



Installation and starting instructions



Parts of the general documentation

- Part 1 : Installation and starting instructions
- Part 2 : Programming instructions
- Part 3 : Programming communication instructions

General information:

SYCLOPE Electronique 2016® Manual of the 19/03/2018 Rev 3

Professional Analyzers/Controllers for water treatment.

Product line DOUBLEAU®

Part 1: Installation and starting instructions (Ref : DOC0336)

Editor :



SYCLOPE Electronique S.A.S.

Z.I. Aéroport pyrénées

Rue du Bruscos

64 230 SAUVAGNON - France –

Tel : (33) 05 59 33 70 36

Fax : (33) 05 59 33 70 37

Email : syclope@syclope.fr

Internet : <http://www.syclope.fr>

© 2014 by SYCLOPE Electronique S.A.S.

Subject to modification

I.	General informations	4
1)	Applicability	4
2)	FCC conformity	5
3)	Use of the document	6
4)	Symbols and signs.....	6
5)	Storage and transport.....	7
6)	Packaging	7
7)	Warranty	7
II.	Safety and environmental instructions.....	8
1)	Use of the equipment	8
2)	User obligations	8
3)	Risk prevention	8
4)	Labelling and localization of the identification plate	9
5)	Disposal and conformity.....	10
III.	Technical specification and functions	11
1)	Technical specifications.....	11
2)	Main functions.....	12
3)	Type and range of measurements	13
	Direct measure through a sensor.....	13
IV.	Installation and electrical connections	16
1)	Installation conditions.....	16
2)	Installation of the wall-mounted devices	16
3)	Electrical connections	16
4)	Primary electrical connections (X1)	18
5)	Connecting power relays free of potential (P1, P2)	19
6)	Connecting the power relays line powered (P3, P4)	20
7)	Connecting the electronic relays free of potential (R1, R2, R3, R4)	21
8)	Connecting the potentiometric measurement input (Pot, Ref)	22
9)	Connecting the pt100 measurement input.....	23
10)	Connecting the 0/4...20mA measurement inputs (In1, In2, Vref, COM)	24
11)	Connecting the analog outputs.....	28
12)	Connecting digital inputs (Kx)	29
13)	Connecting the RS485 communication port	31
14)	USB stick connection	33
V.	Introduction to the human-machine interface.....	34
1)	Display and control keypad	34
2)	Internal connections	35
3)	Connection terminal boards	36
VI.	Starting the controller	37
1)	Select your language	38
2)	Set current date and time	39
3)	Configure your sensor(s)	40
4)	Configure your measurement channel(s).....	41
5)	Configure dosing pump's relays.....	42
6)	Configure control settings	44
7)	Calibration of measurement channels	45
8)	Programming display settings.....	46
9)	Symbols and statutes of working	48
10)	Starting regulation and dosing.	50
VII.	Spare parts and accessories	51
VIII.	Maintenance.....	52

I. General informations

1) Applicability

The analyzer/controller of the **SYCLOPE DOUBLEAU®** range you have just purchased is an electronic water management device. It has been carefully developed and manufactured to ensure your greatest pleasure and peace of mind.

Its remarkable capacity for adapting to different conditions and sizes of applications means it can be installed in the most difficult of environments where control of water treatment and water regulation processes are decisive.

Designed according to the needs of the customer, the **SYCLOPE DOUBLEAU®** controller is equipped with 4 analogical inputs and 2 digital inputs for specific sensors for treating water and also include alarm functions and regulations with cyclic commands. It can combine and calculate 2 parameters with these entries and use them as entire complete parameters.

A RS485 link, allows communication with computer.

The simplicity of operation of the **SYCLOPE DOUBLEAU®**, the user friendliness and the remarkable technical aspects of these controllers, will ensure you benefit from their many options, guaranteeing you full control and supervision of the quality of the water in your swimming pool.

The following instructions contain all the information required for the installation, use and maintenance of your new equipment.

- Installation
- Technical specifications
- Commissioning instructions
- Safety tips

If you would like to receive further information or if you encounter any difficulties not described in this manual, please contact your usual retailer or else directly contact the sales department of SYCLOPE Electronique S.A.S., either at the agency or at the office for your region, or the technical/quality departments of our establishments. We will do everything in our power to help you and ensure you benefit from our advice and know-how in the field of measurement and treatment of swimming-pool water.

Contact : contact@syclope.fr

2) FCC conformity

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received including interference that may cause undesired operation.

Instructions to Users: This equipment complies with the requirements of FCC (Federal Communication Commission) equipment provided that the following conditions are met.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate receiving antenna,
- Increase the separation between the device and receiver,
- Connect the device into an outlet on a circuit different from that to which the receiver is connected,
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Remark : In order to maintain compliance with the limits of a Class B digital device, use a recommended shielded cable when connected to this device as describe in the present notice. Using a bad cable or a cable not connected to the ground voids the user's authority, which is granted by the Federal Communications Commission, to operate this equipment.

3) Use of the document

Please read carefully the entire document before starting the installation and the commissioning of the controller device, in order to ensure the safety of swimmers, users and equipments.

The information provided in this document must be strictly observed. SYCLOPE Electronique S.A.S. declines all responsibility in cases where failure to comply with the instructions of this documents.

The following symbols and pictograms will be used to facilitate reading and understanding of these instructions.

- Information
- Action to be taken
- Item of a list or catalogue

4) Symbols and signs



Identification of a continuous voltage or current.



Identification of an alternative voltage or current.



Protective ground.



Functional ground.



Risk of injury or accident. Identifies a warning concerning a potentially dangerous risk. The documentation must be consulted by the user with each time the symbol is notified. If the instructions are not respected, this presents risks of death, physical injuries or property damages.



Electric hazard. Identifies a warning statement relative to a mortal electric danger. If the instructions are not strictly respected, this implies an inevitable risk of physical injuries or death.



Risk of incorrect operation or damage for the device.



Comment or particular information.



Recyclable element.

5) Storage and transport



It is important to store and to transport the **SYCLOPE DOUBLEAU®** controller in its original packaging in order to minimize risk of damage.
Furthermore, the package must be stored in an environment that is protected against humidity and exposure to chemical products.

Environmental conditions for transport and storage:

Temperature: -10 °C to 70 °C

Air humidity: Maximum of 90% with no condensation

6) Packaging



The controller is delivered without electrical power cable.

The pre-drilled holes of the box are drilled and equipped with according electrical glands in compliance with IP65 level protection. The cables must be adapted to the electrical glands for respecting the level of protection.

Content of the packaging:

- ✓ One analyser/controller **SYCLOPE DOUBLEAU®**
- ✓ Installation and starting instruction notice
- ✓ Programming notice
- ✓ Communication notice

7) Warranty

The warranty is provided according to the terms of our general conditions of sale and delivery as long as the following conditions are met:

- Use of the equipment according to the instructions of this notice
- No modifications of the equipment which may modify its behavior and no incorrect manipulation
- Respect for the electrical safety conditions



Consumable material is no longer covered by the warranty when in use.

II. Safety and environmental instructions

Please:

- Read this manual carefully before the unpacking, the installing or the commissioning of this equipment
- Take into account all the hazards and of recommended precautionary measures

The failure to respect these procedures can result in serious injury to users or damaging the device.

1) Use of the equipment

The **SYCLOPE DOUBLEAU®** controller has been designed to measure and control temperature, pH, Redox potential, chlorine (or bromine), Ozone, PHMB, flow, Turbidity and Conductivity by means of sensors and controls of suitable actuators in the context of the possible uses described in this manual.



All other uses are considered to be non-conforming and must therefore be forbidden. SYCLOPE Electronique S.A.S. will not be responsible in any case for any damage that result from such uses.

2) User obligations

The user undertakes not to allow its employees to work with the **SYCLOPE DOUBLEAU®** controller described in this manual unless they:

- Are aware of the fundamental instructions relating to work safety and prevention of accidents.
- Are trained in the use of the device and its environment.
- Have read and understood these instructions, warnings and manipulation rules.

3) Risk prevention



The installation and connection of the **SYCLOPE DOUBLEAU®** controller should be only performed by a specialized personnel and qualified for this task.

The installation must comply with the current safety standards and instructions!



Before opening the controller or manipulate the relay outputs, always remember to switch-off the primary power supply!

Never open the controller when it is powered on!

Maintenance operations and repairs should be only performed by trained and specialized personnel!



Take care when choosing the location for installing the controller!

The controller should not be installed in a hazardous environment and should be protected against splashing with water or chemical products. It should be installed in a dry, well-ventilated and isolated location.

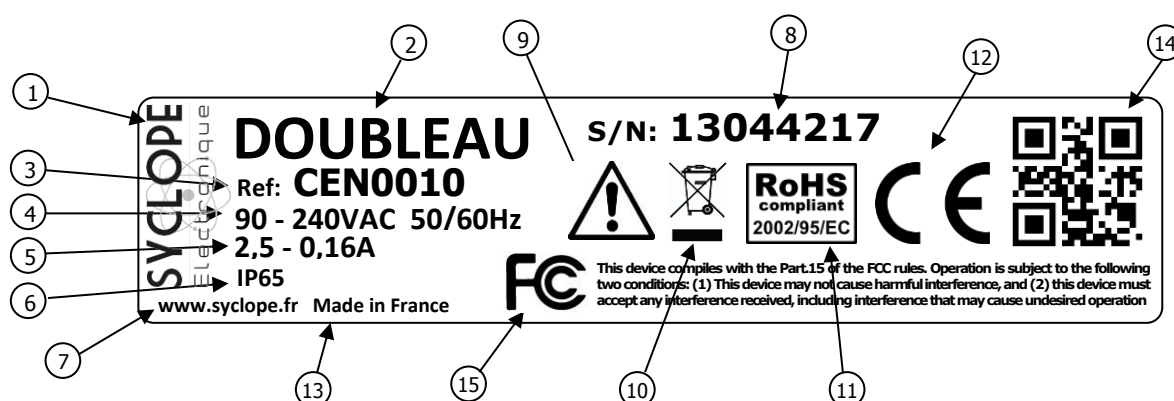


Make sure that the chemical sensors used with this controller correspond well to the chemicals used. Refer to the individual technical note of each sensor. Chemistry of water is very complex, in case of doubt, contact immediately our engineering service or your approved installer/reseller.



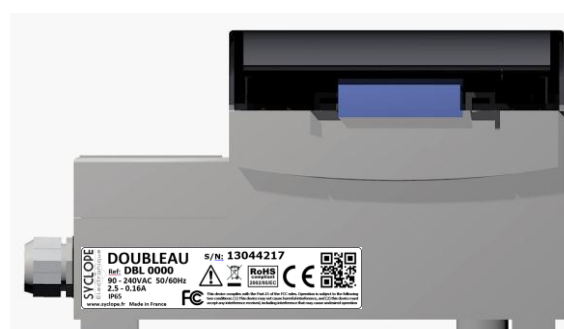
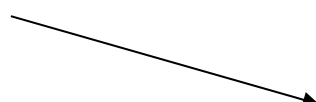
Chemical sensors are sensitive elements using consumable parts. They must be supervised, maintained and calibrated regularly using specific calibrator systems not-provided with this equipment. In the event of defect, a surplus possible hazard of chemical injections can be noted. In the doubt, a service contract must be taken near your reseller/installer or failing this near our engineering services. Contact your approved installer/reseller or our business service for more information.

4) Labelling and localization of the identification plate



① Label of the manufacturer	⑨ Particular risks. Read the manual
② Model of the product	⑩ Product which can be recycled
③ Reference of the product	⑪ Limitation of dangerous substances
④ Range of power supply	⑫ EC compliance
⑤ Values of the maximum current	⑬ Country of the manufacturer
⑥ Class of protection	⑭ Manufacturer square code
⑦ Identification of the manufacturer	⑮ Conformity with the FCC part 15 Class B
⑧ Serial number	

Identification plate



5) Disposal and conformity

The recyclable packaging of the **SYCLOPE DOUBLEAU®** equipment must be disposed of according to current regulations.



