PROBOX
SYSTEM OF REGULATION

Temperature (°C, °K or °F)
pH
Redox
Chlorine
Chlorine dioxide
Bromine
Ozone
Oxygen
Hydrogen peroxide*
Peracetic acid*

VERY IMPORTANT

Before any connection, filling with water and utilisation read the present manual very carefully.

Non-application of the instructions given may invalidate the **BWT BWT PERMO** guarantee.

www.bwtBWT PERMO.fr

For You and Planet Blue.

CONTENTS

General information

The **PROBOX®** systems measure and regulate **temperature, pH, Redox potential, chlorine, chlorine dioxide, bromine, oxygen, ozone, hydrogen peroxide and peracetic acid** using specific sensors and appropriate actuator control signals, within the context of the utilisation possibilities described in the present manual.

The PROBOX® system should only be installed and connected by qualified specialist personnel.
The installation must respect the applicable safety requirements.

Before connecting the mains power cable and the relay contacts, ALWAYS SWITCH OFF THE PRIMARY POWER SUPPLY.
Never open the unit while it is switched on.
Servicing and repair work should only be carried out by authorised specialist personnel.
Select the best position at which to install the various systems.
The PROBOX® electronic control unit should not be installed in a hazardous place, where there is a risk of sprayed water or chemical products, etc. It should be installed in a dry and ventilated place, where it cannot be exposed to corrosive vapours.
Measurement probes and analysis chambers must be installed in compliance with electrical safety requirements.
Before starting up the system, check that all operating parameters are as required.

1. Technical characteristics

1.1. Complete standard function single-value systems

Various versions are available in the standard functions configuration. For specific applications, consult our sales department.
PROBOX® electronic control units have several programmable measurement scales for free chlorine, and this parameter is defined by the user during the setting up operations.

The measurement scale programming must be properly respected, as a function of the sensor used.

a)   **PROBOX® « Temperature »**

Power supply required 230 V 50 Hz
PVC temperature probe, ½" male union, 6 bars
Link 4-20 mA for –5 to 45°C

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002957	Wall mounting	None	P0060057	PI65

b)   **PROBOX® « pH »**

Power supply required 230 V 50 Hz
pH probe without pressure 2-14 pH
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 to 14 pH

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002956	Wall mounting	P0029112	P0060055	PI65

c)   PROBOX® Universal « Free chlorine »

Power supply required 230 V 50 Hz
Free or available chlorine probe (with chlorine stabiliser) (DPD1)
Measurement scales 0 to 10 mg/l or 0 to 2mg/l
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 on measurement scale.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002951	Wall mounting 0-10 mg/l	P0029114	P0060061	PI65
P0992736	Wall mounting 0-2 mg/l	P0029114	P0060060	PI65

d)   PROBOX® Universal « Active chlorine » (Hock)

Power supply required 230 V 50 Hz
Active chlorine probe (Hypochloric acid)
Measurement scales 0 to 10 mg/l or 0 to 2mg/l
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 on measurement scale.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002953	Wall mounting 0-10 mg/l	P0029114	C0959553	PI65
P0002952	Wall mounting 0-2 mg/l	P0029114	P0060062	PI65

e)   PROBOX® Universal « TOTAL chlorine »

Power supply required 230 V 50 Hz
Total chlorine probe (DPD4)
Measurement scales 0 to 10 mg/l or 0 to 2mg/l
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 on measurement scale.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002955	Wall mounting 0-10 mg/l	P0029114	P0060066	PI65
P0002954	Wall mounting 0-2 mg/l	P0029114	P0060064	PI65

f)   PROBOX® Universal « Chlorine dioxide »

Power supply required 230 V 50 Hz
Chlorine dioxide (ClO_2) probe
Measurement scale 0 to 2 mg/l
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 on measurement scale.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002942	Wall mounting 0-2 mg/l	P0029114	P0960515	PI65

g) PROBOX® Universal « Bromine » - « Sea water » applications

Power supply required 230 V 50 Hz
Bromine (Br$_2$) measurement probe
Measurement scale 0 to 10 mg/l
Universal « lost water » type 963 Plexiglas measurement chamber
Link 4-20 mA for 0 to 10 mg/l.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002965	Wall mounting 0-10 mg/l	SC	SC	PI65

h) PROBOX® Universal « Ozone »

Power supply required 230 V 50 Hz
Ozone (O$_3$) measurement probe
Measurement scale 0 to 2 mg/l
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 to 2 mg/l.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Protection index
P0002958	Wall mounting 0-2 mg/l	P0029114	P0060091	PI65

1.2. Complete standard function two-value systems

a) PROBOX® « Sea water Bromine + pH »

Power supply required 230 V 50 Hz
pH probe without pressure 2-14 pH
Sea water Bromine probe
Measurement chamber
Link 4-20 mA for –5 to 45°C

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Measurement probe	Protection index
P0002966	Wall mounting	SC	SC	P0060055	PI65

b) PROBOX® « BCDMH 0-10 ppm + pH »

Power supply required 230 V 50 Hz
BCDMH probe 0-10 ppm

pH probe without pressure 2-14 pH
Measurement chamber
Link 4-20 mA for 0 to 14 pH

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Measurement probe	Protection index
P0002959	Wall mounting	P0029111	P0960152	P0060055	PI65

c) PROBOX® « CLO$_2$ 0-2 ppm + chlorites 0-2 ppm »

Power supply required 230 V 50 Hz
Chlorine dioxide probe ppm
pH probe without pressure 2-14 pH
PVC universal « lost water » measurement chamber
Link 4-20 mA for 0 on measurement scale.

BWT PERMO P/N	PROBOX® Electronic control unit	Transit chamber	Measurement probe	Measurement probe	Protection index
P0002941	Wall mounting	2 X P0029114	P0960515	P0060103	PI65

1.3. PROBOX® electronic regulator - General characteristics

Temperatures:
- Consumption: ----------------- **Max. 10 VA**

- Operation: ---------------- **-5 to 60°C**
- Storage: ----------------------- **-20 to 85°C**
- Relative humidity: ----------- **Max: 90% at 40°C**

Case material:
- Wall mounting: --------------------------- **ABS**

Weight:
- Wall mounting: --------------------------- **1.4 kg**

1.4. PROBOX® electronic characteristics and functions

a) PROBOX® standard electronics characteristics

- Electronics: --------------------- **8-bit microprocessor**
- Display: ----------------------- High resolution graphical LCD green LED backlighting
- Relay outputs: --------------------- 2 programmable relays (max. 250 V / 5 A)
- Input signals 4-20 mA: ----------- 3 inputs, 2 of which are configurable
- Output signals 0/4-20 mA: -- 2 outputs configurable in GTC or regulation
- Communication outputs: ----- 2 RS 232C outputs and 1 RS 422 or 485 output

b) PROBOX® general functions

- Display: ----------------------- Display measured in physical values
Temperature displayed in °C, °K or °F.
- Temperature compensation: --- Automatic
- User menu: -------------------- Plain language text in selected language
- Calibration: ---------------------- Direct and automatic as a function of the selected

	parameter.
- Computer function: ------------	PC with communication program (supplied separately)

c) PROBOX® general regulation functions

Types of regulation:

Logic (on/off) with:
- Hysteresis from 0 to 50% of RR*
- Proportional band from 0 to 100 x RR*
- Constant from 0 to 50% of RR*

Proportional (P) with:
- Constant from 0 to 50% of RR*
- Proportional band from 0 to 100 x P.R.*
- Dead band from 0 to 50% of RR*

Proportional (P.I.) with:
- Constant from 0 to 50% of P.R.*
- Dead band from 0 to 50% of P.R.*
- Proportional band from 0 to 100 x P.R.*
- Integration time 0 to 5000 seconds

Proportional (P.I.D.) with:
- Constant from 0 to 50% of P.R.*
- Dead band from 0 to 50% of P.R.*
- Proportional band from 0 to 100 x P.R.*
- Integration time 0 to 5000 seconds
- Derivative time 0 to 1000 seconds

Self-Adapting

« MS » = Measurement Scale
« RR » = Regulation Range
Regulation range is expressed from 0 to 100%.

- Reference values: -------------	**0 to 100% of MS*** (Measurement Scale) Adjustable in physical value.

PROBOX® Versions

Types of actuator: ---------	For 2 relay outputs:
- **Threshold control**	▪ With hysteresis
- **Width modulation control**	▪ Cycle time 0 to 240 seconds ▪ Cycle modulated from 0 to 100%
- **Pulse modulation control**	▪ 0 to 120 cps/mn ▪ Cycle time 0 to 240 seconds
- **3-point control**	▪ Cycle time 0 to 240 seconds

The 3-point control must use both relays in both « Open » and « Close ».

For the 2 analog outputs from 0 to 100% of the regulation range:

▪ Outputs in 0/4 - 20 mA or 20 - 0/4 mA
▪ Possibility of 0/2 - 10 V or 10 - 0/2 V.

Regulation direction: -----------	Upwards or downwards.

d)   PROBOX® general alarm functions

Alarm functions: ----------   **General technical alarm:**
Represents defects related to the sensors, the electronics or to malfunctions.

Low Alarm:
Represents only the lowest value measured, below the nominal minimum, expressed as a physical value.

High Alarm:
Represents only the highest value measured, above the nominal maximum, expressed as a physical value.

Low + High Alarm:
Represents the lowest and highest values measured, respectively below and above the measurement scale, expressed as physical values.

Injection too long alarm
Represents the maximum product injection time in continuous treatment: (max. 24 hours).

The alarms can only be transmitted by the relays.

e)   PROBOX® measurement scales

For the temperature function:

	Temp. (°C)	Temp. (°K)	Temp. (°F)
Electronic sensor	-5.00 to 45.00°C	268 to 320°K	23.0 to 113.0°F

For the pH and Redox, Ozone and Oxygen functions:

pH	Ozone
0.00 to 14.00 pH	0 to 1.000 mg/l
-	0 to 2.000 mg/l

For the raw current Bromine, Chlorine and Chlorine dioxide functions.

Bromine	Chlorine	Chlorine dioxide
0 to 10.00 mg/l	0 to 2.000 mg/l	0 to 1.000 mg/l
-	0 to 10.00 mg/l	0 to 2.000 mg/l
-	-	0 to 10.00 mg/l

For the Hydrogen peroxide* and peracetic acid* functions.

Hydrogen peroxide (H_2O_2)	Peracetic acid
0 to 500.0 mg/l	0 to 500.0 mg/l
0 to 2000 mg/l	0 to 2000 mg/l
0 to 10000 mg/l	0 to 10000 mg/l

188

166

120

160

115

104

150

70
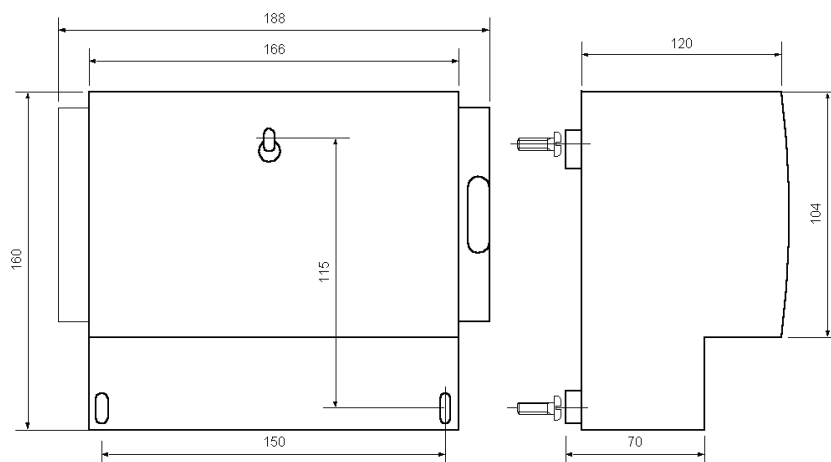
1.5. PROBOX® electronic control unit dimensions

Unit wall mounting: (P0029010)

2. PROBOX® installation and connections

2.1. PROBOX® transport and storage

The PROBOX® is a high tech. system that uses sensitive electronic components and electro-chemical sensors.
The PROBOX® design and components result in an extremely robust unit. However, all appropriate precautions should be taken during the transport and storage of this equipment.

Store the equipment in a dry and cool place.
After unpacking, install the equipment as quickly as possible.

Transport the equipment very carefully.
Avoid impacts.

2.2. PROBOX® installation requirements

✓ Dry room

✓ Operating ambient temperature range: -5°C to 50°C.

✓ Install away from any source of vibration.

✓ Install on a clean and non-distorted bracket.

✓ Ensure proper wall mounting.

Respect the installation instructions. If these instructions are not respected:
- ● *The unit may be damaged.*
- ● *Values measured may be inaccurate.*
- ● *The guarantee will be invalidated.*

2.3. Installing PROBOX® units

Before starting the installation, switch off all electrical power supplies.
Protection Index PI65 is only guaranteed if the unit cover is closed and the cable grommets are the correct diameter for the cables.

a)   PROBOX® installation procedure - wall mounting version

✓ Drill three holes, dia. 8 mm, as shown in the drilling diagram below:
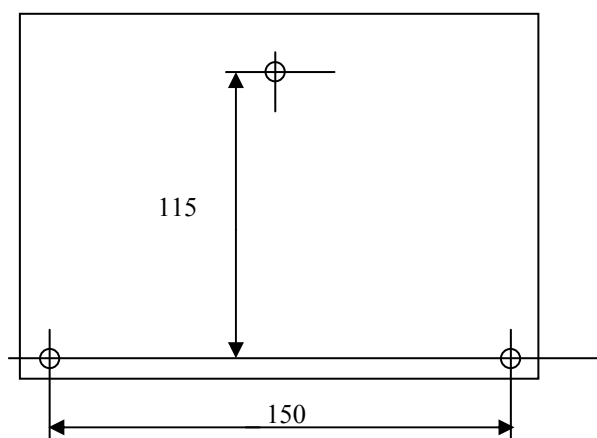
✓ Insert 8 mm plugs into the holes (tap lightly in with a hammer).
✓ Remove the protection cover from the unit terminal strip.
✓ Insert the upper screw, without screwing it fully in (leave 5 mm gap between screw head and wall.
✓ Hang the unit on the upper screw and check that it is stable.
✓ Install the two lower screws.
✓ Close the terminal strip protection cover.

When closing the terminal bar protection cover, take care to avoid damaging the seal.

2.4. Connecting the PROBOX®

Internal terminal strip connections:

Before making any connections, switch off the electrical power supplies.

