

Immerse the probe in the 465mV standard reagent. Wait for the reading to stabilise. Once the reading has stabilised, continue as follows.

Step 13

To calibrate the ORP 465mV value, touch the ORP measurement channel, and then the calibration key (see chapter 5.3.6 Channel configuration). Select the 465mV tab, and validate using the  key.

Step 14

Stop filtration and close the isolation valves

Step 15


Replace the probe in its housing

Step 16

Open the valves and restart filtration

5.4.3 Erasing calibration

To erase calibration of a pH or ORP value, touch the measurement channel to be calibrated and then the calibration key (see chapter **Erreur ! Source du renvoi introuvable.** Channel configuration).

Next, press the  key.

5.5 Calibrating the Chlorine channel

Probes CAA320X and CAA330X require calibration of the probe slope and, if necessary (measurement at low Chlorine concentrations) zero point calibration. Depending on the physical and chemical parameters of the water, the gain multiplier switch may be used.

5.5.1 Calibrating the probe slope

A calibration of the probe slope must be performed after the device is put into operation for the first time (approximately 3H) and then again at regular intervals for chlorination to run properly. If Chlorine Dioxide is present, calibration must take this into consideration. Chlorine Dioxide is 6 times more active than the Chlorine measured.

- Allow chlorinated water to circulate in the chamber, wait for the value read on the regulation device to stabilise.
- The Chlorine value must correspond to at least 10% of the measurement scale.
- Measure the Chlorine concentration using a reference device.
- Perform a counter measure to validate this standard value.
- Enter this value in the regulation device to validate calibration.

To correctly perform calibration, the probe must be present in the analysis chamber, under nominal pressure with the recommended flow rate (see the technical characteristics).

5.5.2 Zero point calibration (if required)

Zero point calibration is necessary to measure low Chlorine values. The cell "zero" is very stable in the absence of Chlorine or any other oxidising agent. However, to ensure a perfect zero that takes measurement chain drift into account, it should be verified and if necessary calibrated.

- Erase analyser calibration.
- Stop the circulation of water through the chamber.
- Wait a few minutes for values to stabilise.
- Once the measurement has stabilised, zero the analyser.
- Restart the flow of water through the chamber.
- Following calibration of the zero point, calibration of the probe slope should be performed (See above).

5.5.3 Using the gain multiplier switch

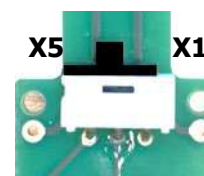
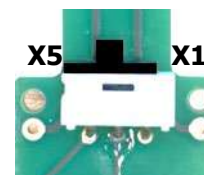
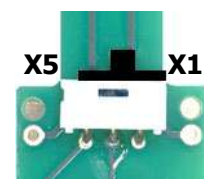
Depending on the water's physical and chemical parameters, the gain multiplier switch may be used. This switch can multiply the gain of the slope by 5.

Example 1 :

The addition of stabiliser will cause the Chlorine measurement to fall. If necessary, use the gain multiplier switch moving it to the X5 position.

Example 2 :

In sea water with a high pH, Chlorine and Bromine measurements will be weak. If necessary, use the gain multiplier switch moving it to the X5 position.



Calibration should be checked after 24 hours by checking the measurement displayed by the sensor against the value in the pool.

- Reset of calibration to factory settings
- Access the calibration menu (Installer -> Chlorine -> Calibration) :
 - Click on the Erase key.

Caution, this operation cannot be undone. Once you touch the Erase key, the calibration values for this parameter will be lost.

5.6 Launching regulation and dosing



Once all programming is complete, you can start the dosing and regulation functions.



The On/ Off key is red  when regulation is inactive.



The On/Off key is green  when regulation is active.

1. Press the  key to start regulation. The icon turns green .
2. Check that the device is running correctly and that regulation starts if necessary.

6. Maintenance

6.1 Maintenance of pH and ORP probes

The pH and ORP probes do not require maintenance (to be replaced). However, the physical condition of the probes should be checked regularly.

- Check that probe heads are free of leaves and dirt.
- Check them by performing control calibrations.
- During the winter, remove them and store them in their original packaging, not forgetting to add preserving liquid into the probe reservoir.

WARNING

**Probes should never be left exposed to air.
If they dry out, their life time may be reduced or even cut short.**

WARNING

Repeated shock chlorination or deposits of chemical products can modify probe operation or even destroy them.

WARNING

Flocculants should not be allowed come into direct contact with the probes. If continuous flocculation is occurring in the skimmer, the probes should be mounted after the filter.