Elements such as paper, cardboard, plastic or any other recyclable elements must be taken to a suitable sorting center.



According to European directive 2002/96/EC, this symbol means that as of 12 August 2005 electrical appliances cannot be thrown out together with household or industrial waste. According to current regulations, consumers within the European Union are required, as of this date, to return their used devices to the manufacturer, who will take care of disposing them at no extra expense.



Collecting and recycling of the internal batteries: According to the European directive 2006/66/CE, this symbol indicates that until September, 26th 2006, used batteries, accumulators and waste materials using dangerous heavy metals as lead (pb), cadmium(Cd) or mercury (Hg) must be collected separately by the manufacturer or by an accredited agency.



According to European directive 2002/95/EC, this symbol means that the **SYCLOPE DOUBLEAU®** controller is designed in compliance with the restrictions on hazardous substances.



According to low-voltage directive (2006/95/EC) and the electromagnetic compatibility directive (2004/108/EC), this symbol means that the device has been designed in compliance with the previously cited directives.



In accordance with part 15 of the FCC regulation (Federal communications commission), this symbol indicates that the device was tested and approved under the respect and the conditions of the limits for a Class B digital device.

III. Technical specification and functions

1) Technical specifications

General characteristics		
Type	Specification(s)	Markers(s)
Consumption	2,5Amp. Max	-
Power supply requirements	Between 90V to 240V +/-10%	-
Overvoltage Category	Category II	-
Temporary overvoltage	Accept temporary over voltages from power line.	-
Electric protection	Polyswitch fuse Glass 5x20 time-lag 2A fuse (relay power lines)	F5 F2
Internal battery	Ni/MH battery 2V 15mA/h	-
Operating temperature (°C)	-5°C to 45°C	-
Storage temperature (°C)	-10°C to 60°C	-
Humidity	Max. 90% without condensation	-
Case material	ABS or Polycarbonate (UL/CSA Version)	-
Case dimensions	Length : 235 mm (9.25 Inches) Width : 185 mm (7.28 Inches) Height : 119 mm (4.67 Inches)	-
Weight of the case	1 kg	-
Protection rating	IP 65	-
Display	LCD 128x128 with blue backlight	-
Inputs		
Measurement inputs	1x potentiometric (pH/RedOx) +/-2500mV 1x RTD (pt100) -10...110°C 2x powered analogue 4...20 mA inputs (12/24V)	Pot/Ref Pt100 Iin1 and Iin2
Control or flow inputs	2x programmable impulse inputs in « control On/off » or flow meter function.	K1 and K2
Outputs		
Relay outputs	4x electronic relay, dry contact Max. 50mA. / 48 VAC 2x single pole double throw, dry contact 4A / 240VAC 2x powered relay, line supply contact 1A / 240VAC	R1 to R4 P1 and P2 P3 and P4
Analogue outputs	2x Analogue outputs 0/4...20 mA Max 500 Ω	Iout1 and Iout2
DC power outputs	1x 12/24V power supply for electronic measurement cells. 1x 12VDC power supply outputs for Max 0.1A	Vref – COM PWR
Communications		
RS485 Bus	1x RS485 communication port	RS485
USB	1x USB slot to connect USB stick mass storage	USB

2) Main functions

Main functions		
Function	Specification(s)	Comment(s)
Control/Measure channels	Parameter measurement value based on sensor(s)	2 computing channel
Regulation mode	Hysteresis, Thresholds, P(I)(D)	Power outputs for treatment in % Relay cycle time for injection 240s.
Actuator type	Powered relay outputs. Dry contact relay outputs. Analogue outputs 0/4...20mA	Drive ON/OFF, PWM, PFM. Control from 0 to 100% of programmed scale.
Direction	Up and/or down function(s)	
Alarms	Low and high measurement value, sensors fault, overdose timeout	Expressed in real measurement values Control of high and low thresholds.
Closed-loop control	Remote control Flow control Level control	Closed-loop control of injections with an external contact (filtering, for example) or with control of water circulation.
Timers	Programming of operating time intervals Individual programmable relay timers.	Option of 7 different weekly time intervals.
Chemical computations	Chemical computation between selected entries.	2 computing
Maintenance	Maintenance helper	Control of dosing actuators
Recording	Data recorder	

3) Type and range of measurements**Direct measure through a sensor**

	0,01...0,5mg/L	0,1...1mg/L	0,02...2mg/L	0,1...5mg/L	0,2...10mg/L	0,4...15mg/L	0,2...20mg/L	0,5...50mg/L	1...100mg/L	2...200mg/L	20...2000mg/L	Client*
Free chlorine	•		•	•	•	•	•	•	•			•
Active chlorine			•		•							•
Total chlorine	•		•	•	•							•
Chlorite	•		•									•
Chlorine dioxide	•		•		•							•
Peroxide								•		•	•	•
BCDMH bromine			•		•	•						•
DBDMH bromine		•		•	•							•
Free bromine		•		•	•							•
Peracetic acid										•	•	•
Ozone			•									•
Dissolved oxygen					•		•					•
PHMB									•			•

(*) : Client sensor scale can be set between 0 to 20000 (ppb, ppm, µg/L, mg/L, g/L or %)

	0,2...100NTU	Client*
Turbidity	•	•

(*) : Client sensor scale can be set between 0 to 20000 (NTU or FNU)

	0...5mS/cm	0...10mS/cm	0...20mS/cm	0...50mS/cm	0...100mS/cm	0...200mS/cm	Client*
Conductivity	•	•	•	•	•	•	•

(*) : Client sensor scale can be set between 0 to 20000 (µS/cm, mS/cm)

	-5...+45°C	Conv. PT100	Client*
Temperature	•	•	•

(*) : Client sensor scale can be custom between -2000 to 2000 (Kelvin, °C, °F or °Ra)

	0...20l/min	0...50l/min	0...200l/min	0...10m3/H	Client*
Flow (4...20mA)	•	•	•		•
Flow (pulse)	•		•	•	•

(*) : Client sensor scale can be set between -2000 to 2000 (L/min, L/H or m3/H) using 4...20mA or pulse inputs

	Client*
Volume (4...20mA)	•

(*) : Client sensor scale can be set between 0 to 20000 (L, m3) using 4...20mA input

	pH 1...12	pH 0...14	Conv. PH_V1	Conv. ISOCAP	Conv. UNISO	Client*
pH (POT input)	•	•				•
pH (4...20mA)			•	•	•	•

(*) : Client sensor scale can be set between -1 to 15 (pH) using potentiometric or 4...20mA input through converter

	+/- 1000mV	Conv. RH_V1	Conv. ISOCAP	Conv. UNISO	Client*
RedOx (POT input)	•				•
RedOx (4...20mA)		•	•	•	•

(*) : Client sensor scale can be set between -2500 to 2500mV using potentiometric ou 4...20mA input through converter

Computed measurement based more than one sensor

Measure kind \ Sensor	Sensor							
	pH	Temperature	Conductivity	Free chlorine	Active chlorine	Total chlorine	Free bromine	Active bromine
pH	•	•						
Conductivity		•	•					
Salinity		•	•					
TDS		•	•					
Free chlorine	•	•			•			
Active chlorine	•	•		•				
Chloramine	•	•		•	•	•		
Free bromine	•	•						•
Active bromine	•	•					•	

DOUBLEAU device can analyze and control tow parameters.

These parameters can result from:

- Direct sensor measurement value
- A computed value based on many sensors connected to the inputs

IV. Installation and electrical connections

1) Installation conditions



To guarantee the user safety and to ensure correct operation of the controller, please observe the following installation instructions:

- Install the controller in a dry location,
- The controller must be protected against rain, frost and direct sunlight,
- The room temperature must range between 0°C and 50°C, with no condensation,
- Choose an installation location free from vibration, on a suitable support and with no deformation.



If these instructions are not observed:

- The controller risks to be damaged,
- The measurements can be disrupted,
- The warranty is not applicable!

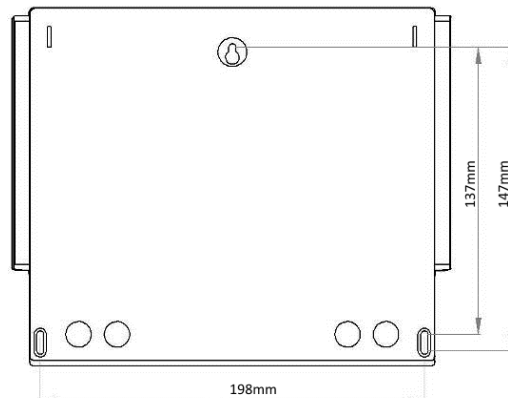
2) Installation of the wall-mounted devices



Before performing the installation and electrical connections, switch-off the power supply!

The rating of IP65 is only guaranteed when the cache of the electric part and the closure of the front face are closed and when the cable glands match to the diameters of the cables and are correctly sealed.

- ▶ Drill three Ø 5-mm holes according to the following drilling plan



- ▶ Insert the 5-mm plugs using a hammer
- ▶ Insert the upper screw (top screw) first without completely tightening it
- ▶ Insert the lower screws and tighten them
- ▶ Tighten the upper screw
- ▶ Use a spirit level to check for correct and accurate fixing to the wall.

3) Electrical connections



The electrical installation must be performed in accordance with current rules by an authorized personnel!

A 30 mA residual current breaker must be use!

A circuit-breaker of maximum 10 Amp must be installed near the controller and easily accessible to stop the main power. It must be identified as a circuit-breaker for the controller!

Before performing the connections, remember to turn off the power!



Use core cables if possible!

If not possible, always use a special wiring tip to be sure that the wires do not make a contact together!

Protect the wirings by using electrical clamps.



a) Actuators protection

The actuators connected through P3 and P4 relays are protected against overcurrent consumption by a 5x20 2A time-lag glass fuse.

Reference	Name
FUS5X20T2A	5x20 2A time-lag glass fuse



In the event of the fuse blown, check that the card is not burnt out. If this is the case, the complete card must be changed!

In the event of destruction of the varistor, please return the controller to our technical department for assessment!

b) Internal protection

The **SYCLOPE DOUBLEAU**[®] is internal protected against overvoltage and surge current using resettable fuse and varistor.



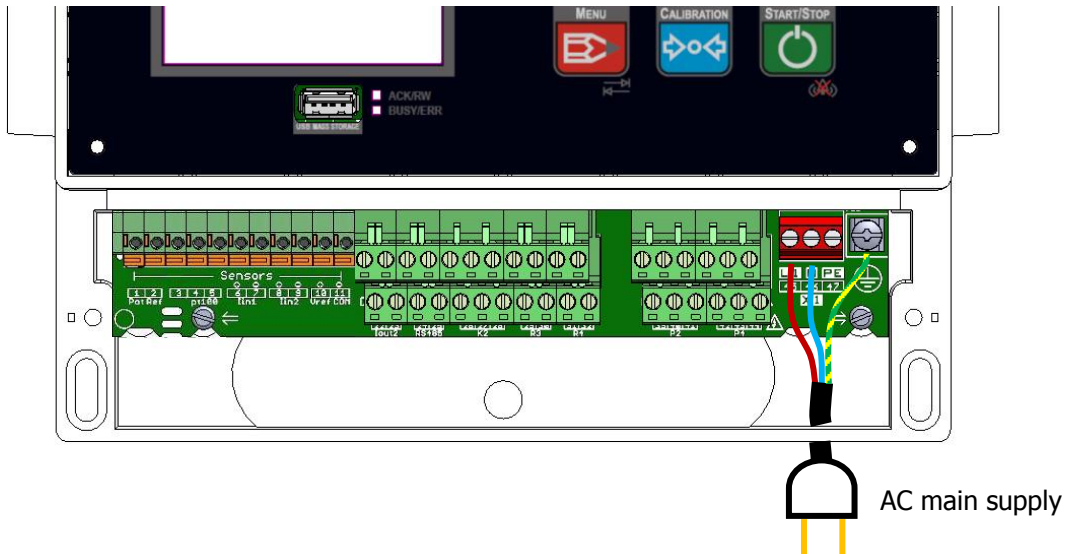
In the event of destruction of the varistor and/or fuse, please return the controller to our technical department for assessment!