The maximum acceptable diameter per connection point corresponds to one wire, section 2.5 mm².
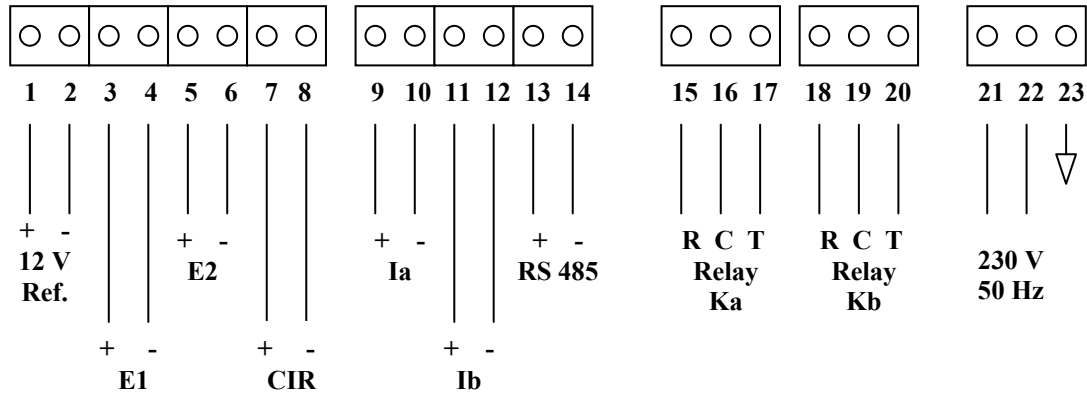
Terminal N°	Cable type	Description
1 and 2	2 x 0.5 or 0.75 mm²	Probe power supply 1: red wire +12 V 2: brown wire -12 V
3 and 4	2 x 0.5 or 0.75 mm²	4/20 mA input signal from probe 3: white (E1 +) 4: black (E1 -)
5 and 6	2 x 0.5 or 0.75 mm²	4/20 mA input signal from probe 3: white (E1 +) 4: black (E1 -)
7 and 8	2 x 0.5 or 0.75 mm²	4/20 mA input signal Option for flow presence detector input
9 and 10	2 x 0.5 or 0.75 mm²	Output 4/20 mA: Injection pump control: 9: +ve 10: -ve
11 and 12	2 x 0.5 or 0.75 mm²	Output 0/20 or 4/20 mA: Signal repeat 11: lb + 12: lb -
13 and 14	2 x 0.5 or 0.75 mm²	Link RS485 Supervision **SYSCOM** (option) 13: RS485 (+) 14: RS485 (-)

15, 16 & 17	2 x 0.5 or 0.75 mm²	Dry contact to junction box for control of solenoid valves and film generator pump. Relay Ka
18, 19 & 20	3 x 0.5 or 0.75 mm²	Dry contact « Injection too long » alarm 18: R: Contact normally open. 19: C: Common. 20: T: Contact normally closed.
21, 22 & 23	3 x 0.5 or 0.75 mm²	**BWT PERMO PROBOX ECS** power supply 230 V 50 Hz 21: Phase 22: Neutral 23: Ground

Connection of internal RS232C data connector for the PC communication and output to printer:
Specific computer connector.
Use the cable supplied as an option with the unit.

RS232 connector plug
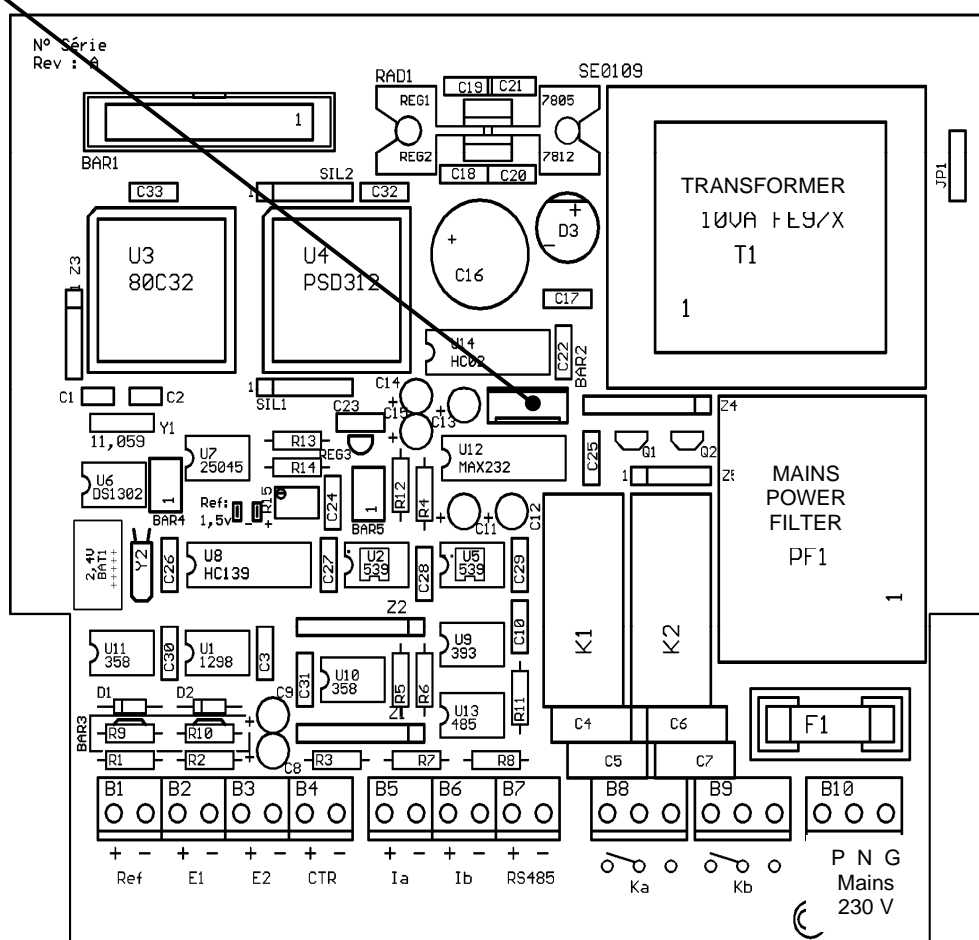
2.5. Connecting PROBOX® mains power supplies

Before making any connections, switch off the electrical power supplies.

The 230 V 50/60 Hz mains power supply necessitates protection by at least one fuse and, if possible, a thermal and 30 mA differential trip.
A ground connection is mandatory.

Personal safety is absolutely essential.
Installation in 110 V 60Hz is possible, consult our sales departments.

PROBOX® units are not equipped with a main power switch, they are activated directly, simply by connection to the mains power supply.

2.6. Outputs through free potential relays Ka, Kb

Relay output connections depend on the application and on the actuators used. The connections shown below only represent an example.

Interference suppression is necessary if inductive loads are used. If suppression is not possible, relay contacts should be protected by an appropriate protection circuit.

The PROBOX® units are equipped with capacitor protection on all relay output contacts. This protection is not sufficient in the case of a powerful inductive load. A power inductive load is not necessarily a large relay or a motor.
Some electrical contactors can generate a considerable effect.

a) AC installation:

Max. current	Capacitor	Resistance
50 mA	10 nF 260 V	390 Ω 2 W
80 mA	47 nF 260 V	220 Ω 2 W
150 mA	100 nF 260 V	47 Ω 2 W
1 A	220 nF 260 V	33 Ω 2 W

b) DC installation:

Connect a transient signal suppressor diode in parallel with the contactor or relay coil.

Relay contacts are not protected and must be equipped with an appropriate fuse or circuit breaker.

2.7. 0/4…20mA analog outputs Ia and Ib

The analog outputs, respectively referenced **Ia** and **Ib**, correspond to fully configurable physical outputs. These current loops can be defined to perform control or data transfer functions, the scales of which are thus fully configurable.
The current output can be defined by the user as:

> ✓ 0 to 20 mA
> ✓ 4 to 20 mA
> ✓ 20 to 0 mA
> ✓ 20 to 4 mA.

Maximum load is **500 Ω.**

2.8. RS485/RS422 bus output

This data bus output is used for the link with a PC and its SYSCOM® data processing software.

It can also be used to link together several PROBOX® units, for « half duplex » communication.

2.9. RS232C outputs for printer and PC

An RS232C serial accounting output is available to provide hardcopy relating to PROBOX® internal programming.

This printer output can be configured for the following transfer rates:

> ✓ 150 bauds
> ✓ 300 bauds
> ✓ 600 bauds
> ✓ 1200 bauds
> ✓ 2400 bauds
> ✓ 4800 bauds
> ✓ 9600 bauds

A serial compatible two-way RS232C input/output is also available for a direct link with a PC and its SYSCOM® data processing software.

This link only has one transfer rate: 1200 bauds.

The communication protocol for these two inputs/outputs is:
> ✓ 8 data bits
> ✓ 1 stop bit
> ✓ no parity

2.10.   4…20mA measurement inputs E1, E2 and CIR

These three analog inputs are dedicated to the acquisition of many parameters for which the sensor or measurement chamber technology is a 4…20 mA output.

E1 and E2 are inputs for which the physical values can be configured.

CIR is a remote control input or an input for a flow detector in the measurement chamber.

PROBOX® inputs are not galvanically isolated, isolation is provided at measurement chamber level.

It is strongly recommended that BWT-BWT PERMO measurement chambers be used.
No claim will be considered if these requirements are not respected.

The electrical supply to the isolators and measurement converters in the measurement chambers is provided by the **REF** output, which supplies **12 V DC**.

2.11. Connecting the various sensors and measurement chambers

a)   **PVC electronic temperature sensors**

Connect the temperature sensor directly to input E1.
The PVC electronic temperature probe **P0002957** does not require a measurement chamber.

7 and 8 not used

2 unshielded wires
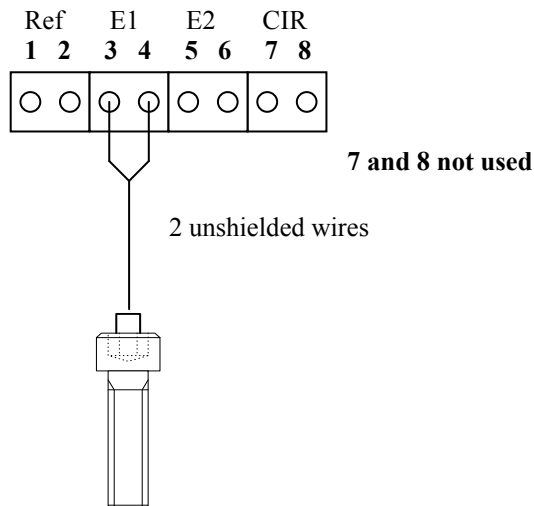
b)   **Measurement chambers for Redox, chlorine, chlorine dioxide, oxygen ozone, hydrogen peroxide and peracetic acid sensors.**

PROBOX® measurement chambers are all based on the same principle. They are equipped with processing electronics corresponding to the selected sensor.

These systems are thus connected as shown below:

Ref   E1   E2   CIR
1 2 3 4 5 6 7 8

Blue wire (-)
Terminal 2

White wire (+)
Terminal 1

1 and 2: Reference or 12 V supply
3 and 4: Main measurement input
5 and 6: Aux. measurement input

**Chlorine
electrode**

**Selective
membrane**
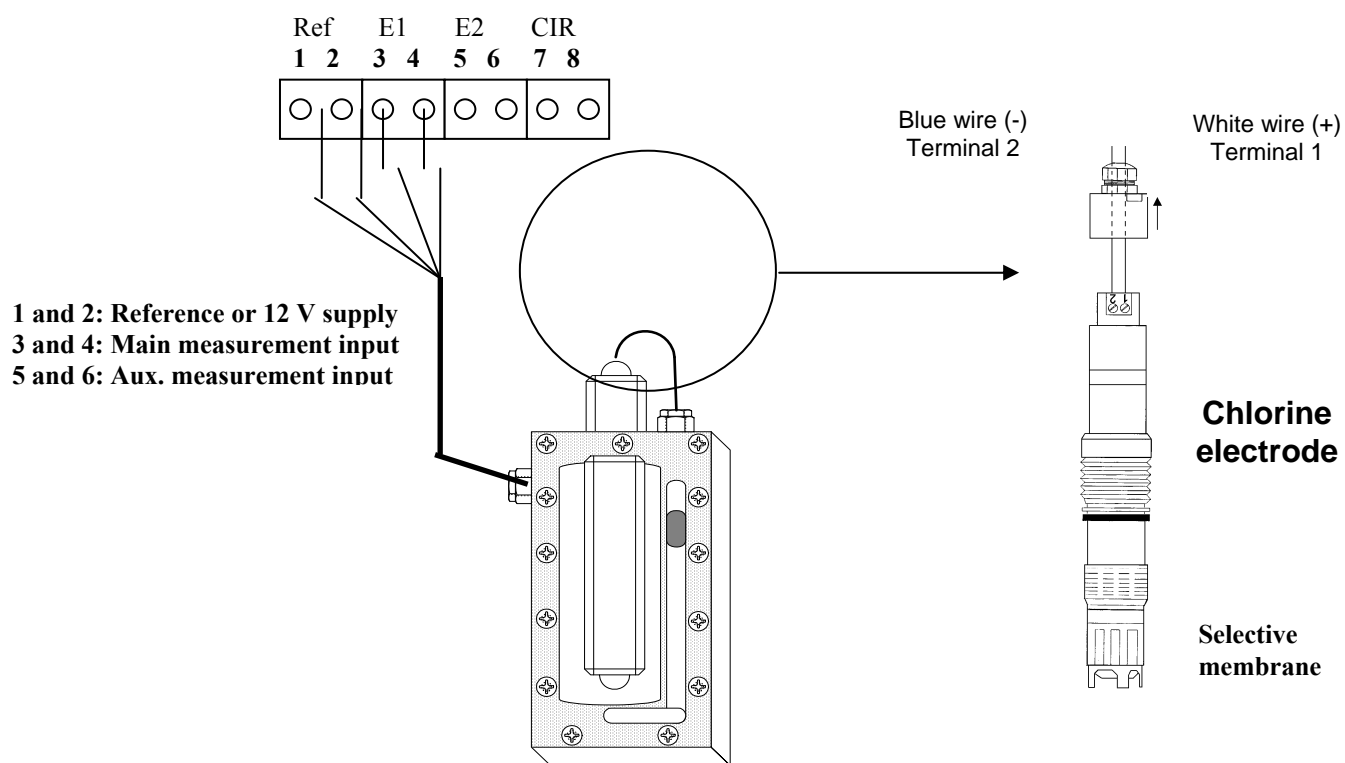
The wires on the PROBOX® measurement chamber are colour coded as a function of the type of sensor used.

Value measured	1	2	3	4	5	6	7	8
Chlorine	red	brown	white	black			grey	violet
Chl. dioxide	red	brown	white	black			grey	violet
Ozone	red	brown	white	black			grey	violet
Hyd. peroxide	red	brown	white	black			grey	violet
Peracetic acid	red	brown	white	black			grey	violet

c)   Measurement chambers for pH sensor

PROBOX® measurement chambers are all based on the same principle. They are equipped with processing electronics corresponding to the selected sensor.

These systems are thus connected as shown below:

Ref   E1   E2   CIR
1 2   3 4   5 6   7 8

1 and 2: Reference or 12 V supply
3 and 4: Main measurement input
5 and 6: Aux. measurement input
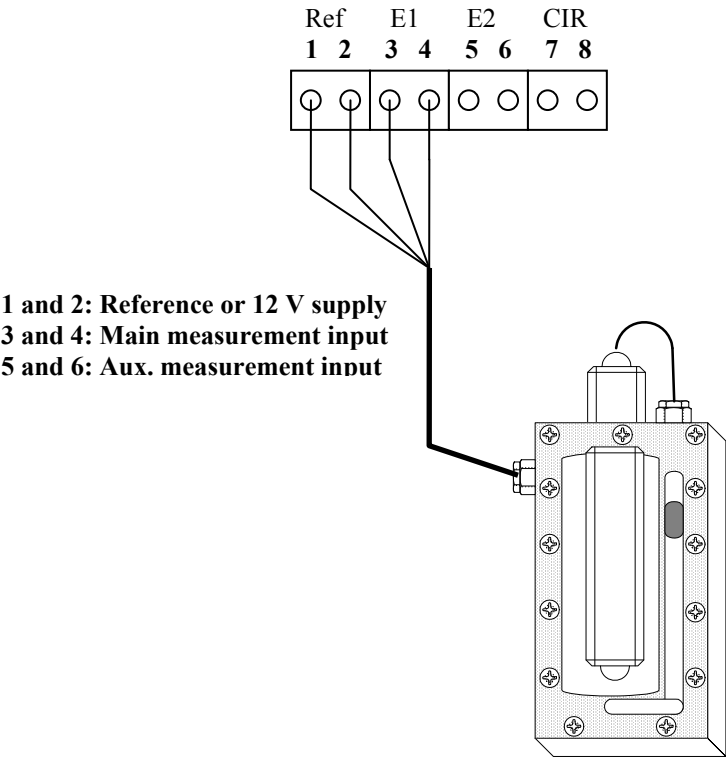
The wires on the PROBOX® measurement chamber are colour coded as a function of the type of sensor used.