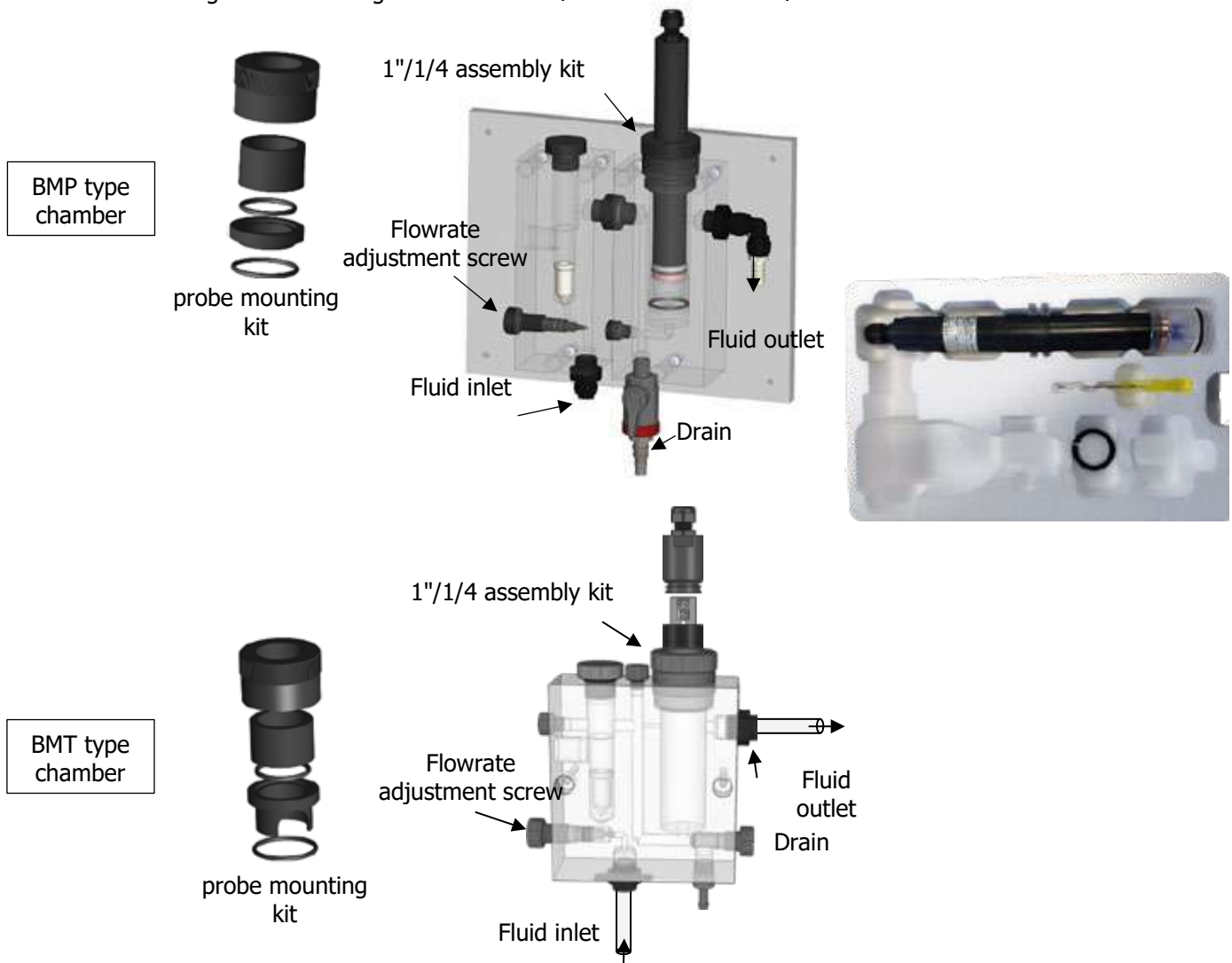
6.2 Maintenance of the Chlorine probe

6.2.1 Removing the probe from the analysis chamber.

WARNING

Once the probe has been removed from its chamber, close the isolation valves upstream and downstream from the sampling loop. Depressurise the system by opening the drain under the chamber.

If the probe is in position, unscrew the 1"1/4 nut and withdraw the probe from its housing after disconnecting the wires using the screwdriver provided in the storage box.