4) Primary electrical connections (X1)



The **SYCLOPE DOUBLEAU®** controller uses an internal switching power module. This particularity can be used with a power line of 90 to 250V 5/60Hz without any disturbance.

- ▶ Use a 3-points 1.5 mm² cable to wire the power supply. Ground cable must be connected firstly
- ▶ Strip the 3 wires for 7 mm.
- ▶ Pass the 3-point cable through a cable gland.
- ▶ Wire the earth to screw contact with the help of an M4 eyelet terminal.
- ▶ Wire the line to L1 and the neutral to N of the sector terminal block **X1**.
- ▶ Tighten the cable gland to ensure tightness.

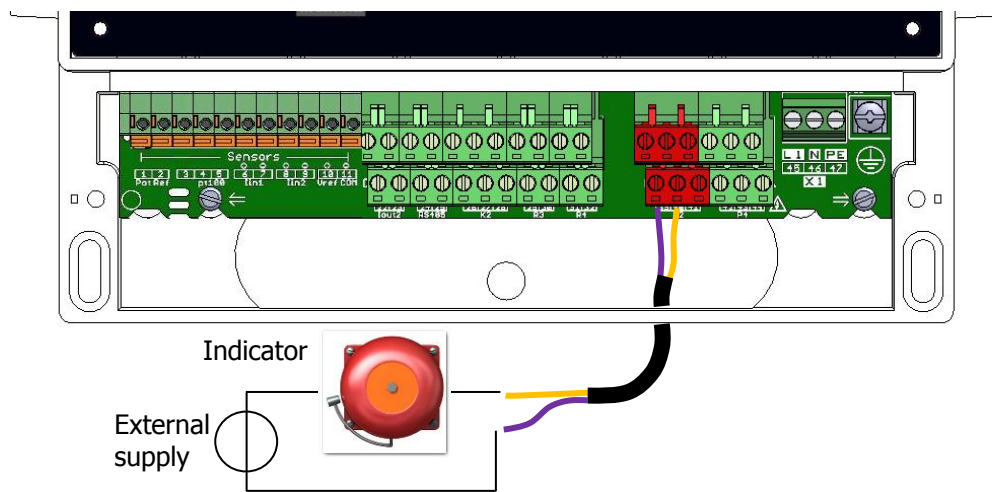


The controller does not have its own independent power switch. It is directly powered when connected to the mains.

5) Connecting power relays free of potential (P1, P2)

The power relay outputs, free of potential, are used to control the various measured or computed parameters. These relays are fully programmable (On/off function, width modulation, pulse modulation or timer slot) with all parameters using by the controller.

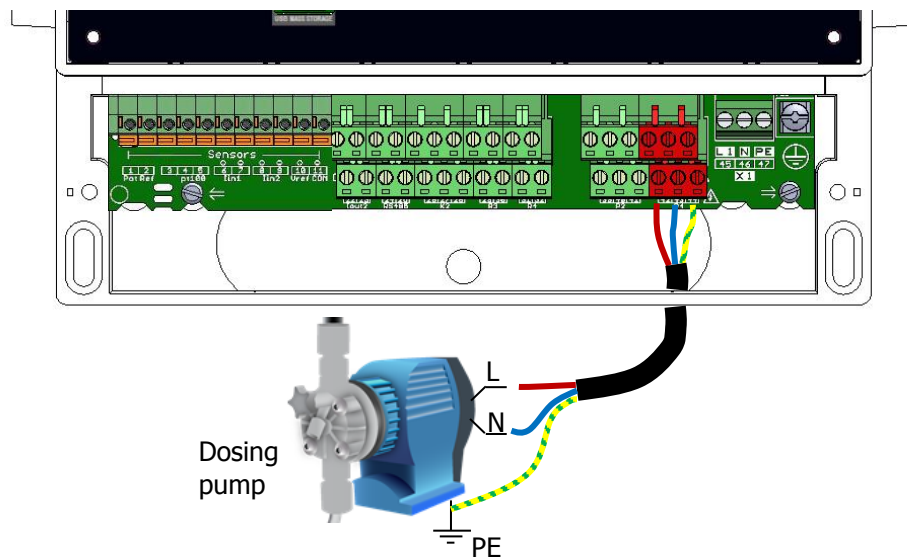
- ▶ Use a 2-points cable.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire one wire to the **COMMON** point of terminal.
- ▶ Wire the other one on the **WORK** or **REST** point according your application.
- ▶ Tighten the cable gland to ensure tightness.



6) Connecting the power relays line powered (P3, P4)

The power relay outputs, (line powered), are used to control the various measured or computed parameters. These relays are fully programmable (On/off function, width modulation or timer slot) with all parameters using by the controller.

- ▶ Use a 3-points 1.5 mm² cable to wire the pump.
- ▶ Strip the 3 wires for 7 mm.
- ▶ Pass the 3-point cable through a cable gland.
- ▶ Wire the earth to PE.
- ▶ Wire the line to **L1**.
- ▶ Wire the neutral to **N**.
- ▶ Tighten the cable gland to ensure tightness.

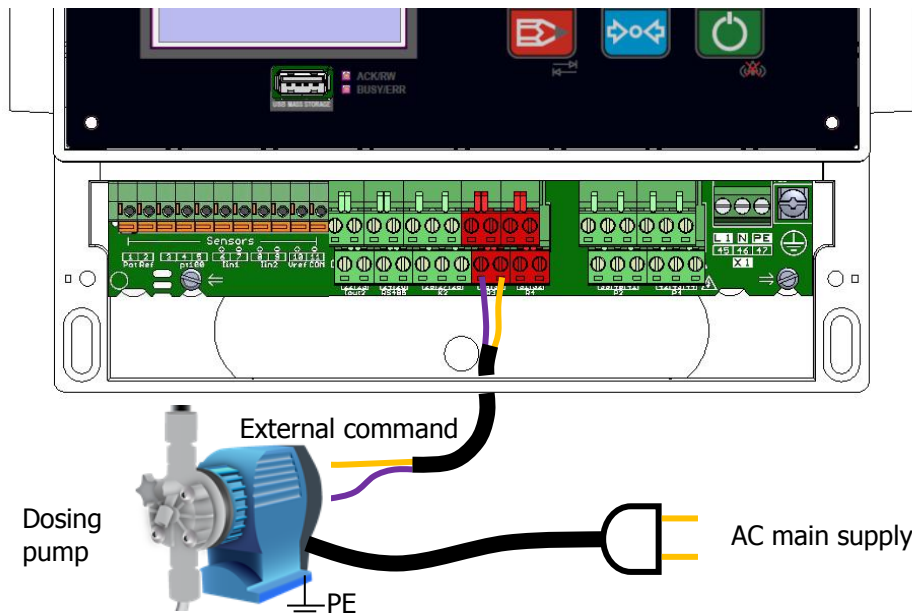


These relays are permanent neutral connected and switch the main power line L1, take care to not invert the line and neutral wires. To prevent electrical choc all connections must be done when device is switched off.

7) Connecting the electronic relays free of potential (R1, R2, R3, R4)

The electronic relay outputs, (line powered), are used to control the various measured or computed parameters. These relays are fully programmable (On/off function, width modulation, pulse modulation or timer slot) with all parameters using by the controller.

- ▶ Use a 2-points cable.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points to the terminal bloc.
- ▶ Tighten the cable gland to ensure tightness.

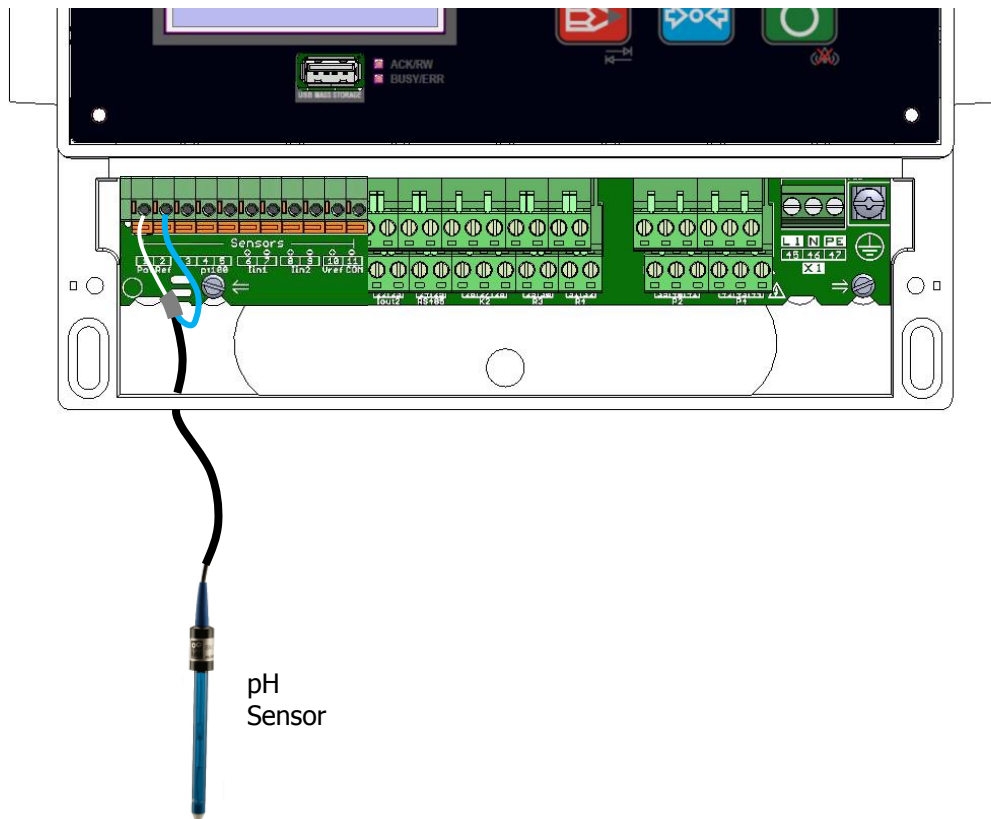


These relays use electronic components to perform switch actions, there are usefull to drive pulse frequency pumps inputs or externals relays.
These relay can switch a **maximum 48VAC** potential and **50mA** current.

8) Connecting the potentiometric measurement input (Pot, Ref)

The analogue input is used for acquiring pH or RedOx measurement sensors.

- ▶ Use the shield cable supplied with your sensor.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the center conductor to **Pot** point.
- ▶ Wire the braided shield to **Ref** point.
- ▶ Tighten the cable gland to ensure tightness.