Value measured	1	2	3	4	5	6	7	8
pH	red	brown	green	blue	-	-	grey	violet

d)   Measurement chamber for bromine (sea water) sensor

Measurement chamber **P0029110** is designed to measure bromine in a marine environment.

This sensor is designed to give optimum performance for sea water « bromine » utilisation. Do not use this sensor with any other oxidiser as this can result in instability and incorrect measurements.

This system is thus connected as shown below:

1 and 2: Reference or 12 V supply
3 and 4: Main measurement input
5 and 6: Aux. measurement input
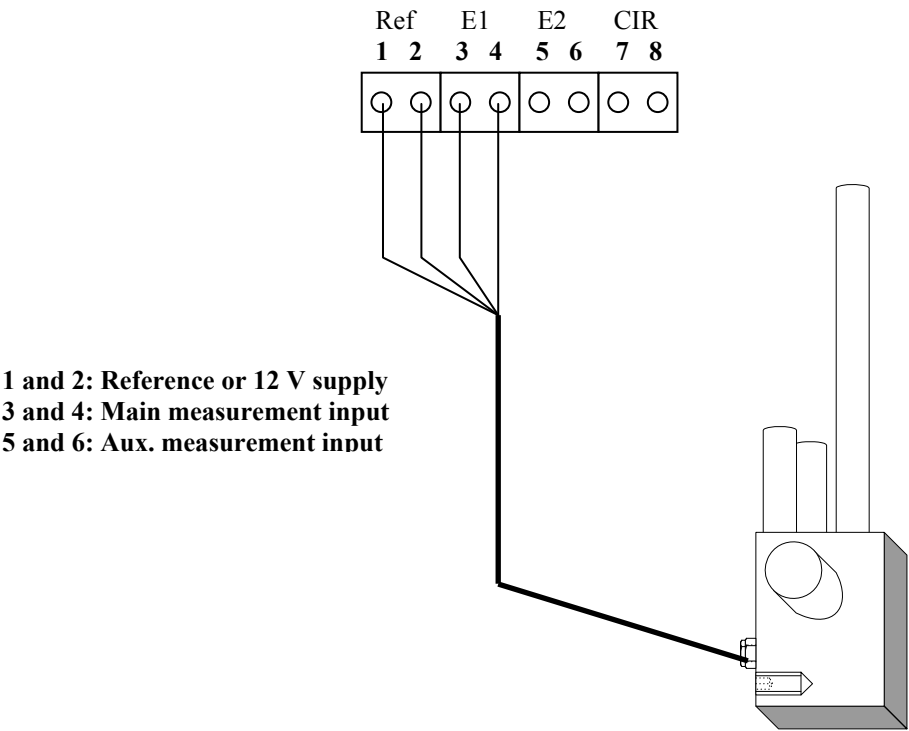
Value measured	1	2	3	4	5	6	7	8
Bromine	red	brown	white	black	-	-	-	-

e) Universal combined measurement chambers pH/chlorine, pH/chlorine dioxide

PROBOX® universal combined measurement chambers of the **pH/chlorine, etc,** series are based on the principle of combining a high impedance pH measurement with a measurement by a chlorine sensor using a 4…20 mA structure. They are equipped with processing electronics corresponding to the selected sensors.

This system is thus connected as shown below:
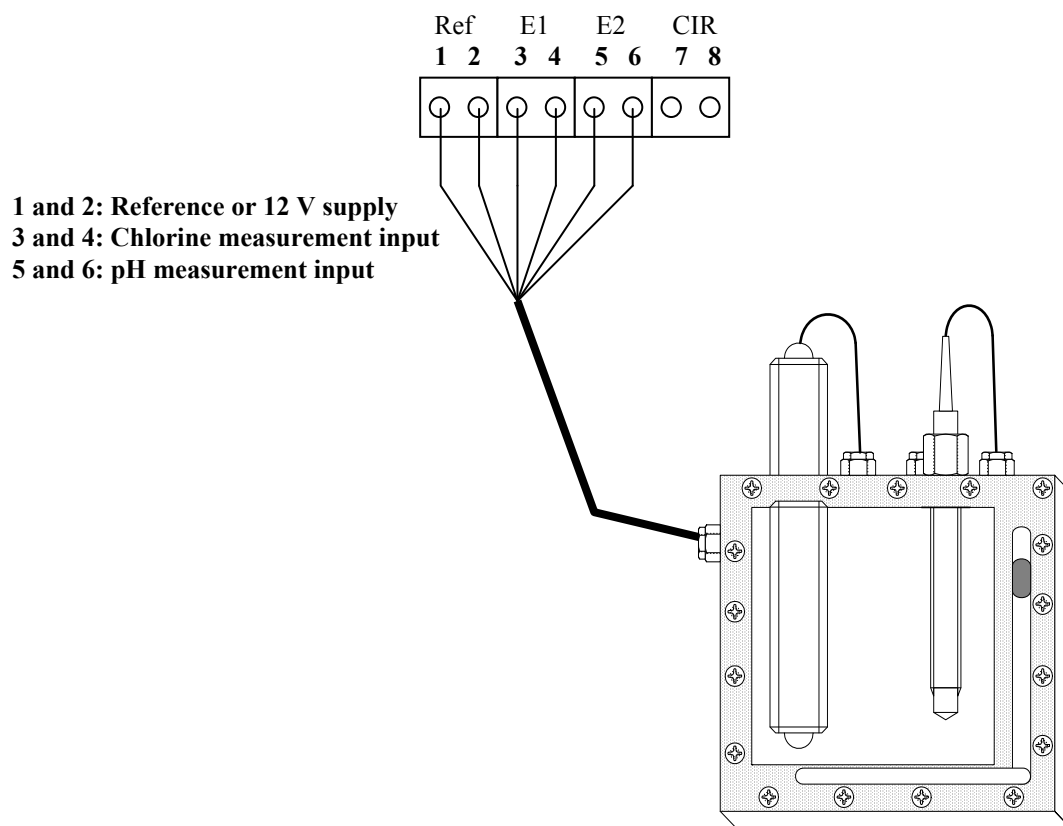
Ref   E1   E2   CIR
1 2   3 4   5 6   7 8

1 and 2: Reference or 12 V supply
3 and 4: Chlorine measurement input
5 and 6: pH measurement input

The wires on the PROBOX® measurement chamber are colour coded as a function of the type of sensor used.
The sensor entered as a main parameter is connected on input E1 (terminals 3 and 4).

Value measured	1	2	3	4	5	6	7	8
pH/Chlorine	red	brown	green	blue	white	black	grey	violet
Chlorine/pH	red	brown	white	black	green	blue	grey	violet
pH/Chl. dioxide	red	brown	green	blue	white	black	grey	violet
Chl. dioxide/pH	red	brown	white	black	green	violet	grey	violet

f)   Universal combined measurement chambers pH/bromine

PROBOX® pH/bromine universal combined measurement chambers are based on the principle of combining a high impedance pH measurement with a measurement by a bromine sensor equipped with a 4…20 mA converter.
They are equipped with processing electronics corresponding to the selected sensors.

Measurement chamber **CBI 1963** is designed to measure bromine in a marine environment.

> *This sensor is designed to give optimum performance for sea water « bromine » utilisation. Do not use this sensor with any other oxidiser as this can result in instability and incorrect measurements.*

This system is thus connected as shown below:

1 and 2: Reference or 12 V supply
3 and 4: Main measurement input
5 and 6: Aux. measurement input
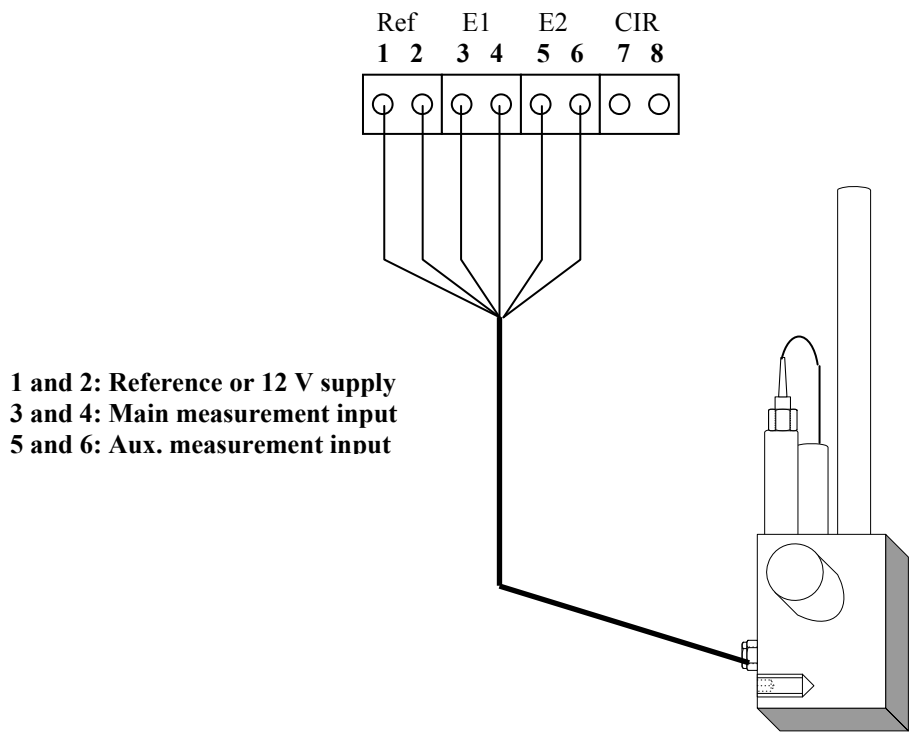
Value measured	1	2	3	4	5	6	7	8
Bromine/pH	red	brown	white	black	green	blue	-	-

2.12. Connecting the CIR input, a level detector or a remote control function

The CIR input has a temporary regulator cutout function. This input must always be loaded by either a resistor loop or a flow sensor. Without this the PROBOX® regulator will be deactivated.

> *If there is neither a resistor loop nor a level sensor on the PROBOX® CIR input, the regulation function is deactivated.*

a)   No level sensor or remote control

If this input is not used, an 820 Ω resistor loop must be installed.

The resistor is connected as shown below:

R= 820 Ω
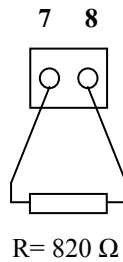
The resistor used must be of the correct value, otherwise malfunctioning or excessive consumption may result.

b)   Using the CIR input for remote control

The principle remains simple, when the loop circuit is open, the regulator cuts off its regulation function.

The ideal connection is thus as shown below:

Free potential
dry contacts

R= 820 Ω
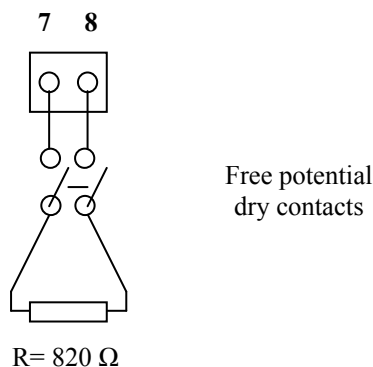
The resistor can be installed remotely, there is no limit on cable length.

3.   PROBOX® - general utilisation

PROBOX® system applications are many and varied.

However, the general operation is always based on two fundamental principles:

- ✓ **Inline measurement and regulation**
- ✓ **Looped measurement and regulation**

3.1. Using the PROBOX® for inline regulation (example)

The complete measurement and regulation system comprises:

- ✓ The PROBOX® analysis and regulation unit (**1**)
- ✓ The measurement chamber and sensors (**2**)
- ✓ The sampling rod (**3**)
- ✓ The dosing element (injection pump in the example shown) (**4**)
- ✓ Water line to be treated (**5**)
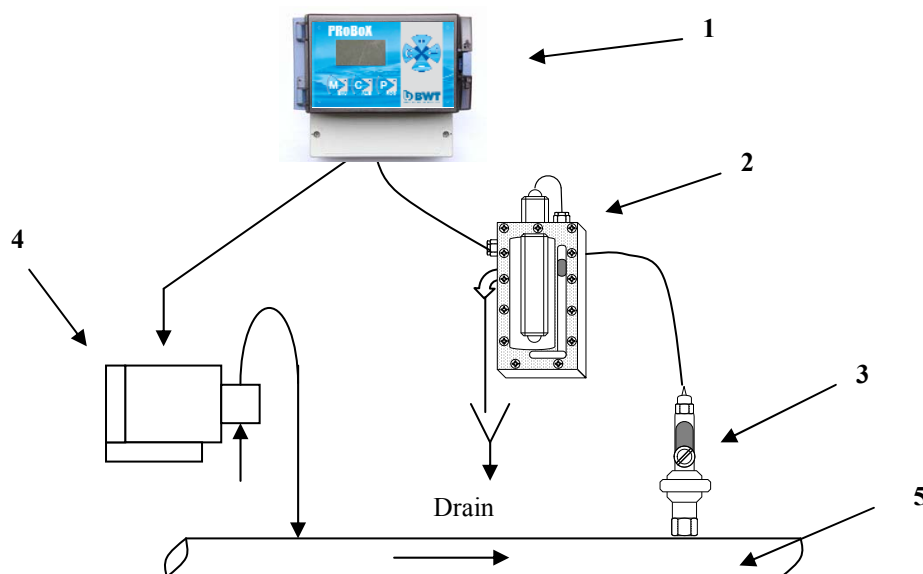
a)   The water is sampled after the product has been injected into the line through the sampling rod (3).

b)   The analysis chamber receives the water to be measured and sends the parameter, through the measurement probe, to the PROBOX® regulator.

c)   Depending on the reference point set by the user, the PROBOX® regulator sends product injection orders to the dosing element, for injection upstream of the sampling.

> *Allow the greatest possible distance between the injection point and the sampling point, so that the injected product can be homogeneously absorbed.*

3.2. Using the PROBOX® looped regulation (example)

The complete measurement and regulation system comprises:

- ✓ The PROBOX® analysis and regulation unit (**1**)
- ✓ The measurement chamber and sensors (**2**)
- ✓ The sampling rod (**3**)
- ✓ The dosing element (injection pump in the example shown) (**4**)
- ✓ Pool or tank to be treated (**5**)

Drain

Circulation motor
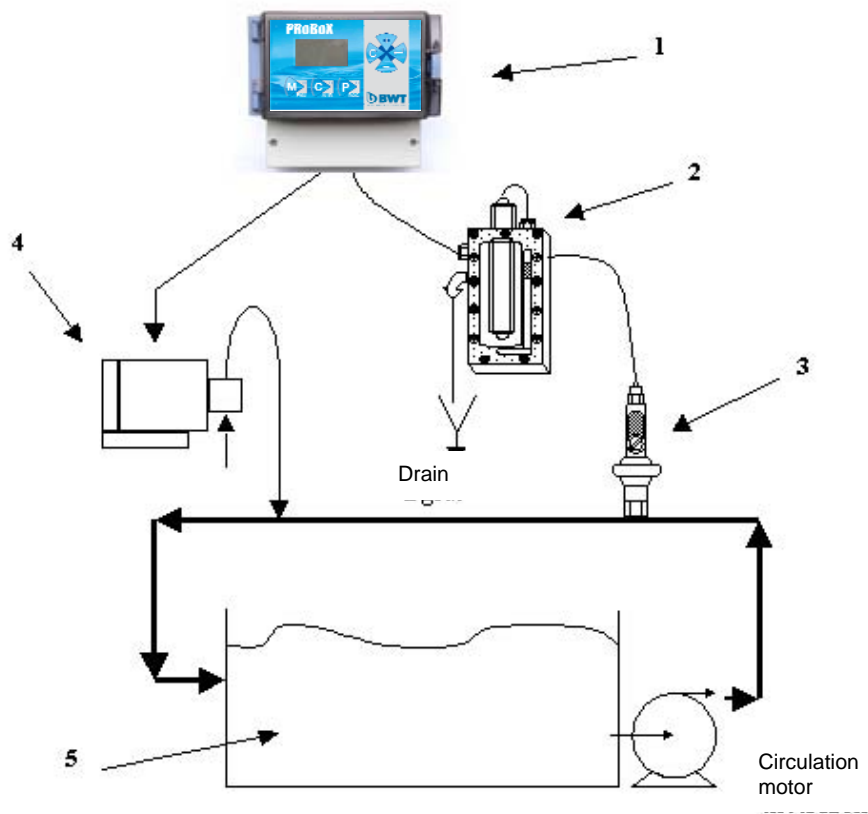
Caution concerning the pool inertia time. The PROBOX® regulator should be carefully programmed to obtain an appropriate response.