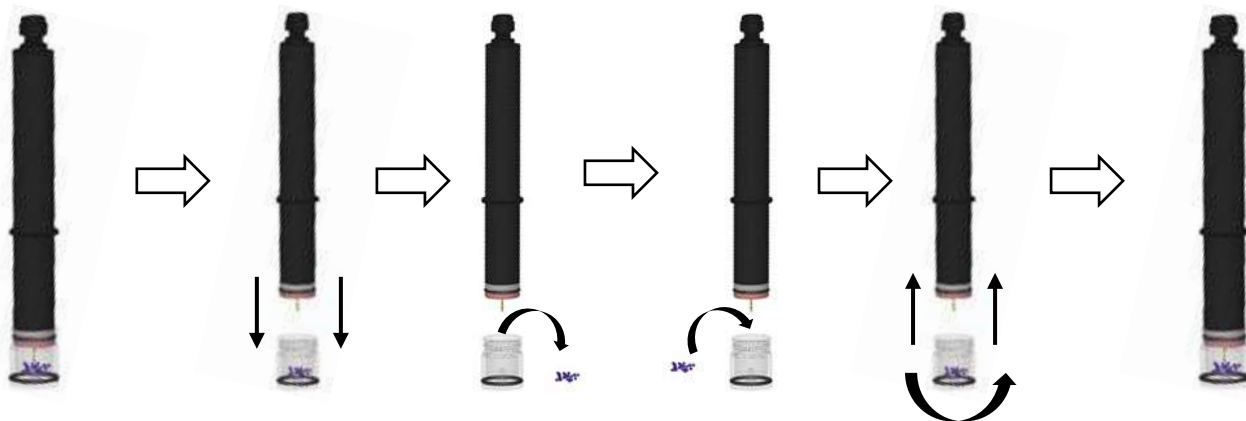
6.2.2 Replacing the glass beads

The glass beads have a limited service life that is determined by the flow rate through the analysis chamber. To protect the probe and ensure consistent readings, the beads should be replaced each year.

To replace the beads, proceed as follows:

- Disconnect the wire powering the measurement loop.
- Remove the probe from the analysis chamber (see above).
- Hold the probe vertically and turn the conditioning cap clockwise to remove taking care **not to loosen the Copper counter electrode or damage the Copper or Gold tip.**

- Dispose of the glass beads responsibly so that they may be recycled.
- Make sure that the conditioning cap is in good condition and clean.
- Take the new beads and place them directly in the conditioning cap, taking care not to lose any.
- Hold the cap filled with beads under the probe and reattach it to the probe by turning it anti-clockwise and taking care to lock the conditioning cap onto its o-ring located above the Copper electrode.

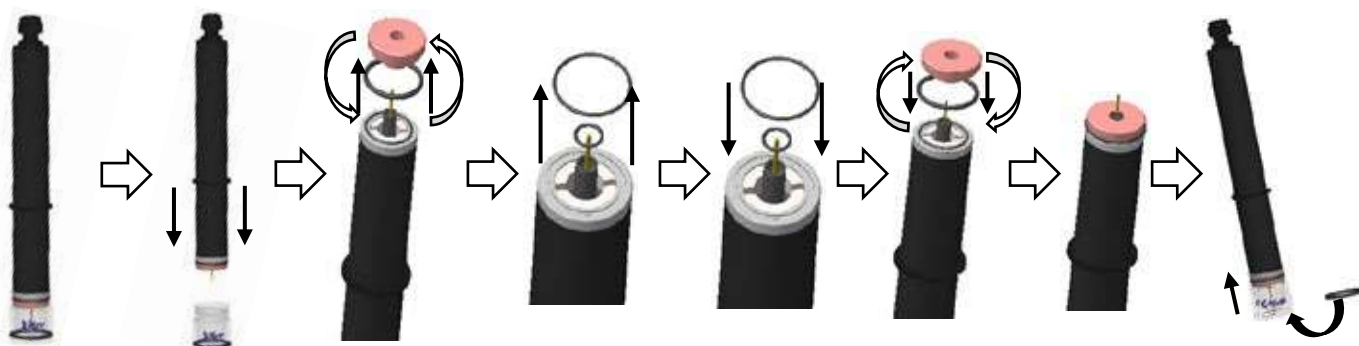


6.2.3 Replacing the Copper counter electrode

The Copper counter electrode should be replaced every year. This interval could vary depending on the water quality and the rate of flow of water over the electrodes.

To replace the Copper electrodes, proceed as follows:

- Disconnect the wire powering the measurement loop.
- Remove the probe from the analysis chamber (see above).
- Hold the probe vertically and remove the conditioning cap taking care not to lose any of the glass beads.
- Turn the Copper electrode anti-clockwise to release it.
- Retrieve and dispose of the o-rings. The o-rings must be replaced each time the electrode is replaced. BE CAREFUL not to damage the tip!
- Put the new o-ring in position and screw in the new Copper counter until the o-ring is compressed.
- Replace the conditioning cap with the glass beads.
- After the counter electrode is replaced the zero pint and slope must be recalibrated as described in § 5.5 *Calibrating the Chlorine channel*.



During these operations, take care not to touch or damage the Gold or Platinum tip.

7. Maintaining the dosing pump tubing

In the event that the dosing pump tubing cracks or starts to leak, it should be replaced immediately.

Replacing the tubing:



Undo the screw fastening the lid of the front panel and remove it.



Turn the roller head to 10:20.