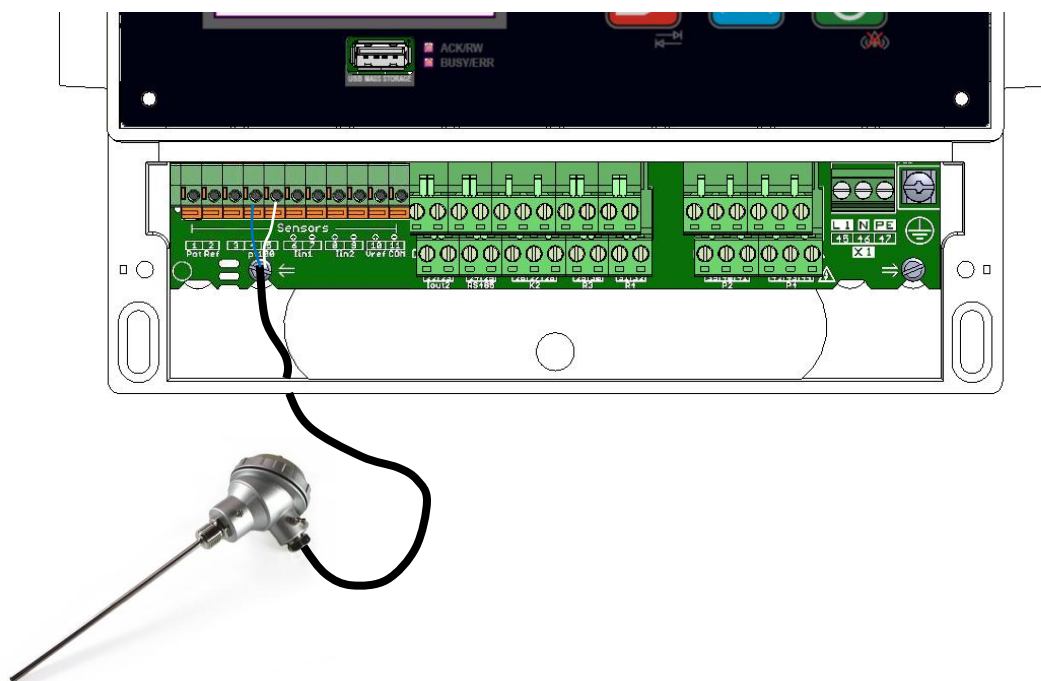


Please, respect the polarities when connecting all the wires.

9) Connecting the pt100 measurement input

The analogue input is used for acquiring platinum temperature measurement sensors. The sensor cell must be pt100 kind.

- ▶ Use a 2 points cable.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points to the terminal bloc.
- ▶ Tighten the cable gland to ensure tightness.



10) Connecting the 0/4...20mA measurement inputs (In1, In2, Vref, COM)

The analogue inputs are used for acquiring multiple measurement sensors or special measuring cells using the 4...20mA loop technology.



The measurement entries of the controller are self-powered (12 or 24VDC). This voltage can be set to supply a passive sensor or converter current loop

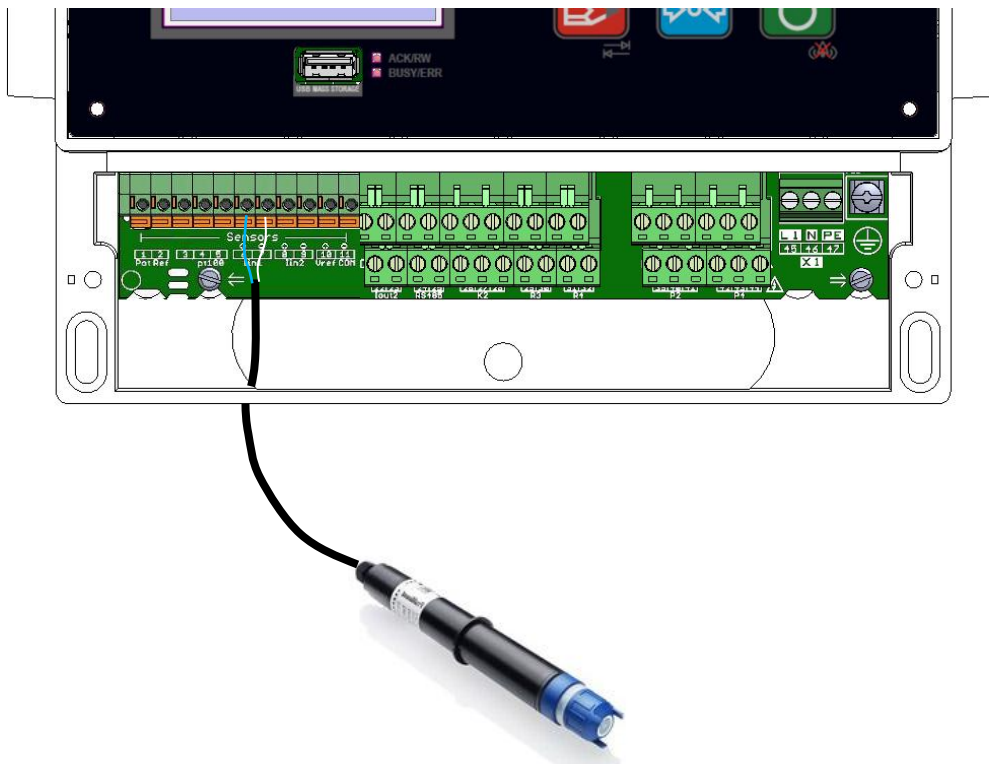


Please, respect the polarities when connecting all the wires of the external measuring cells or of the converters onto the controller inputs.

The external power supply **Vref COM** (12 or 24VDC) can be used to supply 4 wires current loop sensors.

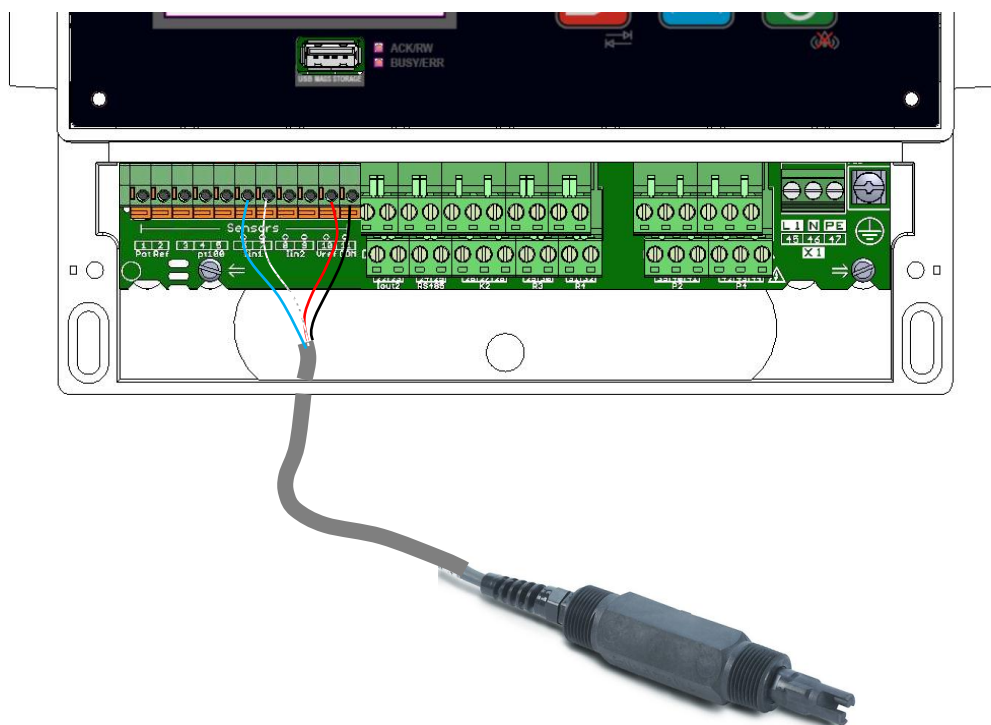
a) Passive 2 wires sensors connection

- ▶ Use a 2 points cable.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points to the terminal bloc, take care the polarity.
- ▶ Tighten the cable gland to ensure tightness.



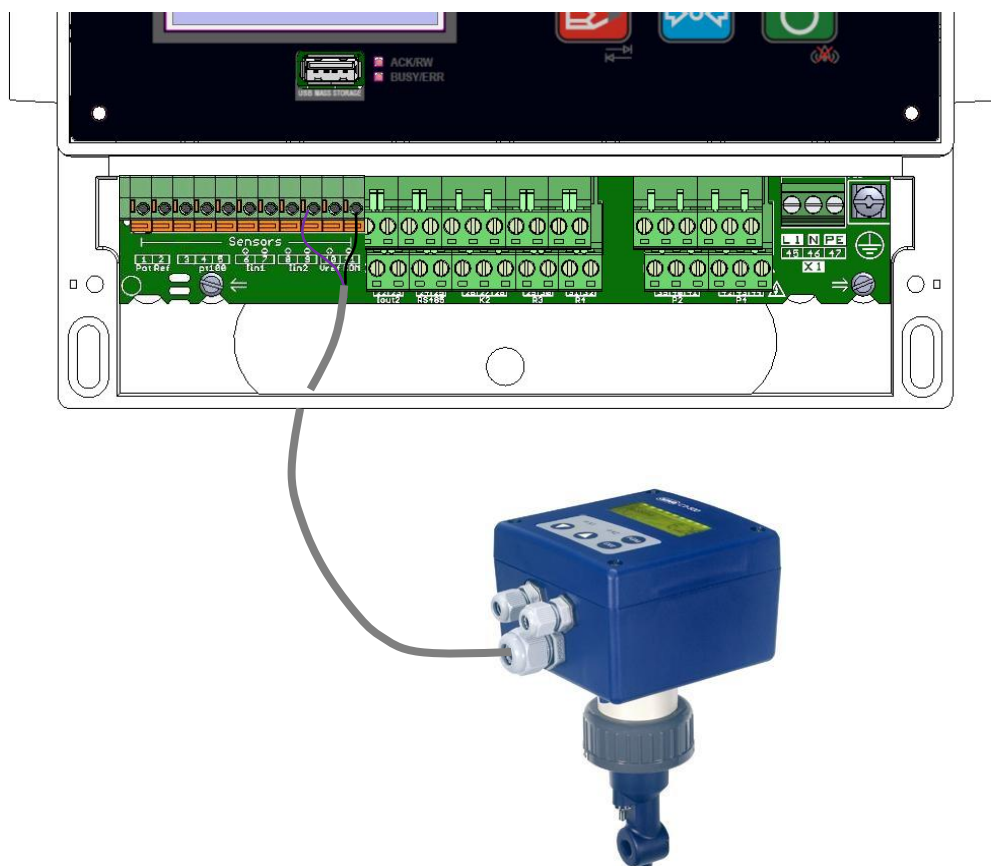
b) Passive 4 wires sensors connection

- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points of the sensor supply to **Vref** (+) and **COM** (-).
- ▶ Wire the two points of the current loop to **In1** (+) and (-).
- ▶ Tighten the cable gland to ensure tightness.



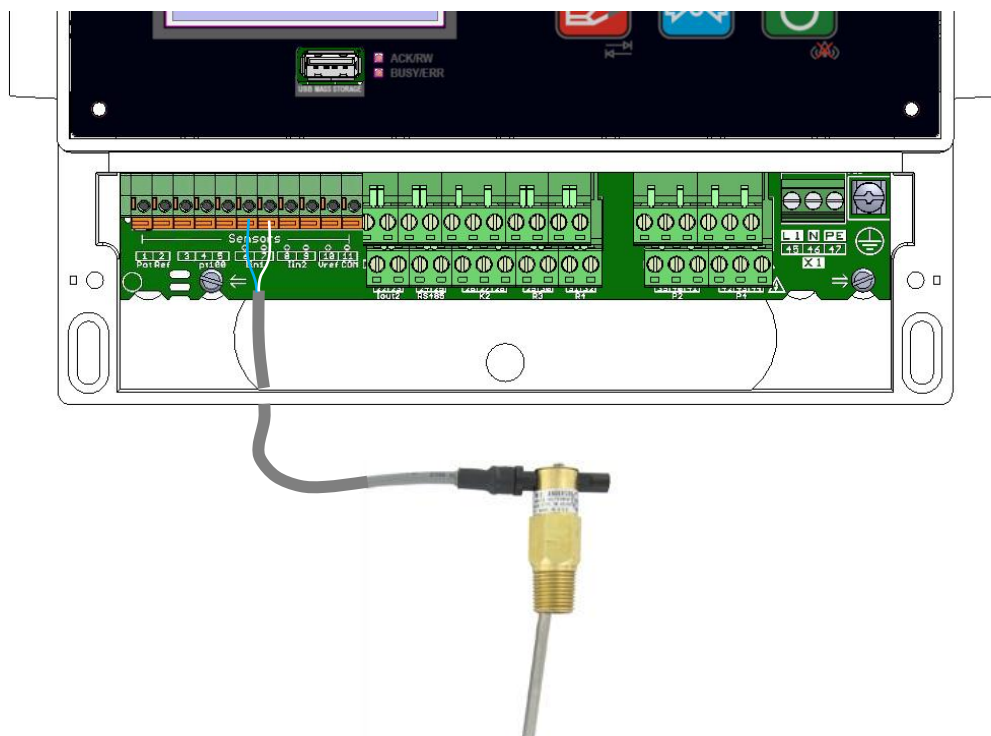
c) Active sensors connection

- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the reference to **COM** (-).
- ▶ Wire the current source to **In2** (-).
- ▶ Tighten the cable gland to ensure tightness.



d) Current loop switch connection

- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points of the switch to **In1** (+) and (-).
- ▶ Tighten the cable gland to ensure tightness.