4. Programming the PROBOX® universal regulators

The PROBOX® universal regulators have a 7-key keypad and a backlit graphical LCD screen for the dialog between the user and the machine.

The control dialog is based on pull-down programming menus, with direct access keys.

Programming is only possible if the regulator <u>is not active</u> (green LED key « P » (Process) off)

Validate regulator operation by pressing key « P » (Process) when programming is completed.

Check that the PROBOX® regulator is properly programmed.
Too much product, or even mixture, can provoke actions that will have an adverse effect on the environment.

4.1. Control keypad and display

Identification:
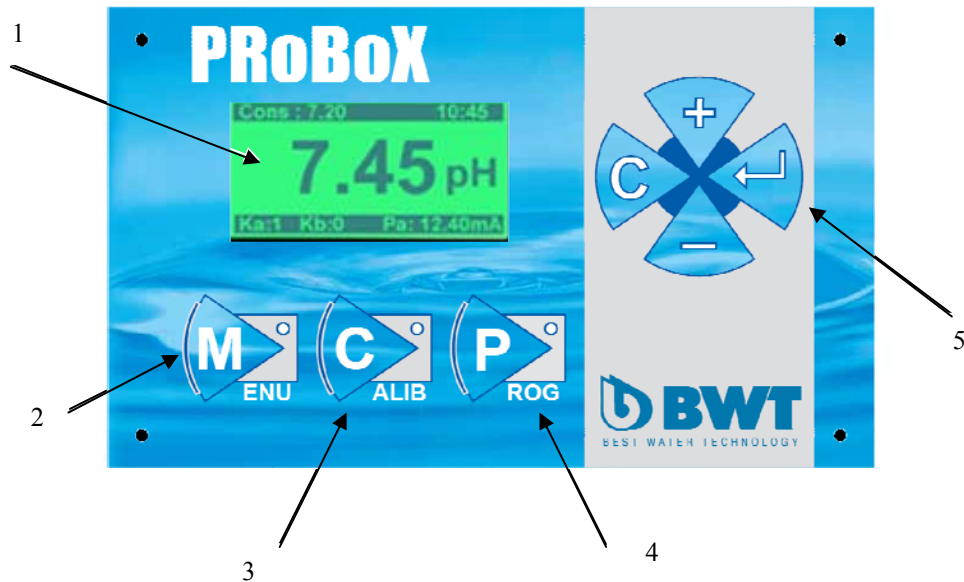
1 - Backlit LCD display

2 - « Menu » key

✓ Access to the various programming menus
✓ The red inset LED is lit up in programming mode

3 - « Calibration » key

✓ Performs a quick calibration of the parameter displayed in large characters on the graphical LCD screen.
✓ The yellow inset LED is lit up during the calibration phases.

4 - « Program » key

✓ Prevents modification of the regulator parameters while the green LED is lit up.
✓ The green inset LED flashes to indicate that the regulation process is deactivated.

5 - Navigation keys

« Clear » key

✓ Press to clear parameters during programming
✓ Press to return on the parameter entered in programming
✓ Press to exit from the programming menus

« Enter » key		✓ Press to confirm parameters or numerical data

« >>+ » and « <<- » keys

✓ Press to increase or decrease data values entered as parameters.
✓ When the PROBOX® regulator is off (green LED off), press to change the contrast of the LCD display.

4.2. PROBOX® standard programming

The PROBOX® universal regulator is fully configurable. It is supplied in a standard configuration, as a function of the type of value to be measured. The basic programming corresponds to the selected system.

When switched on, the standard plant settings are displayed and the standard regulation processes are off (green LED in key « P » is off).

The existing programming and all modifications are stored in a non-volatile memory for a period of 10 years with no external power supply.

The first time the unit is switched on, the basic programming is the standard programming.
These parameters should be modified if they do not correspond to your utilisation.
Programming is only possible if the regulator is not active (green LED in key « P » « Process » is off).

a) Standard « plant » configuration (1st time unit is switched on)

Irrespective of the type of parameter selected (T°, pH, chlorine, etc.), the following configuration is set up in the plant:

✓ Text in French.
✓ Regulator « Off » (green LED off).
✓ Relay statuses displayed on bottom line.
✓ No zero or gradient calibrations (theoretical standard scale).
✓ Non-programmed technical alarms.
✓ Proportional regulation mode (P).
✓ « Hold » function deactivated.
✓ Proportional band value: 10
✓ No dead band.
✓ 0/4…20mA Ia and Ib analog channels not assigned (except ECS).
✓ Relays Ka and Kb (and option Kc) not assigned.
✓ Communication in RS485 mode.
✓ Unit identification number = 0.
✓ Printer RS232 output transfer rate: 600 bauds.

And the following parameters, as a function of the type of measurement performed:

	Measurement scales	Regulation reference
T°C	-5 to 45°C	28°C
T°K	268°K to 318°K	301.1°K
T°F	23°F to 113°F	82.4°F
pH	0 to 14 pH	7.2 pH
Chlorine	0 to 10 mg/l	1.5 mg/l

Chlorine - ECS	0 to 10 mg/l	1.5 mg/l
Bromine	0 to 10 mg/l	1.5 mg/l
Oxygen	0 to 50 mg/l	15 mg/l
Ozone	0 to 2 mg/l	0.5 mg/l
Redox	0 to 1000 mV	0 mV
Raw current	0 to 20 mA	10 mA
Peroxide	0 to 1000 mg/l	500 mg/l
Peracetic acid	0 to 1000 mg/l	500 mg/l

4.3. PROBOX® programming principle

a)   Main parameter and auxiliary parameter

The **PROBOX®** has a system that enables two different physical parameters to be regulated and measured simultaneously.

However, the dual parameter principle is minimised and the initial single parameter operation is preferred.

The principle of the **main parameter** defined is that it is entered in priority, which is the fundamental reason for the **PROBOX®**.
The main parameter is defined as that entered on channel E1.

The principle of the **auxiliary parameter** defined is that it is entered as an accessory and that is frequently a compensation parameter or an auxiliary measurement parameter necessary for a treatment process.
The auxiliary parameter is defined as that entered on channel E2.

The main parameter is that defined as the basic function of the PROBOX®.
The auxiliary parameter is that defined as the accessory parameter of the PROBOX®.

b)   Principle of pull-down menus

The PROBOX® has a three-level pull-down menu programming system:

- ✓ **The Main level**
- ✓ **The User level**
- ✓ **The Specialist level**

Each level provides access to increasingly basic functions, requiring an excellent knowledge of the process required.

To access the pull-down menus, the « P » (Process) function must be off (green LED off).

Press the « Menu » key…

The integral red LED lights up …

Use the navigation keys to validate the successive menus ...

Each level has a menu of functions that can be configured.

REMARK: *Each level can be protected by a password.*

4.4. PROBOX® main menu

Press the « Menu » key…

The integral red LED lights up …

Use the and keys to select the required function, and a triangular vertical position cursor

indicates the function to be confirmed.

Main menu selection possibility:


```
>> MENU PRINCIPAL <<
► Niveau Utilisateur
  Langue/Sprache/Taal
  Ajustage Horloge
  Services
```

a) User level
Transition to User level (**see Section 4-5**).

c)   Langue/Language/Sprache/Idioma/Lingua/Taal
Change PROBOX® text and printing language.
6 languages are available:

```
>> MENU PRINCIPAL <<
Langue/Sprache/Taal
  ► Francais
    English
    Deutsch
    Espagnol
    Italiano
    Portugues
```

d)   Adjusting the Clock
Update date and time of internal real time clock.
The clock is protected by a backup battery.

If the PROBOX® is a basic model, the year, month, day, hours and minutes can be modified.

Use the and keys to modify the required value and confirm by pressing the key. If you make a mistake,

press the key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

If the numerical value was confirmed, the « Clear » key can no longer be used to modify the parameter.
In this case, return to the function to modify the value.

```
┌─────────────────────────────┐
│      Ajustage Horloge       │
│    Année:01  Mois:12         │
│                             │
│    Jour:25 Heure:13          │
│                  ▲           │
│      Minutes:35             │
│                             │
└─────────────────────────────┘
```
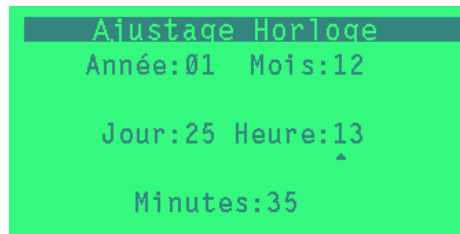
e) Services

This function enables voluntary control actions to be performed on the PROBOX® regulator output systems.

Thus, relays Ka and Kb (option for Kc) can be operated to check that the control systems operate properly.

Similarly for the 0…20 mA outputs Ia and Ib, output currents are simulated at the required value, to the analog transfer functions.

```
┌─────────────────────────────┐
│  >>  MENU PRINCIPAL  <<      │
│ Services                    │
│   ►Simulation relais         │
│    Simulation 0-20mA         │
│                             │
│                             │
└─────────────────────────────┘
```
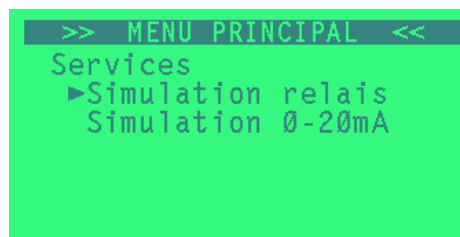
Immediately following the exit from the « Services » function, the relays that have been set or the 0…20 mA outputs that have been programmed, are automatically reset to « 0 ».

For the relay simulation function:

Use the [+] and [−] keys to modify the desired value and press [↵] to confirm and continue to the next relay.

```
┌─────────────────────────────┐
│      Simulation Relais       │
│                             │
│      Relais Ka:1            │
│                ▲            │
│      Relais Kb:0            │
│                             │
└─────────────────────────────┘
```
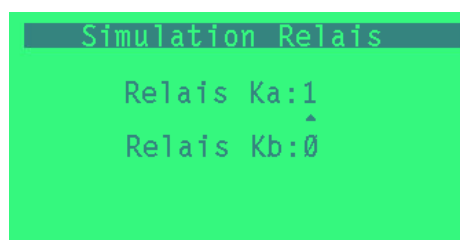
Press the [C] key to exit from the simulation function.

A horizontal triangular position cursor indicates the value to be modified.

For the analog outputs:
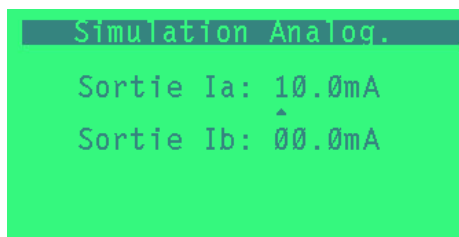
```
      Simulation Analog.
     Sortie Ia: 10.0mA
              ▲
     Sortie Ib: 00.0mA
```

Use keys [+] and [−] to modify the required value and press [↵] to confirm. If you make a mistake, press
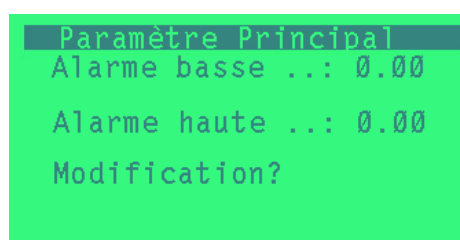
the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

When the horizontal cursor disappears, press the [C] key to exit from the simulation function.

4.5. PROBOX® User menu

Press the « Menu » key… [Menu]

The red integral LED then lights up …

Then press the [↵] **key to confirm the « New User ».**

> *The « User » may be protected by a password. Without this password, the PROBOX®
> operation cannot be modified.*

> *If you forget your password, contact your installation technician or the BWT France BWT
> PERMO technical department, with your identification and the machine serial number or
> your date of invoice.*

> *Without this information, no work can be carried out on the system and it cannot be
> unlocked.*

If a password has been programmed …

```
       Code utilisateur
     Code d'accès : 0---
```

Use keys and to modify the required value and press to confirm. If you make a mistake, press the key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

If no password has been programmed or if your password is valid, the following menu is displayed:

Or …

Use keys and to select the required function. A vertical triangular position cursor indicates the function to be confirmed.

The pull-down menus enable the following functions to be selected …

Selection possibilities in the « User » menu:

a)   Specialist level
Transition to the Specialist level (**see Section 6-6**)

b)   User password
A 4-digit password can be defined to protect access to the User menu.

Ensure that you remember the password or keep it in a safe place.

Protection by a User menu password also locks the access to the higher Specialist level.
This can be cancelled by entering password « 0000 ».

If no password is programmed …

Use keys and to modify the required value and press to confirm. If you make a mistake, press the key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

c) Calibration

The calibration procedures are described in this option.

Both parameters (Main and auxiliary) can be adjusted in exactly the same way.

Wait for the values to become perfectly stable before starting the calibration procedure.

There are three possible options:

- ✓ **Calibration of the zero or the pH=7**
- ✓ **The gradient or gain of the measurement system**
- ✓ **Erase previous values and restore the standard plant values.**

The selection on the screen depends on the programming of the physical parameters measured by the PROBOX®.

For example, if the main physical parameter is the pH and the auxiliary parameter is chlorine…


```
> MENU UTILISATEUR <
Etalonnages
 ► pH
   Chlore
```
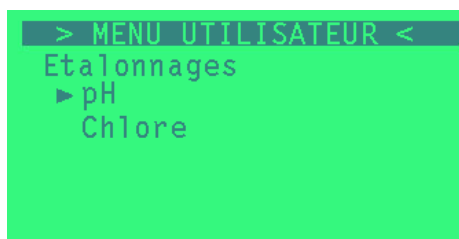
Use keys and to select and then press to confirm.

The following functions are then displayed …


```
   Paramètre Principal
Paramètre Principal
 ► Zéro (ou pH=7)
   Pente (ou Gain)
   Effacement...
```
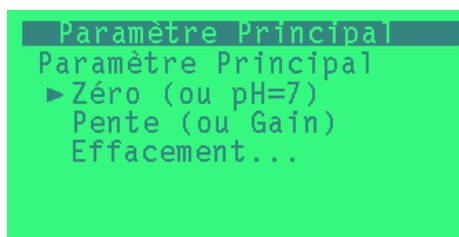
Use keys and to select and then press to confirm.

If the Zero or pH=7 procedure was confirmed, the PROBOX® performs the operation <u>automatically</u>.

Check that the measurement probe is actually in the correct reference liquid.
Thus, for a chlorine probe, ensure that there are no traces of chlorine close to the electrode.
For a pH probe, check that the pH value actually is 7 and that the probe is in a reference liquid.