Release the left hand union completely keeping it pulled outwards, then rotate the roller head to release the tube.



Reposition the roller head to 10:20.



Insert the left-hand union into its housing, then pass the tube under the roller head guide. Rotate the roller head fitting the tube onto the pump head until it reaches the right-hand union



Fit the lid back onto the pump paying attention to the arrows, then refasten the screw to secure it in position.

Comment : Before reconnecting the device, use a soft, dry cloth to remove any traces of chemical residue that may be on the device.

8. Winterizing

8.1 Winterizing the probes

WARNING

The probes should never be left exposed to air during the winter. The probes must be stored in a temperate location, protected against humidity and in their original packaging. A preserving agent is available from your installer. Failing this, fill the probe cap with tap water and store it in its original packaging.

WARNING

The service life of the probes will be determined by usage and storage. In normal operating conditions, the service life should be over 3 years. Improper use or storage could reduce the service life to a few months!

8.2 Winterizing the dosing pumps

WARNING

Pass clear water through the pump tubing.
Disconnect the tubing if there is a risk of freezing.
Turn the roller head clockwise until the dosing pump pinch rollers are positioned at 7:05.
If the precautions are not taken, the pumps will not work the following season. The dosing pump tubing will be marked and damaged.

Stop pH and ORP regulation by cutting the power supply.

9. Accessories

Accessories and spare parts for the REGUL-SYSTEM-P

Description	Reference
Glass time delay fuse 5x20 250mA	FUS5X20T250
Glass time delay fuse 5x20 3.15A	FUS1016
Assembly kit (Screws + bushings)	KFB 0006

pH and ORP probes

Description	Reference
Standard pH probe, 6 m cable	CAA 2524
Standard Platinum ORP probe, 6 m cable	CAA 2522
"salt electrolyser" compatible Gold ORP probe, 6 m cable	CAA 2521
Chlorine measuring probe 1" Cu/Au 0-10 ppm output 4-20 mA	CAA3206
Chlorine measuring probe 1" Cu/Pt 0-10 ppm output 4-20 mA	CAA3306
Maintenance kit (Cu Electrode +Beads+o-ring) for CAA32xx and CAA33xx probes	CAA3209
Buffer solution pH=7.00	CAA 2533
Buffer solution pH=4.00	SOL 0010
Buffer solution 465mV	SOL 0020
pH or ORP probe housing	RAC 1212
External test cap for probe	SKY 0000

Dosing pump accessories

Description	Reference
PE return tubing (1m) 4x6mm	TPE 0604
Transparent PVC suction tubing (1m) 4x6mm	TPC 0604
Roller head (0.4 to 2.4 l/h)	DF2 9478
Standard "dosing" tubing, all flow rates	DF2 5002
Injection valve for tube 4/6mm	HYD 0001
Suction strainer for tube 4/6mm	HYD 0002
End of tank detection kit	ECK 0001
Teflon tape	TEFLONR

10. Troubleshooting

Comment: In the event of a measurement probe malfunction, contact your after sales service provider.

Fault	Cause	Solution
The regulator does not come on after being started.	<ul style="list-style-type: none"> ✓ Primary power supply fault 	<ul style="list-style-type: none"> ✓ Check the primary power supply fuse ✓ Check the power supply cable
Upon being powered up, the probes do not measure anything, or the values displayed are erratic	<ul style="list-style-type: none"> ✓ Probe ✓ Probe faulty 	<ul style="list-style-type: none"> ✓ Check the probe cable ✓ Check the BNC connector ✓ Replace the probe
The display continuously shows the maximum value	<ul style="list-style-type: none"> ✓ Probe cable cut ✓ Probe faulty 	<ul style="list-style-type: none"> ✓ Check the connections or replace the faulty probe
The value displayed is continuously erratic	<ul style="list-style-type: none"> ✓ Faulty or worn out probe ✓ Air in the filtration circuit ✓ External interference 	<ul style="list-style-type: none"> ✓ Replace the probe ✓ Check that the filtration pump is primed
Impossible to calibrate the probe	<ul style="list-style-type: none"> ✓ Bad electrode or measurement instability 	<ul style="list-style-type: none"> ✓ Replace the electrode and check that filtration pump is primed
Erratic or unstable regulation	<ul style="list-style-type: none"> ✓ Parameter setting error 	<ul style="list-style-type: none"> ✓ Check the programmed parameter settings ✓ Study the conditions on site and adapt the regulation parameters
Dosing components are not working	<ul style="list-style-type: none"> ✓ Regulator in safety mode 	<ul style="list-style-type: none"> ✓ Check the errors displayed ✓ Check that the operating threshold has not been exceeded

Notes

Notes

Notes



S.A. au capital de 7 000 000 € - R.C.S/Rennes B 333263846000 37