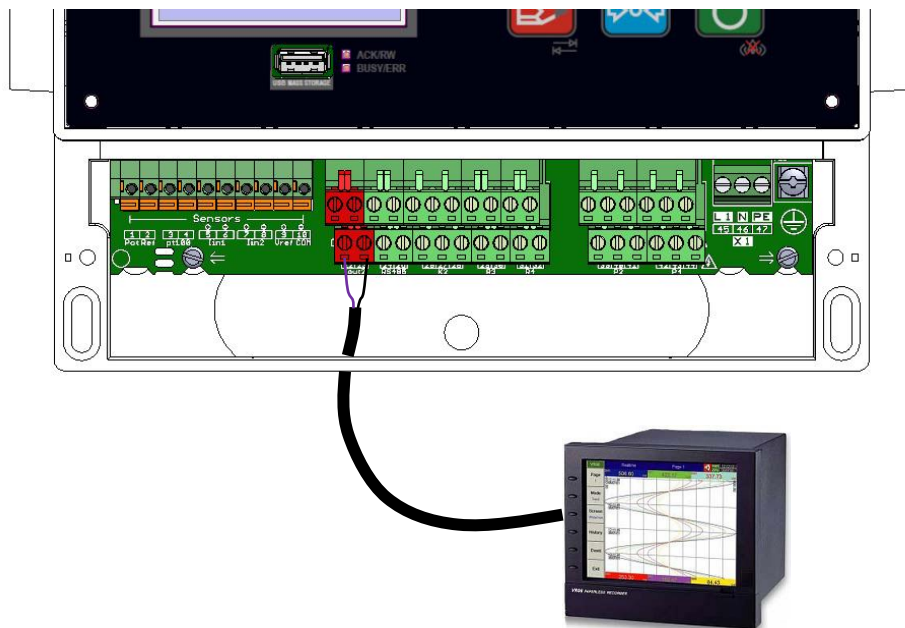


11) Connecting the analog outputs

The analogue outputs of the controller are used to forward information to a central unit or to control a dosing unit by means of a signal of 0/4 - 20mA or 20...0/4mA.

The analogue outputs of the controller are fully configurable. Therefore, you can assign an output to any measured or calculated parameter and you can use it for control or transfer operations.

- ▶ Use a 2 points cable.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points of the current loop to **Out1** or **Out2** (+) and (-).
- ▶ Tighten the cable gland to ensure tightness.



12) Connecting digital inputs (Kx)

The **SYCLOPE DOUBLEAU®** controller has two digital inputs (K1 and K2) which can be used to remote control unit or connect sensors like pulse flowmeter. These inputs are either an open/closed switch input or a pulse control input used in a subservient manner to the main circulation pump of the filtration system.



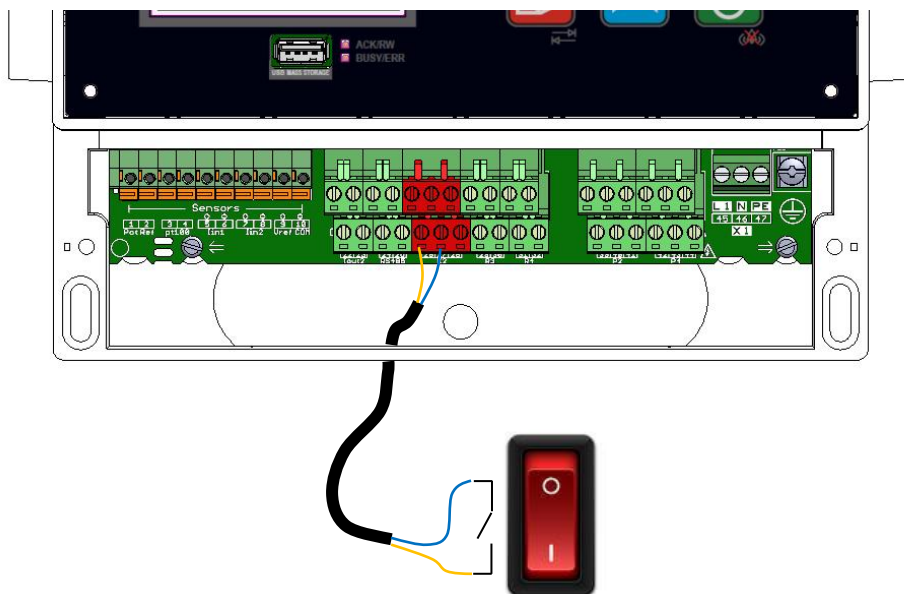
It is imperative to enslave the controller to the switch of the filtering group's motor to prevent damages caused by chemical overdoses!



K1 and K2 inputs are designed to receive a NO contact (normally open), a NC (normally closed). The switch can be free-potential, NPN or PNP.

a) Free of potential switch connection (flow switch/meter, empty tank, remote switch)

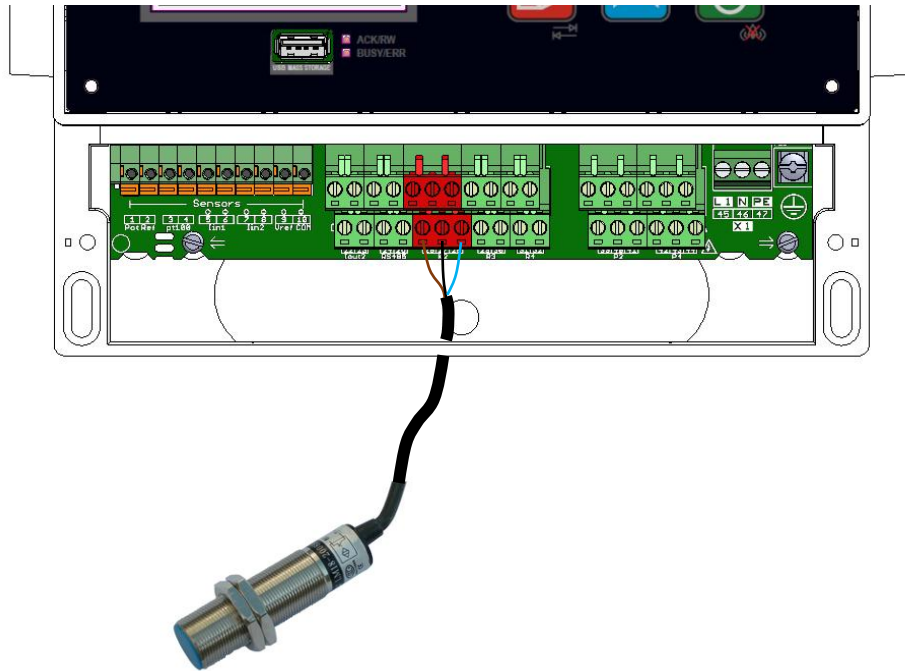
- ▶ Use a 2 points cable.
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points of switch to (SW) and (+).
- ▶ Tighten the cable gland to ensure tightness.



In case you need to detect filtering motor you must use an external relay to drive a free potential switch.

b) Bipolar switch connection (NPN, PNP)

- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire the two points supply, brown to (+) and blue to (-).
- ▶ Wire the switch point black to (SW)
- ▶ Tighten the cable gland to ensure tightness.

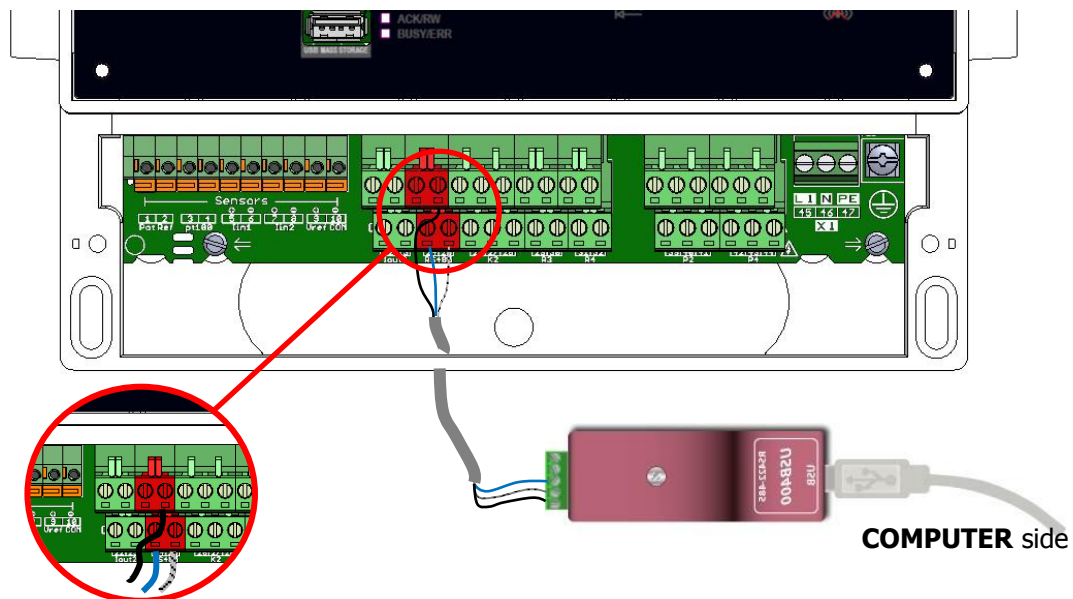


13) Connecting the RS485 communication port

The **SYCLOPE DOUBLEAU®** controller has an RS485 communication port for linking a desktop computer equipped with the data-processing software **SYSCOM®** which trace measurements, alarms, instructions and display graphics.

a) Connection to USB port of the computer

- ▶ Use a 3 points cable
- ▶ Strip the wires for 7 mm.
- ▶ Pass the cable through a cable gland.
- ▶ Wire AA' (n° 3) of the converter to **RS485** (A) terminal.
- ▶ Wire BB' (n° 4) of the converter to **RS485** (B) terminal.
- ▶ Wire C (n° 5) of the converter to **PWR** (C) terminal
- ▶ Tighten the cable gland to ensure tightness.



- Blue (Terminal block n°3) : AA' RS485
- White (Terminal block n°4) : BB' RS485
- Black (Terminal block n°5) : Ground RS485



Configuration : All switches are "**ON**"

Please, contact us for further information on these products.



Respect the connection polarities of the bus.