See section on calibration accessories

Special case for « open » ammeter probes, with no counter electrode. (P/N P0060098 for bromine).
To set the electrode zero, either the liquid to be analysed should be passed through an active carbon filter, or the flow should be stopped for 3 to 5 minutes, and then the zeroing procedure can be carried out.

If the gradient or gain calibration procedure is validated, the PROBOX® computes the new gradient as a function of the P/N indicated on the electrode.

```
       Paramètre Principal
    Paramètre Principal
       Zéro (ou pH=7)
     ► Pente (ou Gain)
       Effacement...

       Etalon..: 04.01
                 ▲
```
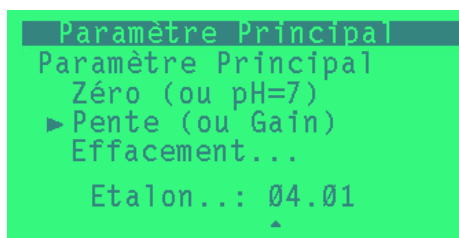
Thus, for a pH probe, a standard value of 4.01 was validated. However, the user can easily change this reference and use that shown on the measurement electrode (example: pH=9.21)

The measurement system gradient or gain should not be calibrated using values close to zero or pH=7.
The calibration could not be properly computed.

Use keys [+] and [−] to change and press [↵] to confirm the calibration value.

If there is any doubt concerning the validity of the calibration procedures, or if the measurement electrode element has been changed, it is recommended that all the old values be erased by confirming the « erase » function.

d) Reference values

This function can be used to program and modify the reference points for the « main » and « auxiliary » parameters.

These provide a computing base for each physical parameter selected.

For example, if the main physical parameter is pH and the auxiliary parameter is chlorine…

```
     > MENU UTILISATEUR <
   Consignes
     ► pH
       Chlore
```
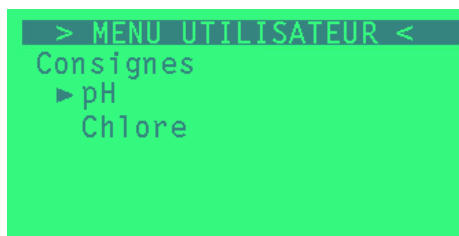
Use keys [+] and [−] to select and then press [↵] to confirm.

For the pH, for example, the « reference » parameter can be confirmed or modified.

```
┌────────────────────────────┐
│ ▐ Paramètre Principal ▌     │
│   Consigne : 7.20          │
│                            │
│   Modification ?           │
│                            │
│                            │
└────────────────────────────┘
```
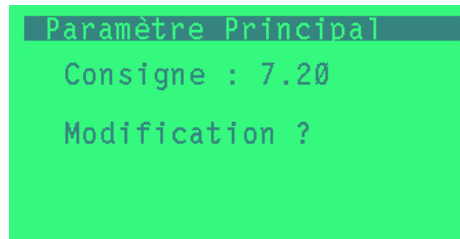
To modify the reference value, press [⏎] , or press [C] to exit.

```
┌────────────────────────────┐
│ ▐ Paramètre Principal ▌     │
│   Consigne :07.20          │
│              ▲             │
│   Modification ?           │
│                            │
│                            │
└────────────────────────────┘
```
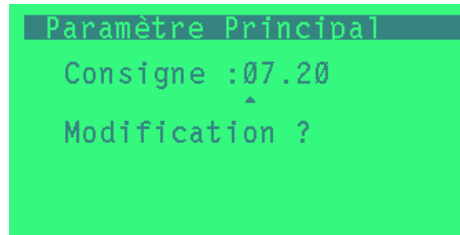
Use keys [+] and [−] to modify the reference value and press [⏎] to confirm. If you make a mistake, press the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

e) Technical alarms

Technical alarms are defined for each parameter as minimum and maximum physical values.

For example, if the main physical parameter is pH and the auxiliary parameter is chlorine…

```
┌────────────────────────────┐
│ ▐ > MENU UTILISATEUR < ▌    │
│   Alarmes techniques       │
│   ► pH                     │
│     Chlore                 │
│                            │
│                            │
└────────────────────────────┘
```
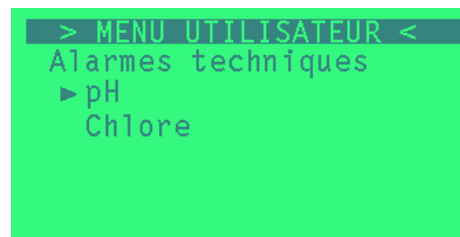
Use keys [+] and [−] to select and then press [⏎] to confirm.

For the pH, for example, the technical alarms can be confirmed or modified.

```
┌────────────────────────────┐
│ ▐ Paramètre Principal ▌     │
│   Alarme basse ..: 0.00    │
│   Alarme haute ..: 0.00    │
│   Modification?            │
│                            │
│                            │
└────────────────────────────┘
```

To modify the alarms, press [⏎] , or press [C] to exit.

```
        Paramètre Principal
     Alarme basse ..:00.00
                      ▲
     Alarme haute ..: 0.00
```
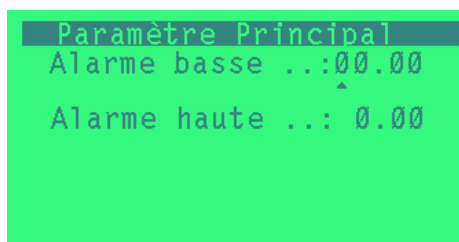
Use keys [+] and [−] to enter the new alarms required and press [↵] to confirm. If you make a mistake, press

the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

f)   Analog outputs

The analog outputs for each parameter can be programmed as physical values within the measurement scale.

If the analog output was defined for regulation use, access is refused.
If the analog output was defined for data transfer and the physical parameter was defined, access is authorised.

See section concerning the assignment of analog output.

For example, if both analog outputs have been configured for data transfer, the main physical parameter is pH and the auxiliary parameter is chlorine…

```
       Sorties analogiques
    ►Sorties Ia...
     Sorties Ib...
```
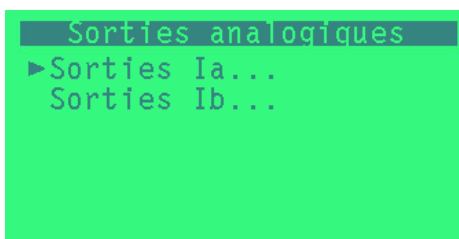
Use keys [+] and [−] to select, and press [↵] to confirm.

For the pH, for example, the analog output scales can be confirmed or modified…

```
       Paramètre principal
       Sortie 4 à 20 mA
    Valeur /4mA..: 0.00

    Valeur /20mA.: 0.00

    Modification?
```
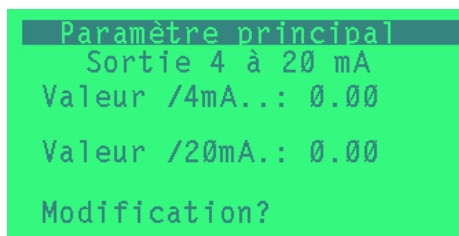
g)   Printer output

Using a printer with an RS232 type serial input, the PROBOX® general configuration can be printed out.
However, for correct communication, the following conditions must be respected.

- ✓ **Transmission: RS232C**
- ✓ **Number of bits: 8**
- ✓ **Parity: None**
- ✓ **Start bit: 1**
- ✓ **Stop bit: 1**
- ✓ **Transfer rate: 75 to 9600 bauds**

Only the transfer rate can be programmed.

```
 Sortie imprimante
►Informations...
  Vitesse(baud)...
```
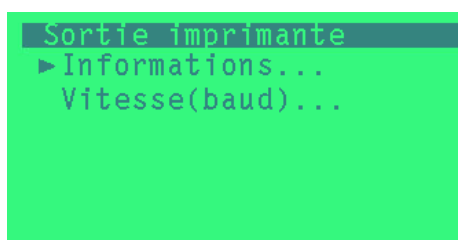
Use keys [+] and [−] to select, and press [↵] to confirm.

For the transfer rate…

```
 Sortie imprimante

 Vitesse (baud)..: 1200
                    ▲
```
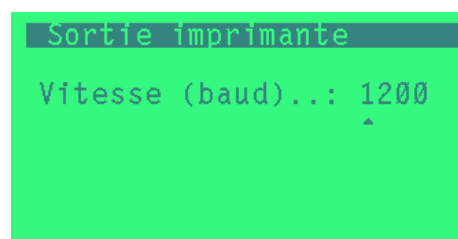
Use keys [+] and [−] to modify the transfer rate and press [↵] to confirm. If you make a mistake, press the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

To print out the data …

```
 Sortie imprimante

 Impression encours...
```
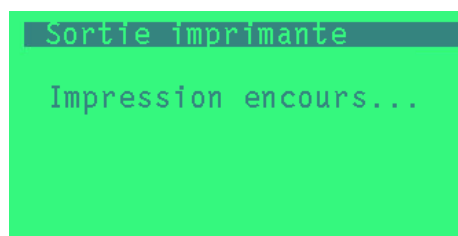
The printout has the following format:

PROBOX data…
--
Main parameter: pH

Reference point = 7.20
Regulation mode: P.I.D.

- Proportional band: 10
- Integration time: 500 s
- Derivative time: 100 s
- Dead band: 5%

etc. …

h) Management of display

The LCD display can be configured to display various parameters …

- ✓ **Video inversion of the Main parameter/Auxiliary parameter display**
- ✓ **Display statuses of relays Ka and Kb**
- ✓ **Display 0/4…20 mA analog outputs Ia and Ib.**

The statuses of the relay outputs and analog outputs are displayed in video inversion on the bottom line of the display.

```
> MENU UTILISATEUR <
 Gestion afficheur
►Inv. paramètres
 Aff. états relais
 Aff. sorties 0-20mA
```
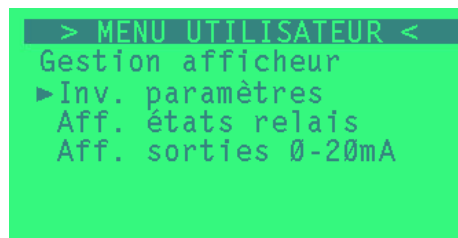
Use keys [+] and [–] to select, and press [↵] to confirm.

4.6. PROBOX® SPECIALIST menu

Press the « Menu » key…

The red integral LED then lights up …

Then press the [↵] **key to confirm the « New User », and then press** [↵] **to confirm « Specialist » Level**.

The SPECIALIST menu may be protected by a password. Without this password, the PROBOX® operation cannot be modified.

If you forget your password, contact your installation technician or the BWT PERMO technical department, with your identification and the machine serial number or your date of invoice.

Without this information, no work can be carried out on the system and it cannot be unlocked.

If a password has been programmed …

```
┌──────────────────────────┐
│     Code utilisateur     │
│                          │
│   Code d'accès : 0---     │
│                          │
│                          │
│                          │
│                          │
└──────────────────────────┘
```
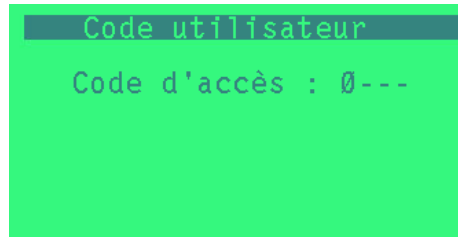
Use keys [+] and [−] to modify the required value and press [↵] to confirm. If you make a mistake, press

the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

If no password has been programmed or if your password is valid, the following menu is displayed:

Use keys [+] and [−] to select the required function. A vertical triangular position cursor indicates the function
to be confirmed. [↵]

```
┌──────────────────────────┐
│  > MENU SPECIALISTE <    │
│    Select. paramètres    │
│    Type de régulation    │
│    Affectation relais    │
│    Affectation analog.   │
│    Focntion "Hold"       │
│    Communication         │
│  ► Réglages usine        │
└──────────────────────────┘
```

or …

```
┌──────────────────────────┐
│  > MENU SPECIALISTE <    │
│  ► Code spécialiste      │
│    Select. paramètres    │
│    Type de régulation    │
│    Affectation relais    │
│    Affectation analog.   │
│    Focntion "Hold"       │
│    Communication         │
└──────────────────────────┘
```

and finally …

```
┌──────────────────────────┐
│  > MENU SPECIALISTE <    │
│    Type de régulation    │
│    Affectation relais    │
│    Affectation analog.   │
│    Focntion "Hold"       │
│    Communication         │
│    Réglages usine        │
│  ► Numero de version     │
└──────────────────────────┘
```
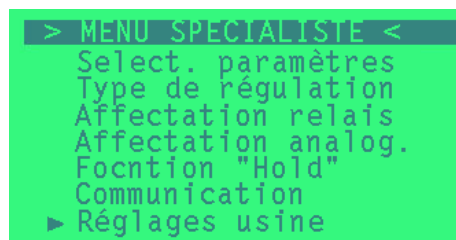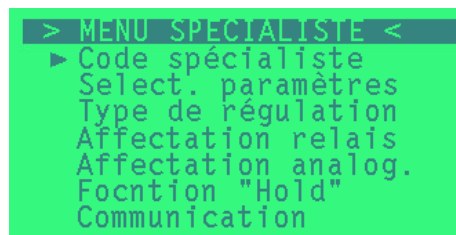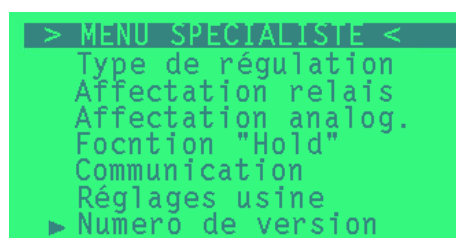
<u>**Selection possibilities in the Specialist menu:**</u>

a)   Specialist password

A 4-digit password can be defined to protect access to the Specialist menu.

Ensure that you remember the password or keep it in a safe place.

Any password may be defined for the Specialist menu. However, it is recommended that it be different from that defined for the User menu.

If no password is programmed …


```
Code Spécialiste
Nouveau code:0---
            ▲
```
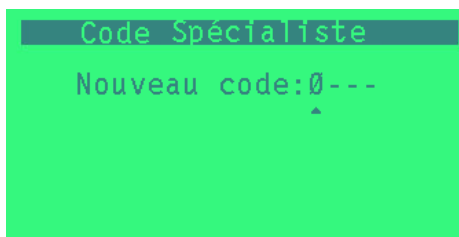
Use keys and to enter the required code and press to confirm. If you make a mistake, press

the key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

Enter « 0000 » to cancel.

b)   Selecting the parameters

This function is used to define the PROBOX® physical parameters as the main parameter or as an auxiliary parameter.

The main parameter must be the major parameter used.

This function is also used to define the measurement scale for each physical parameter, where they are not defined by default values.

See Section 3-4.

f)   Measurement scales

The following physical parameters are available:

- ✓ **Temperature in °C**
- ✓ **Temperature in °K**
- ✓ **Temperature in °F**
- ✓ **pH**
- ✓ **Chlorine or chlorine dioxide**
- ✓ **Bromine**
- ✓ **Oxygen**
- ✓ **Ozone**
- ✓ **Redox**
- ✓ **Raw current in mA**
- ✓ **Hydrogen peroxide***
- ✓ **Peracetic acid***

The physical parameter to be defined as the main parameter, and that to be defined as the auxiliary parameter, should be selected.

If the auxiliary parameter is « Raw current in mA », it will not be used as an auxiliary parameter, but as a raw current reading for the main parameter.

The PROBOX® then operates with a single parameter.

```
> MENU SPECIALISTE <
Select. paramètre
  ►Principal
    Auxiliaire
```
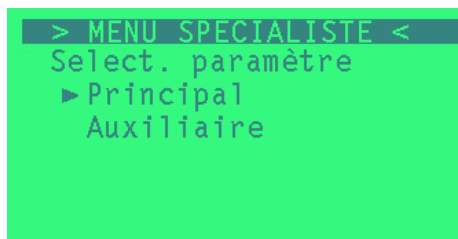
Use keys and to select the required parameter. A vertical triangular position cursor indicates the function to be confirmed.


```
Paramètre principal
Select. paramètres
    Température (°C)
    Température (°K)
    Température (°F)
  ►pH
    Chlore
    Brome
```

or…


```
Paramètre principal
Select. paramètres
    Température (°K)
    Température (°F)
    pH
    Chlore
    Brome
  ►Oxygène
```
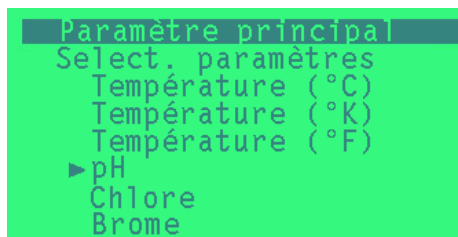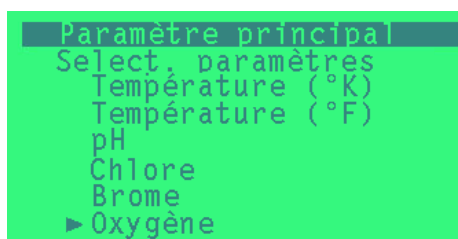
etc.

If the measurement scales for the selected physical parameter have not been defined by default, then this value will have to be defined…

The selected physical parameter and measurement scale must be fully compatible with both the sensor and the measurement chamber used.


```
Paramètre principal
Plages de mesure
    0.00 à 1mg/l
    0.00 à 2mg/l
  ►0.00 à 10mg/l
    00.0 à 50mg/l
    00.0 à 100mg/l
```
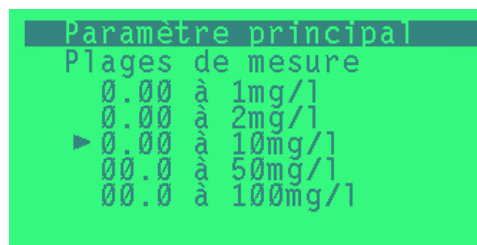
Use keys and to select the required measurement scale and press to confirm.

A horizontal triangular position cursor indicates the value to be modified.

c) Type of regulation

Each physical parameter has a « regulation » function.
The regulation function is performed under the following programmable conditions:

- ✓ **No regulation**
- ✓ **Logic (On/Off) regulation or threshold regulation**
- ✓ **Proportional regulation (P.)**
- ✓ **Proportional regulation with Integration computing (P.I.)**
- ✓ **Proportional regulation with Integration and Derivative computing (P.I.D.)**
- ✓ **Self-adapting regulation**

If the auxiliary parameter is « raw current in mA », the regulation function is not available on this parameter.
The « Type of regulation » is then « No regulation ».

Depending on the type of regulation, the factors that influence the regulator response are defined as follows:

- ✓ **Positive regulation constant**
- ✓ **Hysteresis** (only for « On/Off » regulation)
- ✓ **Proportional band**
- ✓ **Dead band**
- ✓ **Integration time**
- ✓ **Derivative time**

The respective values of these impacting factors are defined in Section 3-4.

Select the physical parameter to configure and then…
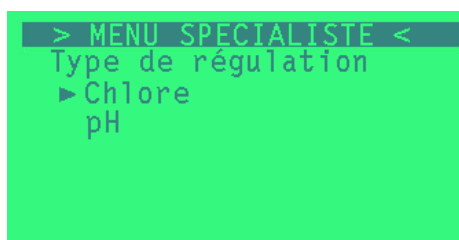
Use keys [+] and [−] to select the physical parameter, to define its regulation mode, and press [↵] to confirm.

A vertical triangular position cursor indicates the parameter to be confirmed.

Select the type of regulation …
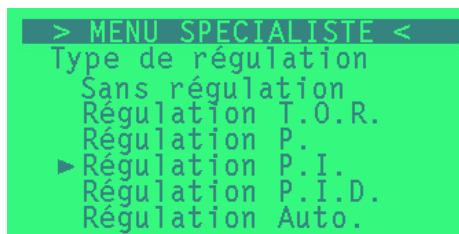
Define the impacting factors…
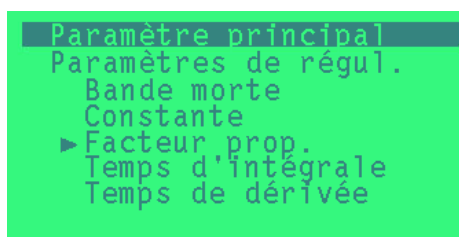
Modify or confirm the parameters.

Use keys [+] and [−] to enter the new values required and press [↵] to confirm. If you make a mistake, press

the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

Defining the impacting factors:

Hysteresis: (only in « On/Off » function)
This is the variable proportion, below and above the reference point, for which the « On/Off » regulator will activate or deactivate the injection systems.
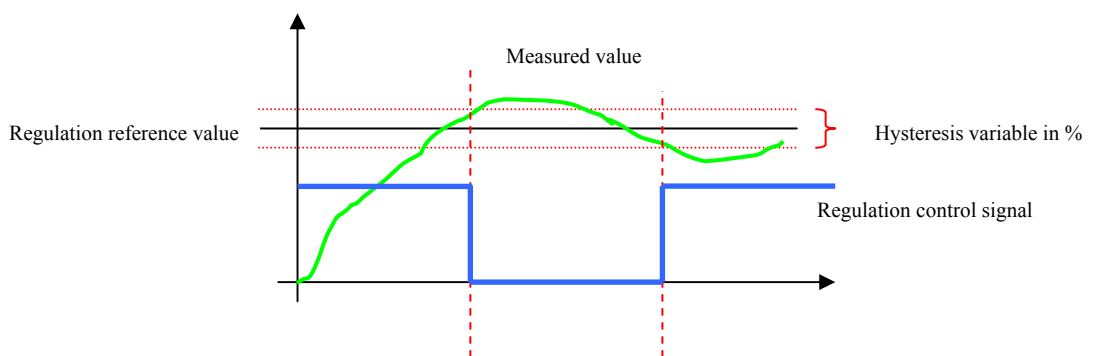
Dead band:
This is the proportion, around the reference point, which no regulation control signal will be sent to the injection systems.
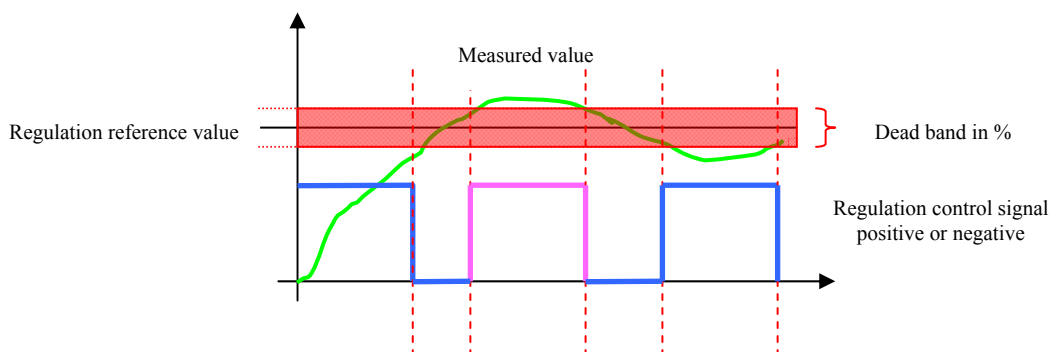
Constant:
This is a constant positive value added to the regulation computing
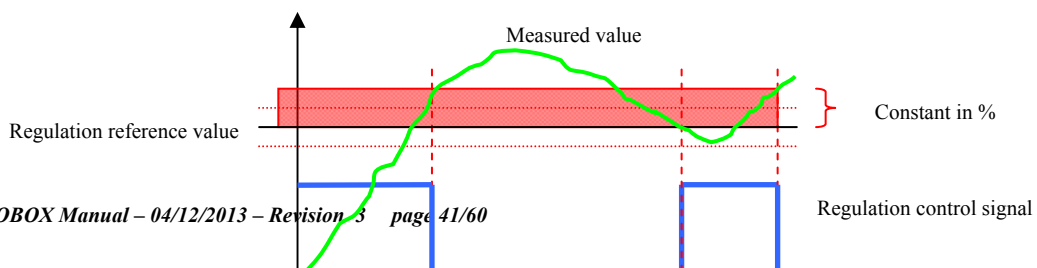
Proportional band:

This is the zone around the reference point for which the regulation control signal is linear.
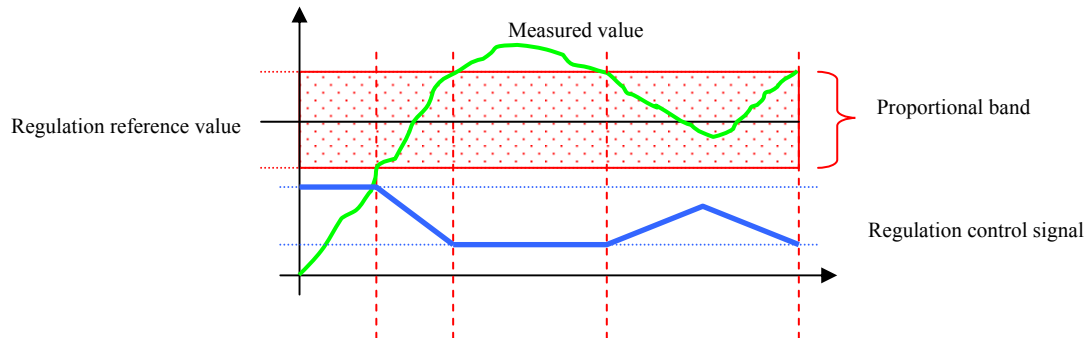
Integral:

This is the computed mean value of the positive and negative deviations, for the integration time.
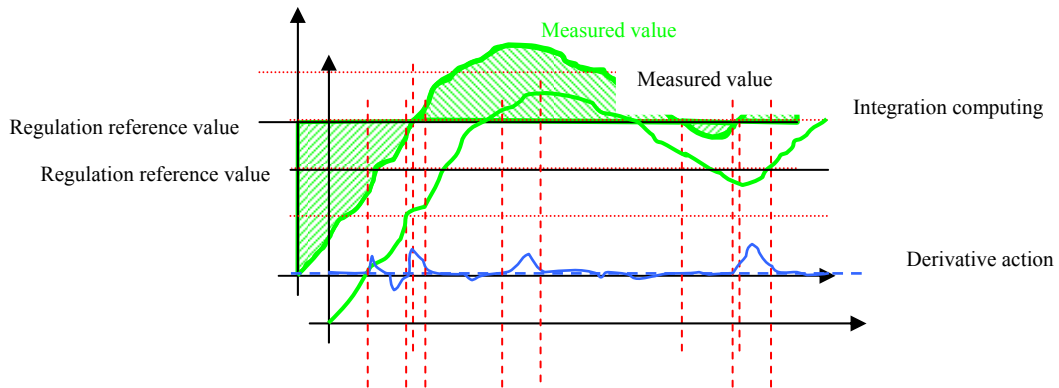
Derivative:

This is the computing of sudden positive or negative variations in the measured value, for the derivation time.

        d)   **Assignment of relays**

This function defines the utilisation of relays Ka, Kb
The relays can be assigned to the following functions:

- ✓ **technical alarms**
- ✓ **process alarms**
- ✓ **width modulation (On/Off) regulation**
- ✓ **pulse recurrence frequency regulation**
- ✓ **3-point position regulation**

These functions are dependent on the following parameters:

- ✓ **Confirmation time (alarms only)**
- ✓ **Cycle time or number of strokes/mn.**
- ✓ **Open / Close time (3-channel position regulation)**

The respective values of these parameters are defined in Section 3-4.

Select the relay to be configured and then…

```
 Affectation relais
►Relais Ka
 Relais Kb
```
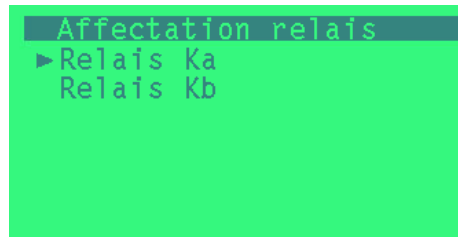
Use keys [+] and [−] to select the relay to be programmed, and press [↵] to confirm.

A vertical triangular position cursor indicates the parameter to be confirmed.

Select the relay function …

```
 Relai Ka...
Affectation relais
  Non-utilisée
 ►Alarmes
  Régulation
```
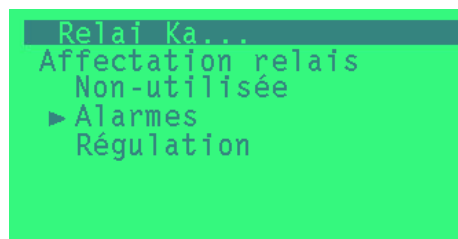
If you wish to define alarms …

```
 Relai Ka...
Alarmes techniques
  Non-utilisée
 ►Générale
  Basse (pH)
  Haute (pH)
  Basse + Haute (pH)
```
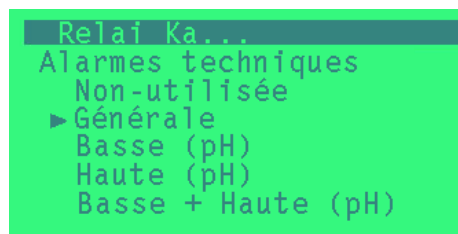
The general technical alarm only concerns physical faults in the sensors or electronics, and do not concern the programmable alarm threshold values.

The time for which the alarm is to remain valid must be specified.
This time is the time for which the alarm will remain confirmed without having been cleared.

If the signal that raised the alarm condition disappears and then reappears, during time for which the alarm remains confirmed, then the time counter will be reset.

```
 Relai Ka...

Délai ........: 120 s

Modification ?
```
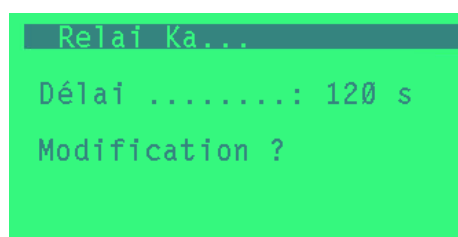
Modify or confirm the time.

Use keys and to enter the new value required and press to confirm. If you make a mistake, press the key to return to the previous numerical value.

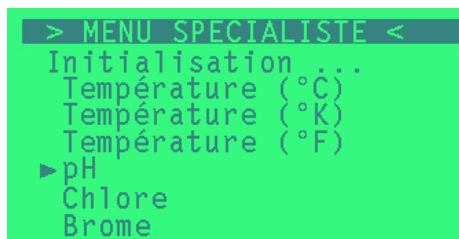A horizontal triangular position cursor indicates the value to be modified.

If you have selected regulation …

```
 Relai Ka...
Régulations
   Non-utilisée
 ►Tout Ou Rien (pH)
   Impulsion (pH)
   3 points (pH)
```
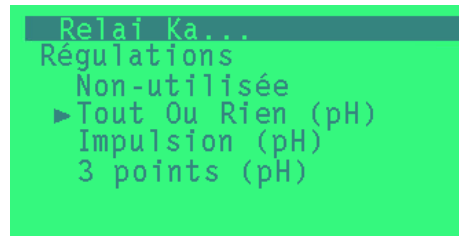
Use keys and to select the function to be performed, and press to confirm.

A vertical triangular position cursor indicates the parameter to be confirmed.