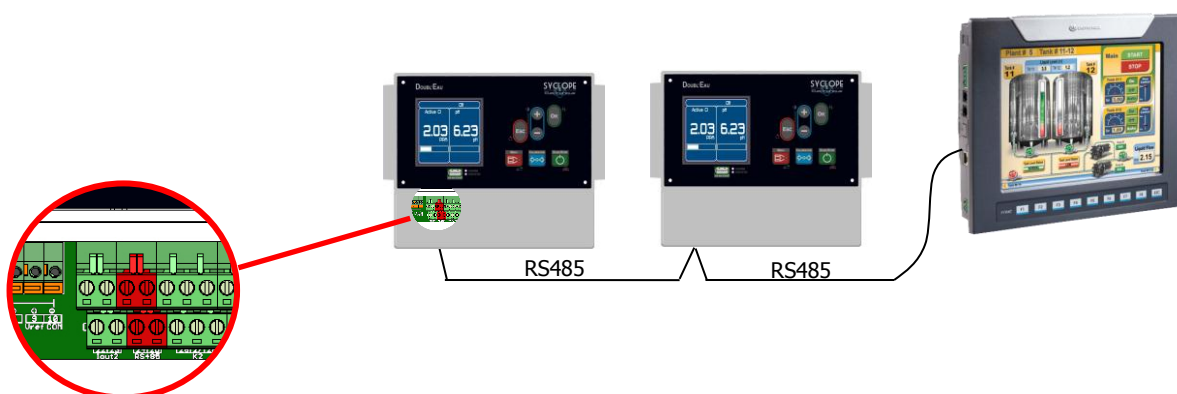
We suggest using a USB/RS485 interface module to connect the **SYCLOPE DOUBLEAU®** controller to your computer. Please consult the instructions of this converter for the connection.

Reference	Name
INF1021	USB => 485 Converter



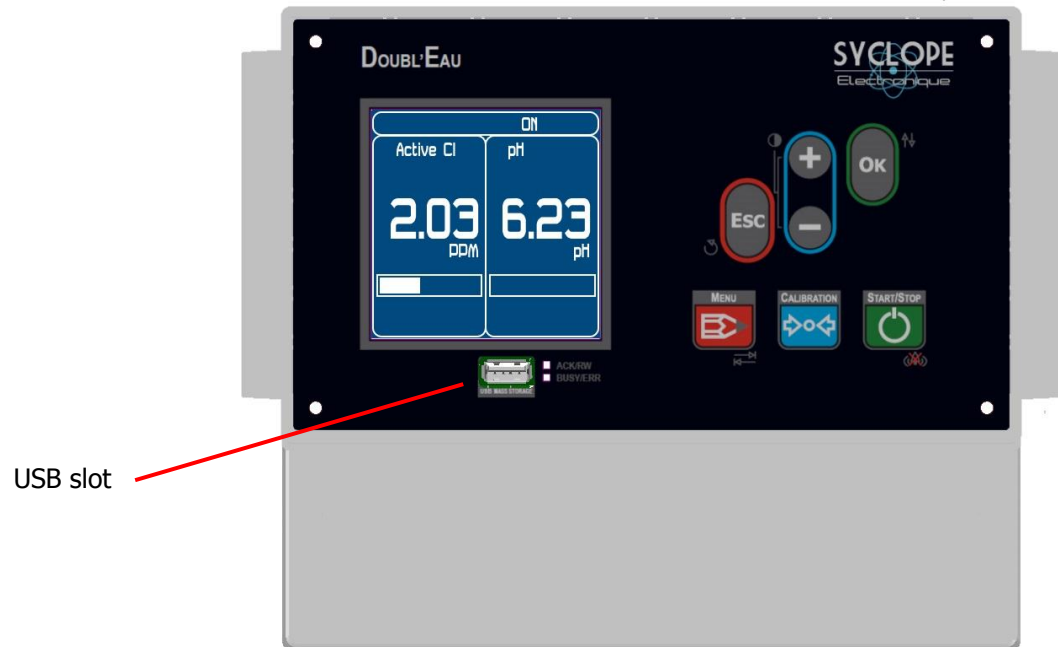
The controllers can be chained by respecting the order of the cables (putting in parallel).

b) Full connections with PLC using RS485 port



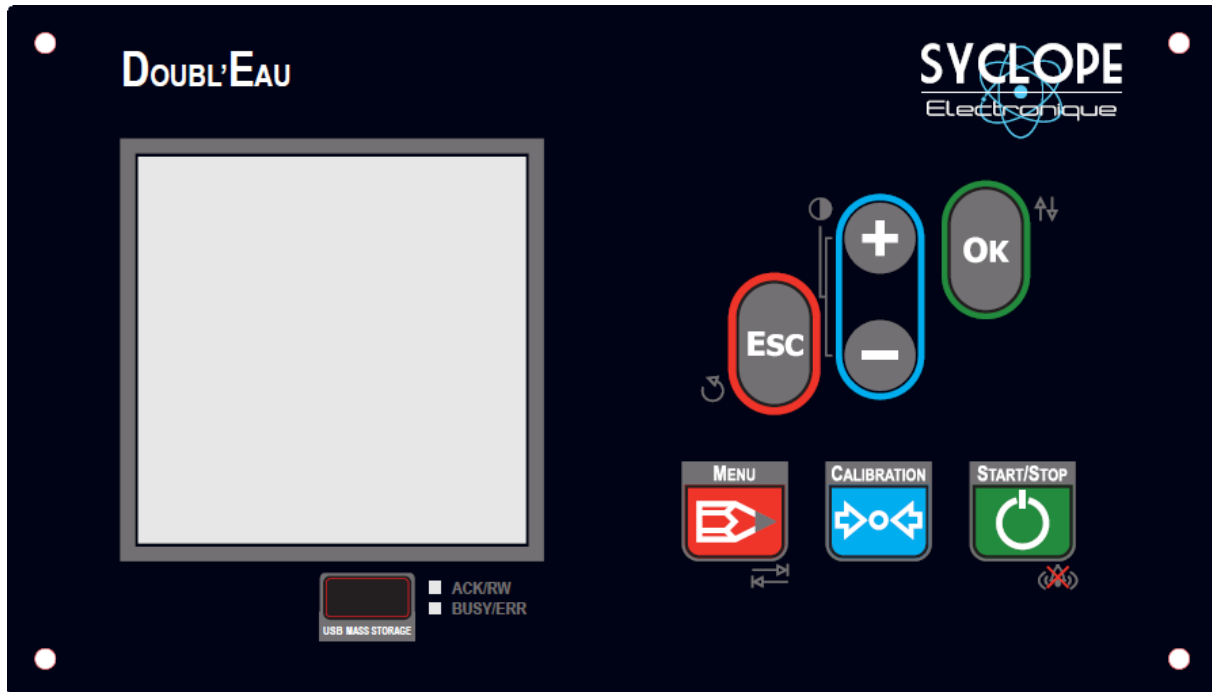
14) USB stick connection

The **SYCLOPE DOUBLEAU**® controller has a USB slot to connect a stick mass storage. This function allows you to record measurement data and doing firmware updates.



V. Introduction to the human-machine interface

1) Display and control keypad



Key **Menu** :
Access to user menu



Key **Calibration** :
Access to the parameter calibration screen



Key **START/STOP** :

- Start or stop the dosing process.
- Acknowledge pending alarms.



Key **Esc** :

- Long press on main screen to short the polarization delay of all sensors.
- Escape from menu during navigation.



Key **OK** :

- Invert order of parameters channel Ex on main screen.
- Check value and settings.
- Enter to menu during navigation

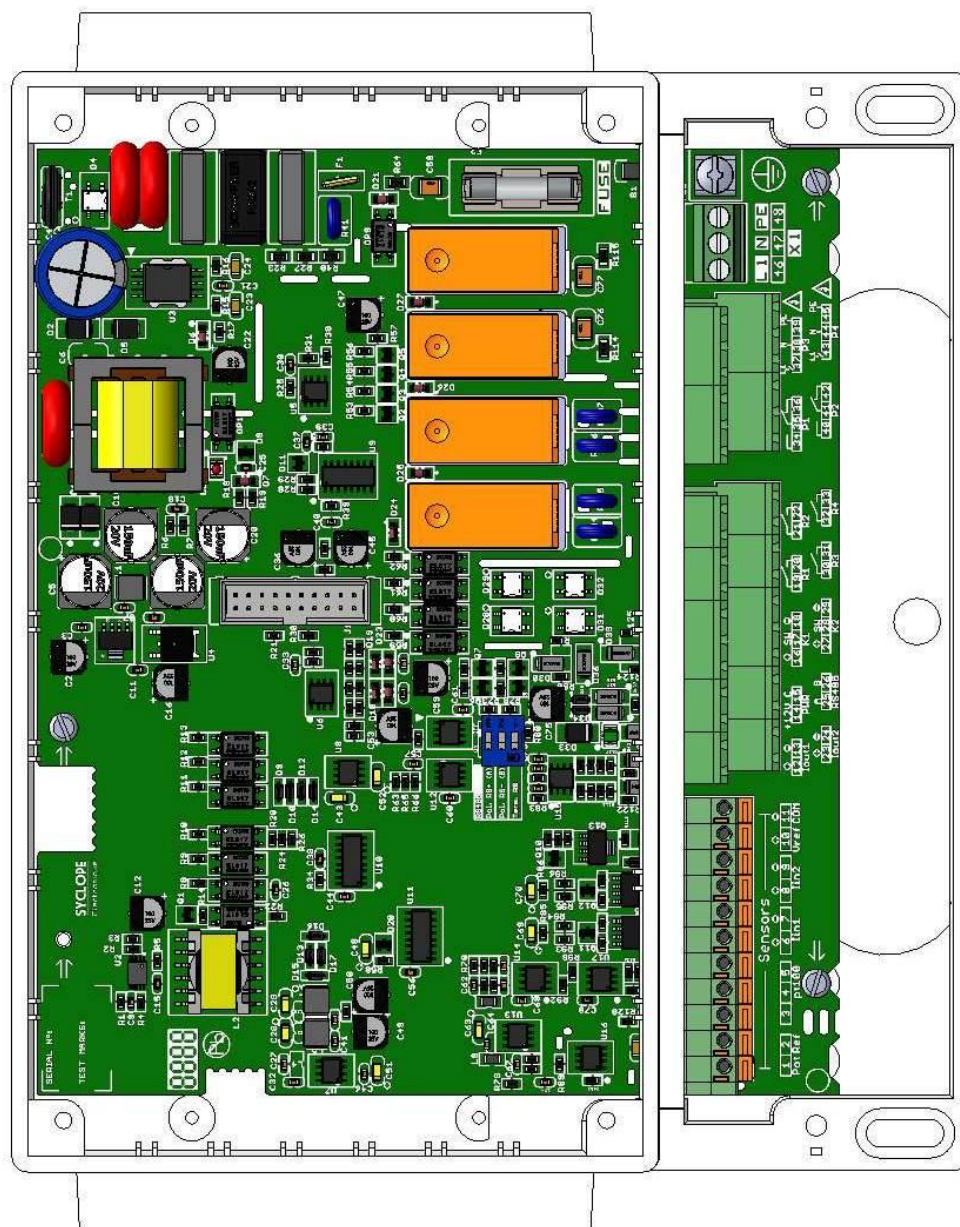


Key **+** :

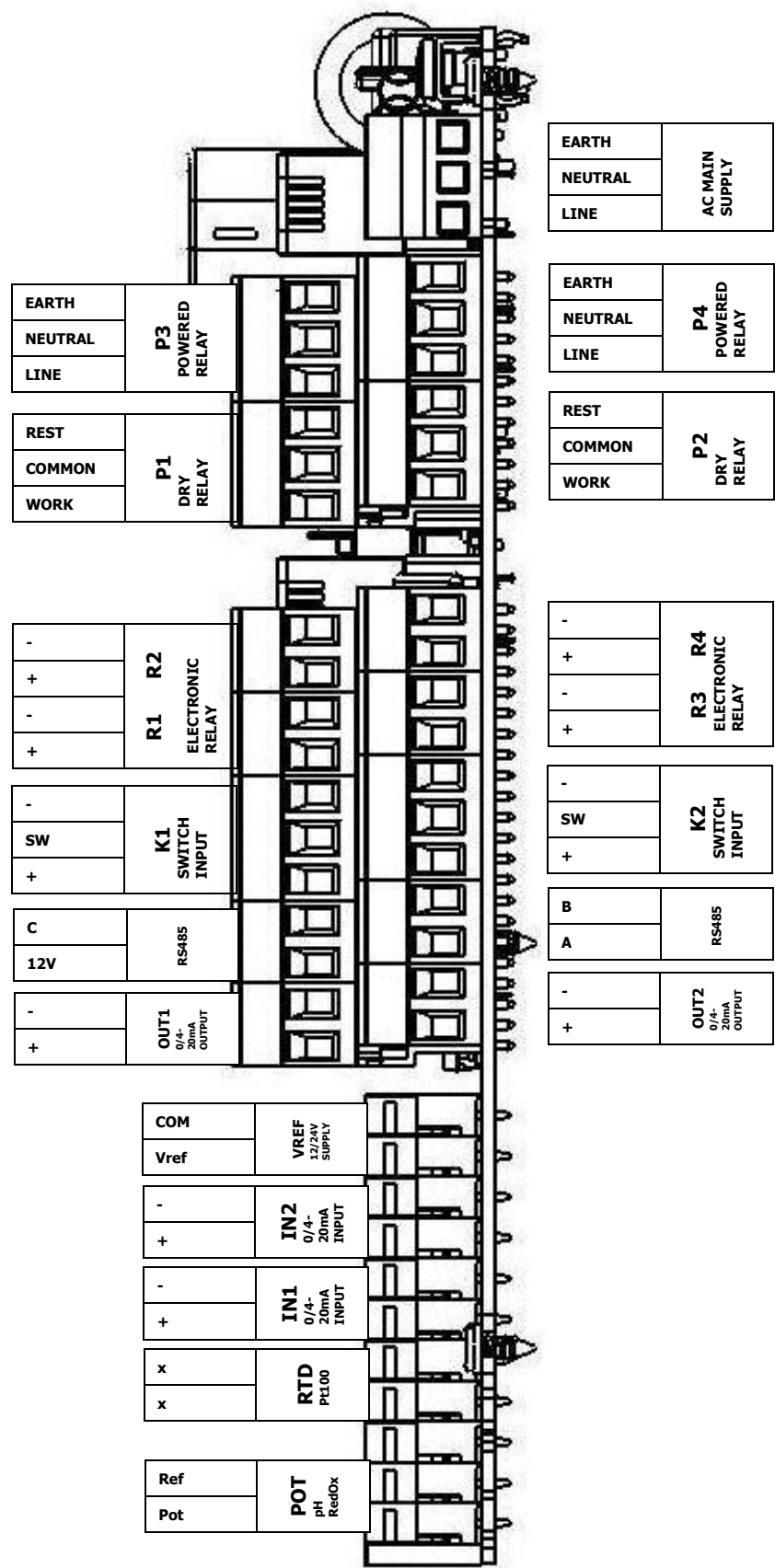
- Increase value or select upper choice.
- Up/Back to previous menu during navigation.
- Set higher screen contrast on main screen.

Key **-** :

- Decrease value or select lower choice.
- Down/Next to next menu during navigation.
- Set lower screen contrast on main screen.

2) Internal connections

3) Connection terminal boards



VI. Starting the controller

You have completed the electrical connections of the various sensors and actuators and are now ready to start the controller.



- ▶ Connecting the controller to the main power line
- ▶ Checking that all systems are correct, that your central unit has switched on and that the other elements of your installation are not disrupted.

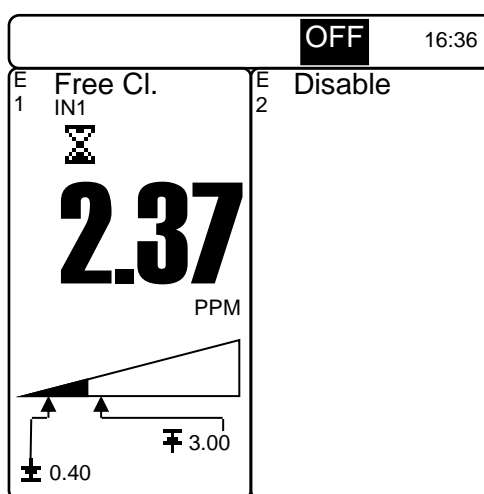


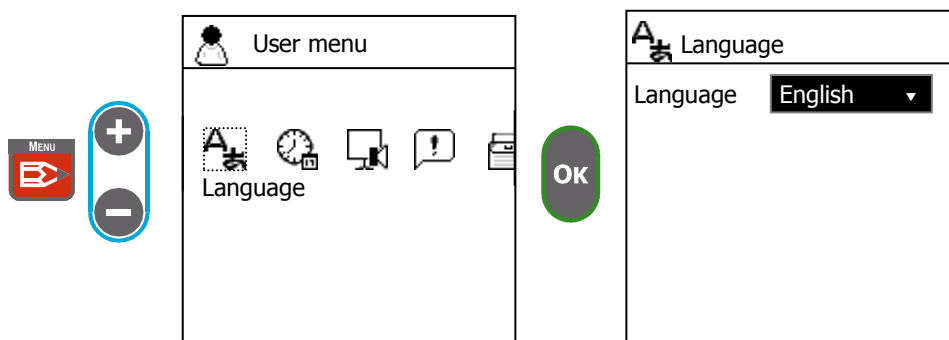
The controller does not start automatically the controls of chemical products when powered. Only the user can control when to begin treatment having checked that the central unit has been correctly programmed according to his/her needs.

When the first power-on, the measured parameters predefined by the basic configuration are displayed and all processes are inactive.

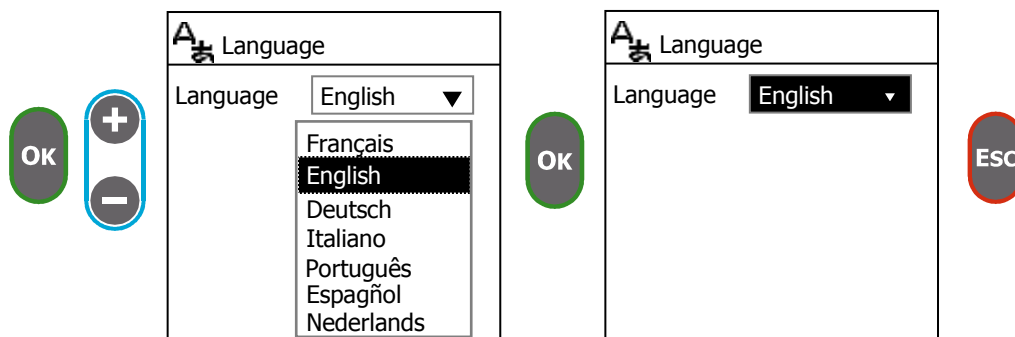
- Measure: free chlorine
- Scale: 0-10ppm
- Vref and 4...20mA sensor supply: 12V

When you power-on the controller, a **"SYCLOPE LOGO"** screen appears, followed by the main screen displaying the measured parameters.



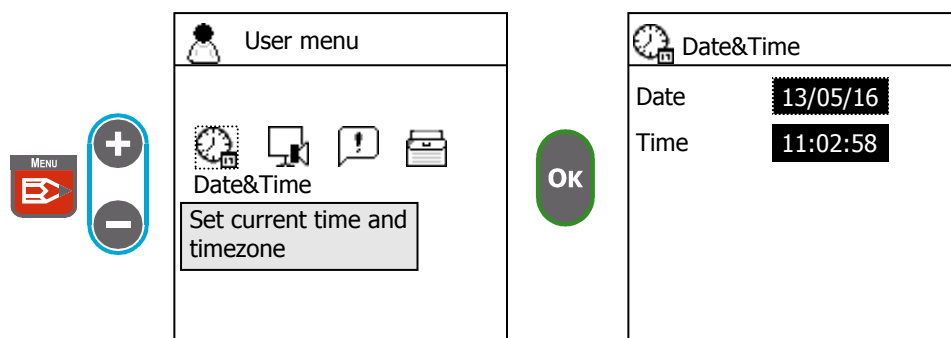
1) Select your language► Go to the “**Language**” screen

► Choose your language

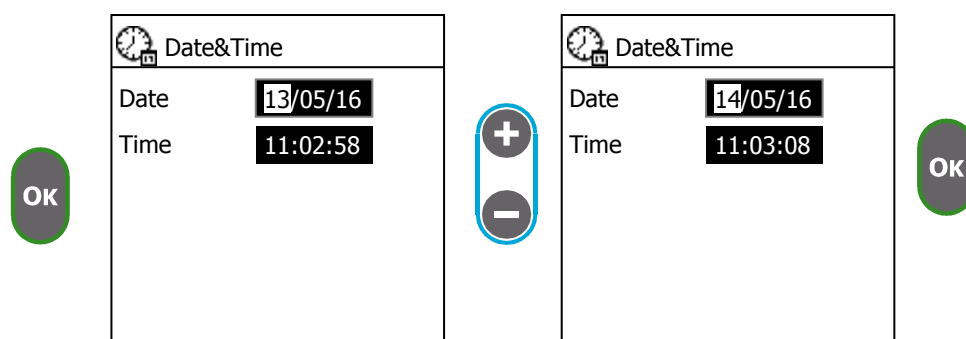


2) Set current date and time

- Go to the **"Date&Time"** screen



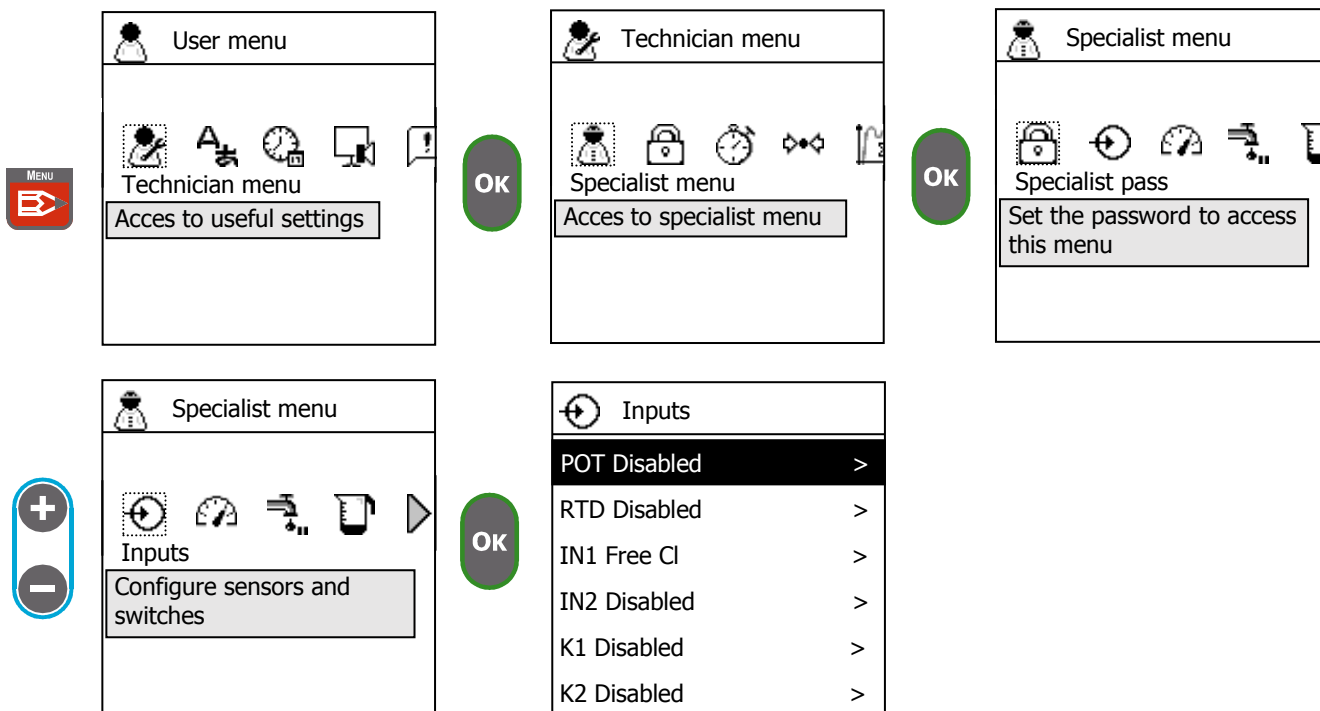
- Edit date and time field according your local timezone