The regulation direction must also be specified …

```
 Relai Ka...
Sens de régulation
 ►Montante (+)
   Descendante (-)
```
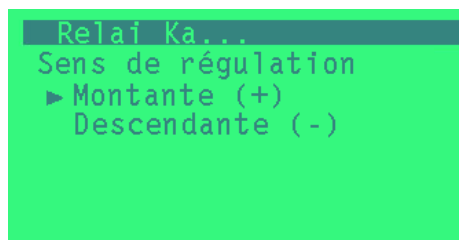
Followed by its cycle time or number of strokes per minute …

```
 Relai Ka...

Délai ........: 120 s

Modification ?
```
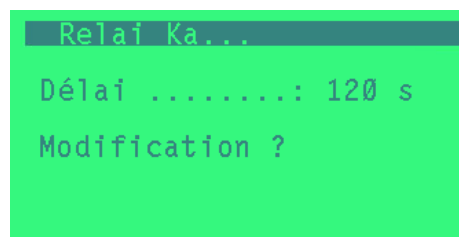
Defining the types of control signal

With modulation On/Off control signal:
Over a given timebase, power is modulated by proportionally varying the cycle time.
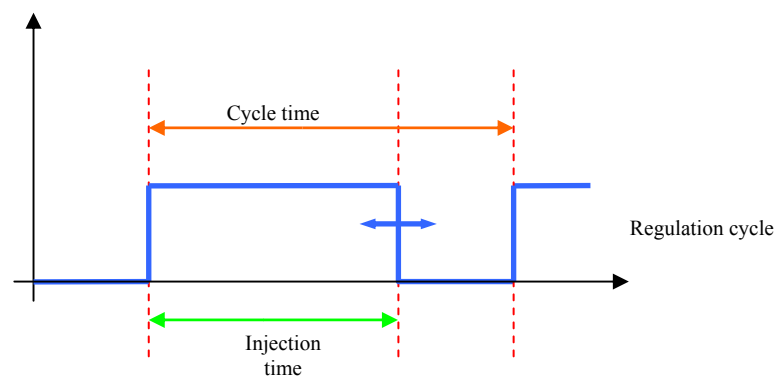
Pulse recurrence frequency control signals:
This control mode generates calibrated pulses, with a maximum pulse recurrence frequency being defined by programming.
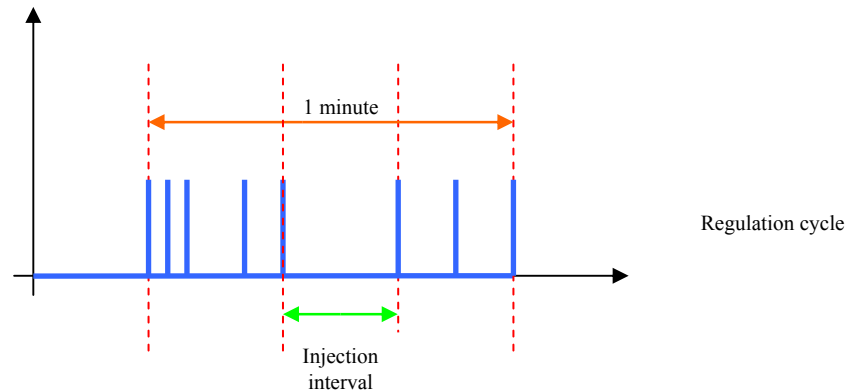
3-point position control signals:
This control signal always uses two relays, one trips the opening of the injection system and the other closes it. However, if no control signals are applied to the two relays, the injection system remains in an intermediate position.
The cycle time is defined as the time taken by the injection system to change from the fully closed position to the fully open position.
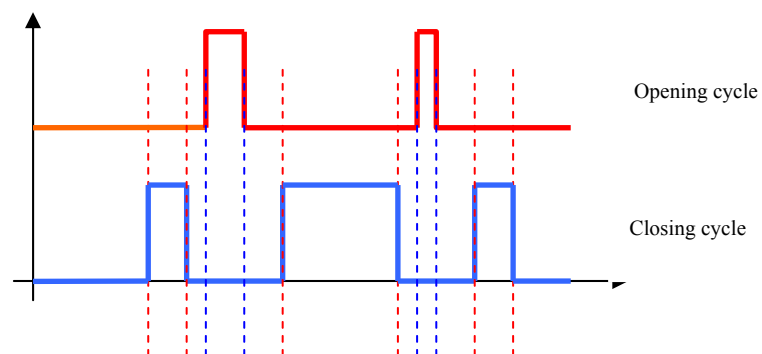
e)   Assignment of analog channels

This function defines the utilisation of the two « analog output » channels.

The analog output channels can be assigned to a function of:

- ✓ **Data transfer (GTC)**
- ✓ **Regulation**

These functions can be performed with various signal scales:

- ✓ **0 to 20 mA**
- ✓ **4 to 20 mA**
- ✓ **20 to 0 mA**
- ✓ **20 to 4 mA**

For data transfer, the scales are fully configurable.

See Section 6-5–f

Select the analog output to be configured and then…

```
Affectation analogique
►Sortie Ia...
 Sortie Ib...
```
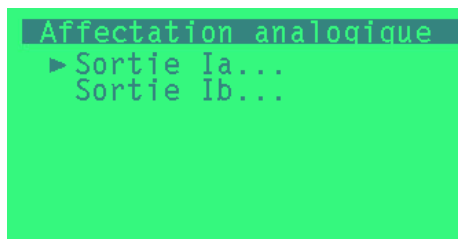
Use keys [+] and [−] to select the output to be programmed, and press [↵] to confirm.

A vertical triangular position cursor indicates the parameter to be confirmed.

Select the analog output function …

```
Sortie Ia...
Affectation analogique
 Non-utilisée
►Transfert (pH)
 Régulation (pH)
```
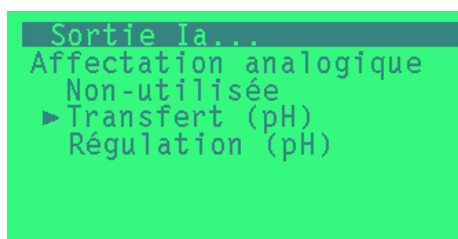
Use keys [+] and [−] to select the required function, and press [↵] to confirm the type of analog transfer.

```
Sortie Ia...
Echelles analogiques
 Sortie 0 à 20mA
►Sortie 4 à 20mA
 Sortie 20 à 0mA
 Sortie 20 à 4mA
```
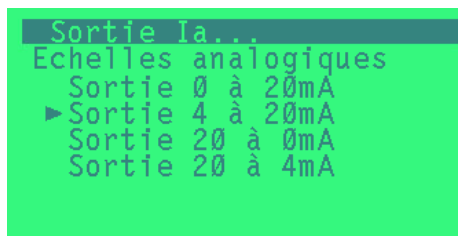
Use keys [+] and [−] to select the type of output to be programmed, and press [↵] to confirm.

A vertical triangular position cursor indicates the parameter to be confirmed.

f)   « Hold » function

This function enables the PROBOX® regulator to conserve the regulation settings (or not), during periods of shutdown (green LED off).
In the case of a quick shutdown, the regulation algorithms are thus saved and the full precision of the regulation process is conserved.

The function may be active or inactive …

```
> MENU SPECIALISTE <
 Fonction "Hold"
►Inactive
 Active
```
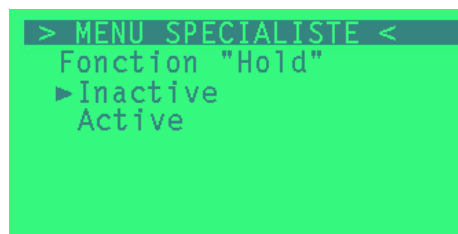
Use keys [+] and [−] to select, and press [↵] to confirm.

g) Communication

This function identifies the PROBOX® regulator for utilisation with an RS485 bus and **SYSCOM®** software**.**

It also defines the type of link used (RS232 or RS485).

When using an RS232 link, the SYSCOM® software cannot be used in bus mode.
In this case, communication will only be through one RS232 link, with only one PROBOX® regulator unit.

The selection is as shown …

```
> MENU SPECIALISTE <
 Communication
  RS232C
 ►RS485 (bus)
```

If RS485 communication in bus mode was selected…

```
> MENU SPECIALISTE <
 Communication
  RS232C
 ►RS485 (bus)

 Numéro de voie : Ø1
                   ▲
```

Use keys [+] and [−] to enter the channel number required and press [↵] to confirm. If you make a mistake, press

the [C] key to return to the previous numerical value.

A horizontal triangular position cursor indicates the value to be modified.

CAUTION: *If several PROBOX® units are used, take care to avoid assigning identical channel numbers. This would prevent the SYSCOM® software from providing proper communication.*

h) Plant settings

This function resets the PROBOX® regulator settings to the standard delivery configuration.

This function thus resets the internal memory, and erases all the programming entered by the user.

Properly identify your sensors and measurement chambers to ensure correct formatting.

```
> MENU SPECIALISTE <
 Initialisation ...
  Température (°C)
  Température (°K)
  Température (°F)
 ► pH
  Chlore
  Brome
```

Use keys [+] and [−] to select the required parameter, and press [↵] to confirm.

A vertical triangular position cursor indicates the parameter to be confirmed.

i) Software release number

Indicates the internal software release number.

The software can only be updated by qualified personnel.
Updates will be <u>invoiced</u> and are necessary for the proper operation of the system, with the latest versions of the machine and its peripherals.

Contact your usual retailer or the BWT PERMO technical department.

No update will be incorporated without the serial number of the unit.

Display software release number…

```
PROBOX V 1.00

Logiciel déposé

APP n° 0100434833
```
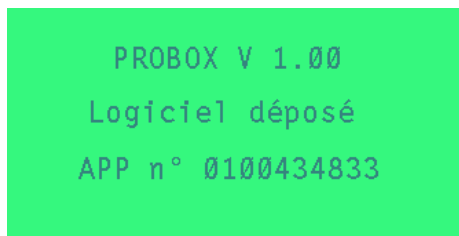
5. Faults and corrective action

REMARK: *In the event of a measurement cell operation problem, refer to the user manuals for the respective electrodes.*

Fault	Probable cause	Corrective action
The screen does not light up after switching on. No indicator lights up.	✓ Defective primary power supply.	✓ Check fuse on primary power supply. ✓ Check power supply cable.
After switching on, the sensors do not measure any values or random erroneous values are indicated.	✓ Measurement chamber reference power supply is defective.	✓ Connect red and brown wires to +12 V reference on terminal strip.
The sensor permanently indicates maximum value.	✓ Current loop in short circuit.	✓ Using this manual, check connections and identify measurement loop.
Measurement sensors permanently unstable.	✓ Defective water supply to measurement chambers or internal overpressure.	✓ Check water supply to measurement chambers and correct as necessary.
Sensor cannot be calibrated.	✓ Wrong electrode or defective membrane.	✓ Change electrode or membrane.
Unit cannot be configured.	✓ Password error.	✓ Carry out release request procedure.
Regulation disturbed or unstable.	✓ Setup error.	✓ Check programming parameters. ✓ Analyse the operation of the site and adjust regulation parameters appropriately.

6. Grafcet programming

PARAMÈTRE PRINCIPAL
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Ozone : 1.50   14:52
- 0.47 0²

PARAMÈTRE PRINCIPAL
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Ozone : 1.50   14:52
- 2.47 0²

PARAMÈTRE PRINCIPAL
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Ozone : 15.00   14:52
- - - - 0²

PARAMÈTRE PRINCIPAL
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Ozone : 15.0   14:52
- 24.7 0²

PARAMÈTRE PRINCIPAL
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

PARAMÈTRE PRINCIPAL
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l

Ozone : 0.150   14:52
- .347 03

PARAMÈTRE PRINCIPAL
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l

Ozone : 1.50   14:52
- 0.47 03

PARAMÈTRE PRINCIPAL
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

PARAMÈTRE PRINCIPAL
Plages de mesure
0 à 1000 mV
0 à 1500 mV
+/- 1000 mV
+/- 1500 mV

Ozone : 150   14:52
- 347 mV

PARAMÈTRE PRINCIPAL
Plages de mesure
0 à 1000 mV
0 à 1500 mV
+/- 1000 mV
+/- 1500 mV

Ozone : 150   14:52
- 371 mV

PARAMÈTRE PRINCIPAL
Plages de mesure
0 à 1000 mV
0 à 1500 mV
+/- 1000 mV
+/- 1500 mV

Ozone : 150   14:52
- - - - mV

PARAMÈTRE PRINCIPAL
Plages de mesure
0 à 1000 mV
0 à 1500 mV
+/- 1000 mV
+/- 1500 mV

Ozone : 150   14:52
- - - - mV

PARAMÈTRE PRINCIPAL
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

Ozone : 15.00   14:52
0.01 mA

> MENU SPECIALISTE <
Select. Paramètres
Principal . . .
Auxiliaire . . .

PARAMÈTRE AUXILIAIRE
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

Ozone : 1.50   14:52
25 °C

PARAMÈTRE AUXILIAIRE
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

Ozone : 1.50   14:52
164 °K

PARAMÈTRE AUXILIAIRE
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

Ozone : 1.50   14:52
75 °F

PARAMÈTRE AUXILIAIRE
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

Ozone : 1.50   14:52
7,8 pH

PARAMÈTRE AUXILIAIRE
Select. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Bicàne
Oxygène
Ozone
Redox (mV)
Courant brut (mA)

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Ozone : 0.150   14:52
- 2.47 CI

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
⇨ 0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 1.50   14 : 52
- 2.47 Cl
IA: 4.0 IB: 4.0 PA I-0.47CL

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
⇨ 0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 1.50   14 : 52
- 2.47 Cl
IA: 4.0 IB: 4.0 PA I-2.47CL

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
⇨ 0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 15.00   14 : 52
- 2.47 Cl
IA: 4.0 IB: 4.0 PA I- - - -CL

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
⇨ 0.0 à 100 mg/l

Cons : 15.0   14 : 52
- 2.47 Cl
IA: 4.0 IB: 4.0 PA I-24.7CL

PARAMÈTRE AUXILIAIRE
Sélect. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
⇨ Brome
Oxygène
Ozone
Rédox (mV)
Courant brut (mA)

PARAMÈTRE AUXILIAIRE
Plages de mesure
⇨ 0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 0.150   14 : 52
- 2.47 Br
IA: 4.0 IB: 4.0 PA I-.347BR

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
⇨ 0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 1.50   14 : 52
- 2.47 Br
IA: 4.0 IB: 4.0 PA I-0.47BR

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
⇨ 0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 1.50   14 : 52
- 2.47 Br
IA: 4.0 IB: 4.0 PA I-2.47BR

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
⇨ 0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 15.00   14 : 52
- 2.47 Br
IA: 4.0 IB: 4.0 PA I- - - -BR

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
⇨ 0.0 à 100 mg/l

Cons : 15.0   14 : 52
- 2.47 Br
IA: 4.0 IB: 4.0 PA I-24.7BR

PARAMÈTRE AUXILIAIRE
Sélect. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Brome
⇨ Oxygène
Ozone
Rédox (mV)
Courant brut (mA)

PARAMÈTRE AUXILIAIRE
Plages de mesure
⇨ 0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 0.150   14 : 52
2.47 O^2
IA: 4.0 IB: 4.0 PA I-0.3470 2

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
⇨ 0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 1.50   14 : 52
2.47 O^2
IA: 4.0 IB: 4.0 PA I-0.47O2

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
⇨ 0.00 à 10 mg/l
0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 1.50   14 : 52
2.47 O^2
IA: 4.0 IB: 4.0 PA I-2.47O2

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
⇨ 0.0 à 50 mg/l
0.0 à 100 mg/l

Cons : 15.00   14 : 52
2.47 O^2
IA: 4.0 IB: 4.0 PA I- - - O2

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
0.00 à 2 mg/l
0.00 à 10 mg/l
0.0 à 50 mg/l
⇨ 0.0 à 100 mg/l

Cons : 15.0   14 : 52
2.47 O^2
IA: 4.0 IB: 4.0 PA I-24.7O2

PARAMÈTRE AUXILIAIRE
Sélect. Paramètres
Température (°C)
Température (°K)
Température (°F)
pH
Chlore
Brome
Oxygène
⇨ Ozone
Rédox (mV)
Courant brut (mA)

PARAMÈTRE AUXILIAIRE
Plages de mesure
⇨ 0.00 à 1 mg/l
0.00 à 2 mg/l

Cons : 0.150   14 : 52
2.47 O3
IA: 4.0 IB: 4.0 PA I-.34703

PARAMÈTRE AUXILIAIRE
Plages de mesure
0.00 à 1 mg/l
⇨ 0.00 à 2 mg/l

Cons : 1.50   14 : 52
2.47 O3
IA: 4.0 IB: 4.0 PA I-0.47O3

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramétres
Type de régulation
Affectation analog.
⇨ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Affectation analog.
⇨ Non - utilisée
Transfert (CI)
Régulation (CI)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Affectation analog.
Non - utilisée
⇨ Transfert (CI)
Régulation (CI)

SORTIE IA . . .
Echelles analogiques
⇨ Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Echelles analogiques
Sortie 0 à 20 mA
⇨ Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
⇨ Sortie 20 à 0 mA
Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
⇨ Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Affectation analog.
Non - utilisée
Transfert (CI)
⇨ Régulation (CI)

SORTIE IA . . .
Echelles analogiques
⇨ Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

SORTIE IA . . .
Sens de régulation
⇨ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Sens de régulation
Montante (+)
⇨ Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Echelles analogiques
Sortie 0 à 20 mA
⇨ Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

SORTIE IA . . .
Sens de régulation
⇨ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Sens de régulation
Montante (+)
⇨ Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
⇨ Sortie 20 à 0 mA
Sortie 20 à 4 mA

SORTIE IA . . .
Sens de régulation
⇨ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Sens de régulation
Montante (+)
⇨ Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
⇨ Sortie 20 à 4 mA

SORTIE IA . . .
Sens de régulation
⇨ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IA . . .
Sens de régulation
Montante (+)
⇨ Descendante (-)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

AFFECTATION ANALOG.
Sortie Ia . . .
⇨ Sortie Ib . . .

SORTIE IB . . .
Affectation analog.
⇨ Non - utilisée
Transfert (CI)
Régulation (CI)

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IB . . .
Affectation analog.
Non - utilisée
⇨ Transfert (CI)
Régulation (CI)

SORTIE IB . . .
Echelles analogiques
⇨ Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IB . . .
Echelles analogiques
Sortie 0 à 20 mA
⇨ Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IB . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
⇨ Sortie 20 à 0 mA
Sortie 20 à 4 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE IB . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA

AFFECTATION ANALOG.
⇨ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Affectation analog.
Non - utilisée
Transfert (CI)
▭ Régulation (CI)

SORTIE Ia . . .
Echelles analogiques
▭ Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

SORTIE Ia . . .
Sens de régulation
▭ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Sens de régulation
Montante (+)
▭ Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Echelles analogiques
Sortie 0 à 20 mA
▭ Sortie 4 à 20 mA
Sortie 20 à 0 mA
Sortie 20 à 4 mA

SORTIE Ia . . .
Sens de régulation
▭ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Sens de régulation
Montante (+)
▭ Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
▭ Sortie 20 à 0 mA
Sortie 20 à 4 mA

SORTIE Ia . . .
Sens de régulation
▭ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Sens de régulation
Montante (+)
▭ Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Echelles analogiques
Sortie 0 à 20 mA
Sortie 4 à 20 mA
Sortie 20 à 0 mA
▭ Sortie 20 à 4 mA

SORTIE Ia . . .
Sens de régulation
▭ Montante (+)
Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

SORTIE Ia . . .
Sens de régulation
Montante (+)
▭ Descendante (-)

AFFECTATION ANALOG.
▭ Sortie Ia . . .
Sortie Ib . . .

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU SPECIALISTE <
Fonction "Hold"
▭ Inactive . . .
Active . . .

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU SPECIALISTE <
Fonction "Hold"
Inactive . . .
▭ Active . . .

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU SPECIALISTE <
Communication
▭ Type RS232
Type RS485 (Bus)

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU SPECIALISTE <
Communication
Type RS232
▭ Type RS485 (Bus)

> MENU SPECIALISTE <
Communication
Type RS232
▭ Type RS485 (Bus)

Numéro de voie :   00

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

Initialisation . . . .

Cons : 15.00   14 : 52

- 2.47 CI

Ia: 4.0   Ib: 4.0   Pa : 0.01mA

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

** PROBOX V - 3 . 01 **

Logiciel déposé . . .
APP : En cours . . .

> MENU SPECIALISTE <
Code spécialiste
Sélect. Paramètres
Type de régulation
Affectation analog.
▭ Fonction "Hold"
Communication
Réglages Usine
Numéro de version

> MENU UTILISATEUR <
Niveau Spécialiste
▭ Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

CODE UTILISATEUR
Nouveau code : 0 _ _ _

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Mode de fct. Timer
Sans timer
Fréquence semaine
Fréquence jour

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Mode de fct. Timer
Sans timer
Fréquence semaine
Fréquence jour

FRÉQUENCE SEMAINE

Lundi	0H00	0H00
Mardi	0H00	0H00
Mercredi	0H00	0H00
Jeudi	0H00	0H00
Vendredi	0H00	0H00
Samedi	0H00	0H00
Dimanche	0H00	0H00

FRÉQUENCE SEMAINE

Lundi   0H00   0H00

Modification ?

FRÉQUENCE SEMAINE

Lundi   00H00   00H00

FRÉQUENCE SEMAINE
Durée du cycle

Nb de semaines :   0

Modification ?

FRÉQUENCE SEMAINE
Durée du cycle

Nb de semaines :   00

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Mode de fct. Timer
Sans timer
Fréquence semaine
Fréquence jour

FRÉQUENCE JOUR

Prog. 1.	0H00	0H00
Prog. 2.	0H00	0H00
Prog. 3.	0H00	0H00
Prog. 4.	0H00	0H00
Prog. 5.	0H00	0H00
Prog. 6.	0H00	0H00
Prog. 7.	0H00	0H00

FRÉQUENCE JOUR

Prog. 1.   0H00   0H00

Modification ?

FRÉQUENCE JOUR

Prog. 1.   00H00   00H00

FRÉQUENCE JOUR
Durée du cycle

Nb de jours   :   0

Modification ?

FRÉQUENCE JOUR
Durée du cycle

Nb de jours   :   00

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Sortie imprimante
Informations
Vitesse (Baud)

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Sortie imprimante
Informations
Vitesse (Baud)

> MENU UTILISATEUR <
Sortie imprimante
Informations . . .

Vitesse (Baud) : 0 0 0 0

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

> MENU UTILISATEUR <
Gestion afficheur
Inv. Paramètres
Aff. États Relais
Aff. États 0 - 20 mA

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

Cons : 0.00   14 : 52

0.01 mA

Kai 0 Kbi 0   PP i . , < CL

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

Cons : 1.00   14 : 52

- 2.47 CI

Kai 0 Kbi 0   Pa : 0.01mA

> MENU UTILISATEUR <
Gestion afficheur
Inv. Paramètres
Aff. États Relais
Aff. États 0 - 20 mA

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

Cons : 1.00   14 : 52

- 2.47 CI

Kai 0 Kbi 0   Pa : 0.01mA

> MENU UTILISATEUR <
Gestion afficheur
Inv. Paramètres
Aff. États Relais
Aff. États 0 - 20 mA

> MENU UTILISATEUR <
Niveau Spécialiste
Code utilisateur
Etalonnages
Consignes
Alarmes techniques
Sorties analogiques
Sortie imprimante
Gestion afficheur

Cons : 1.00   14 : 52

- 2.47 CI

Iai4.0 Ibi4.0 Pai0.01mA

>> MENU PRINCIPAL <<

Niveau Utilisateur
Langue/Sprache/Taal
Ajustage Horloge
Services

>> MENU PRINCIPAL <<
Langue / Sprache / Taal
Français
English
Deutsch
Espanol
Italiano
Portugues

>> MENU PRINCIPAL <<

Niveau Utilisateur
Langue/Sprache/Taal
Ajustage Horloge
Services

AJUSTAGE HORLOGE

Année : 03   Mois : 2

Date : 26   Jour : 3

Heure : 13   Minutes : 56

>> MENU PRINCIPAL <<

Niveau Utilisateur
Langue/Sprache/Taal
Ajustage Horloge
Services

>> MENU PRINCIPAL <<
Services
Simulation relais
Simulation 0 - 20 mA

SIMULATION RELAIS

Relais   Ka : 0

Relais   Kb : 0

>> MENU PRINCIPAL <<

Niveau Utilisateur
Langue/Sprache/Taal
Ajustage Horloge
Services

>> MENU PRINCIPAL <<
Services
Simulation relais
Simulation 0 - 20 mA

SIMULATION ANALOG.

Sortie   Ia : 00.4 mA

Sortie   Ib :   mA

>> MENU PRINCIPAL <<

Niveau Utilisateur
Langue/Sprache/Taal
Ajustage Horloge
Services

7. Servicing

The PROBOX® is a high technology system that uses sensitive electronic components and electro-chemical sensors.

The measurement electrode is a sensitive element that is in permanent contact with the water being analysed, and can therefore be subject to varying degrees of drift over a period of time, due to deposits or the normal ageing process.

The characteristics of the electrode therefore have to be monitored with time. Measurement checking, or calibration, should be regularly carried out, to ensure the effectiveness of the probe and the subsequent regulation process.

If the inspection of the probe shows significant drift that cannot be corrected, the consumable materials specific to each probe should be replaced, as shown in the table below, or the complete sensor may be replaced.
The sensors and spare parts should be considered as consumable or subject to wear, and are thus not covered by the guarantee.

8. List of consumable materials

BWT PERMO P/N	PROBOX® electronic control unit
P0960516	Membrane for ClO_2 probe, active chlorine and ozone probe
P0060090	Membrane for free chlorine, total chlorine, BCDMH probe
P0060104	Membrane for chlorite probe
P0060120	Membrane for H_2O_2 and APA probe
P0060122	Membrane for H_2O_2 0-10000 probe
P0960517	Reactive agent refill for ClO_2 probe
P0060105	Reactive agent refill for chlorite probe
C0960181	Reactive agent refill for active chlorine probe
P0959274	Reactive agent refill for free chlorine, total chlorine, BCDMH probe
P0060110	Reactive agent refill for APA probe
P0060111	Reactive agent refill for Ozone probe
P0060112	Reactive agent refill for H_2O_2 probe

9. Technical assistance contract

BWT PERMO remains at your disposal to offer a Technical Assistance Contract for this equipment, so that it can be maintained in the best possible operating condition throughout the longest possible life cycle.

For information, call your closest regional branch by dialling the number below:

For more information contact the number au 0 825 00 07 26 *(0,15€ TTC / mn)*

BWT PERMO
AGENCE NORD - PICARDIE
Z.I. - 15 A, rue du Plouvier
59175 Templemars
Tél. : 03 20 16 03 80
Fax : 03 20 16 03 89
bwtpermo.lille@bwt.fr

BWT PERMO
AGENCE NORMANDIE
Z.A Écoparc 2 - allée de la
Fosse Moret
27400 Heudebouville
Tél. : 02 32 63 32 32
Fax : 02 32 63 32 30
bwtpermo.rouen@bwt.fr

BWT PERMO
AGENCE CHAMPAGNE - ARDENNES
3, rue Saint-Rémi
Lieu-dit Les Vianneries
51370 Les Mesneux
Tél. : 03 26 84 00 52
Fax : 03 26 84 05 04
bwtpermo.reims@bwt.fr

BWT PERMO
AGENCE RÉGION EST
Technopôle Nancy - Brabois
2, allée d'Auteuil
54500 Vandoeuvre Lès Nançy
Tél. : 03 83 67 61 89
Fax : 03 83 44 65 81
bwtpermo.nancy@bwt.fr

BWT PERMO
AGENCE ILE DE FRANCE
191, rue du 1er mai - Hall n° 3
92000 Nanterre
Tél. : 01 46 49 01 01
Fax : 01 46 49 50 69
bwtpermo.idf@bwt.fr

BWT PERMO
AGENCE ILE DE FRANCE
191, rue du 1er mai - Hall n° 3
92000 Nanterre
Tél. : 01 46 49 01 01
Fax : 01 46 49 50 69
bwtpermo.idf@bwt.fr

BWT PERMO
AGENCE ILE DE FRANCE
191, rue du 1er mai - Hall n° 3
92000 Nanterre
Tél. : 01 46 49 01 01
Fax : 01 46 49 50 69
bwtpermo.idf@bwt.fr

BWT PERMO
AGENCE BRETAGNE - PAYS DE LOIRE
Z.A. des 3 prés - 16, rue de la Plaine
35890 Laillé
Tél. : 02 23 61 48 50
Fax : 02 23 61 48 51
bwtpermo.rennes@bwt.fr

BWT PERMO
AGENCE CENTRE - OUEST
10, rue des frères Lumière
37170 Chambray-Lès-Tours
Tél. : 02 47 74 74 48
Fax : 02 47 74 74 49
bwtpermo.tours@bwt.fr

BWT PERMO
AGENCE DAUPHINÉ - PAYS DE SAVOIE
3c, rue Irène Joliot Curie
38320 Eybens-Les-Ruires
Tél. : 04 76 14 77 20
Fax : 04 76 14 77 29
bwtpermo.grenoble@bwt.fr

BWT PERMO
AGENCE RHÔNE- ALPES
Les Jardins d'Entreprise
213, rue de Gerland - bt F1
69344 Lyon cedex 07
Tél. : 04 78 72 99 17
Fax : 04 78 72 88 07
bwtpermo.lyon@bwt.fr

BWT PERMO
AGENCE SUD - OUEST
Z.A Toussaint Catros - 6 rue Ariane
33185 Le Haillan
Tél. : 05 56 13 02 18
Fax : 05 56 55 94 92
bwtpermo.bordeaux@bwt.fr

BWT PERMO
AGENT SECTEUR DE TOULOUSE
Agence SUD - OUEST
Tél. : 05 56 13 02 18
Fax : 05 56 55 94 92
bwtpermo.bordeaux@bwt.fr

BWT PERMO
AGENCE RÉGION SUD
112, Traverse de la Serviane
13012 Marseille
Tél. : 04 91 44 87 86
Fax : 04 91 45 25 62
bwtpermo.marseille@bwt.fr

BWT PERMO
AGENT SECTEUR DE MONTPELLIER
Agence RÉGION SUD
Tél. : 04 91 44 87 86
Fax : 04 91 45 25 62
bwtpermo.marseille@bwt.fr

BWT PERMO
AGENCE SUD - EST
138, chemin de l'hôpital
06580 Pegomas
Tél. : 04 93 40 59 00
Fax : 04 93 40 59 09
bwtpermo.cannes@bwt.fr

BWT PERMO
AGENCE OCÉAN INDIEN
ZAC du Portail
9,rue de l'usine
97424 PITON SAINT LEU
Tél. : +262 262 32 52 77
Fax : +262 262 22 77 46

BWT PERMO
SERVICE EXPORT
103, rue Charles Michels
93206 Saint-Denis Cedex
Tél. : +33 1 49 22 46 51 / 48
Fax : +33 1 49 22 45 30
bwtexport@bwt.fr

For You and Planet Blue.

b BWT
BEST WATER TECHNOLOGY