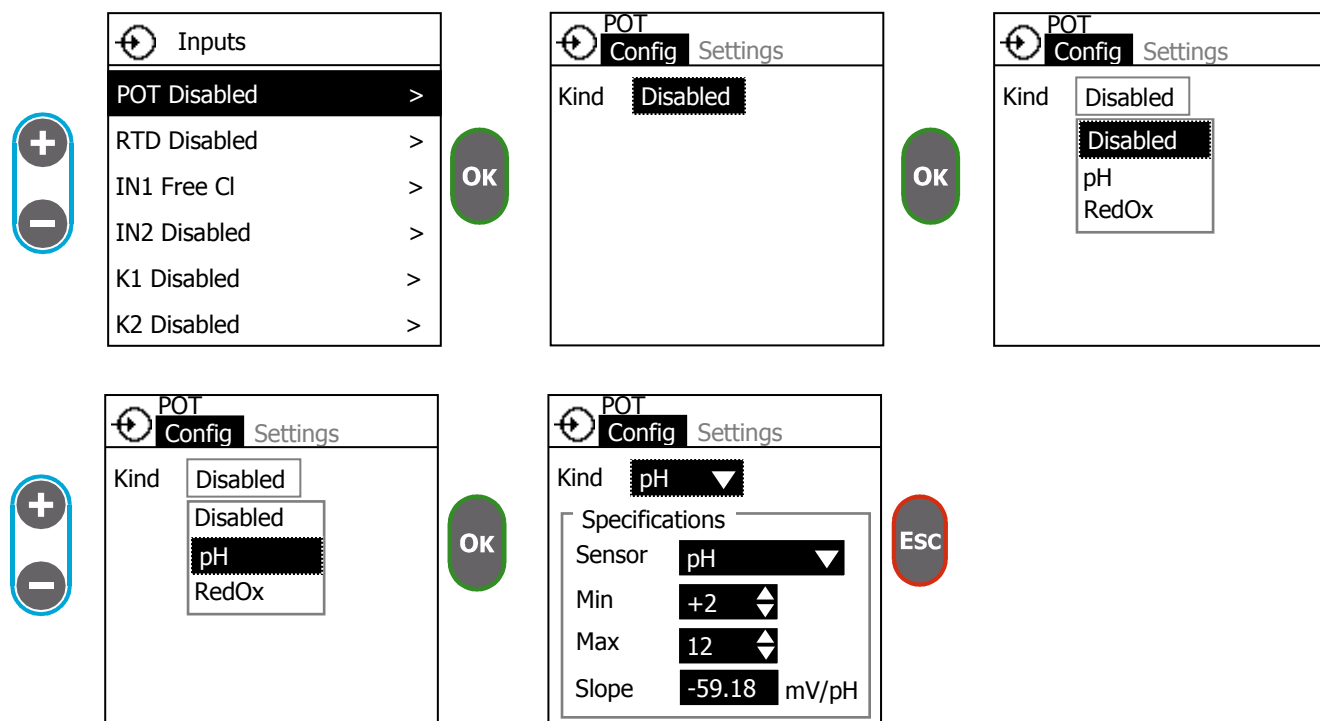
3) Configure your sensor(s)

A sensor is a physical part connected to your device.

► Go to the **"Inputs"** screen



► Select the input corresponding the sensor you want to define



- Enter all the sensor specification according its manual
- Repeat the previous actions for all your sensors and detectors

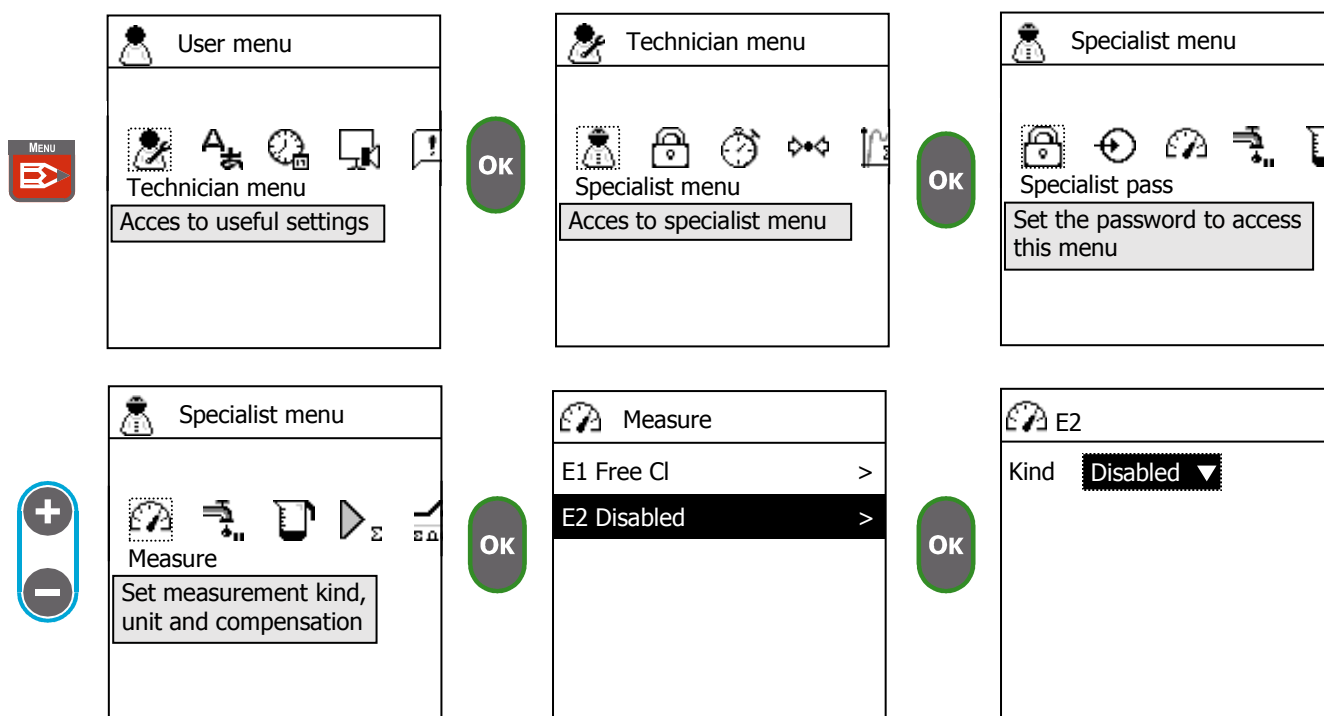
4) Configure your measurement channel(s)



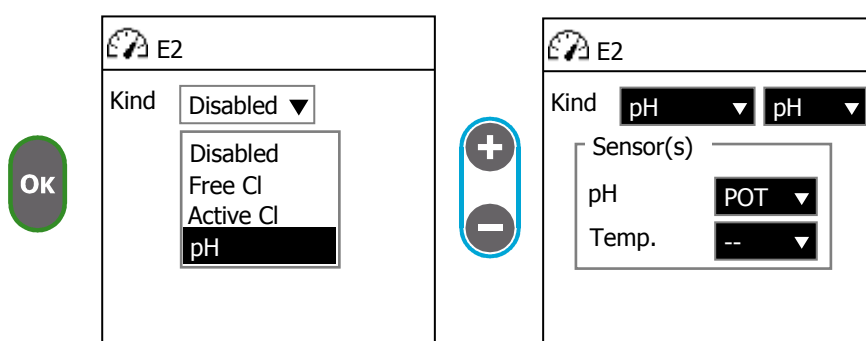
A measuring channel corresponds to a measurement value from a sensor either directly or a calculation between several sensors. This is the path of action that can be regulated and on which to set alarm and operational thresholds.

Example: If you set the POT input on a pH sensor and the IN1 input on free chlorine, you can either set the measuring channel for pH and free chlorine or chlorine from a calculation between your pH sensor and the free chlorine.

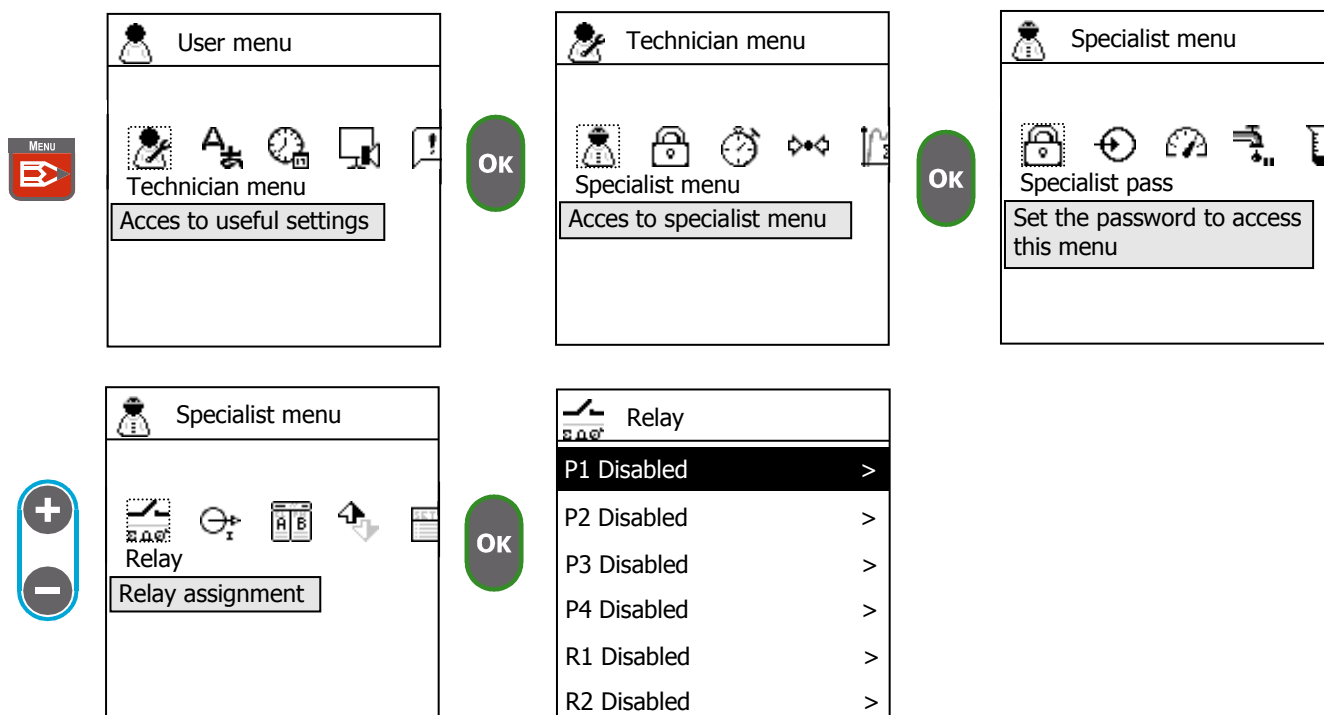
► Go to the “**Measure**” screen



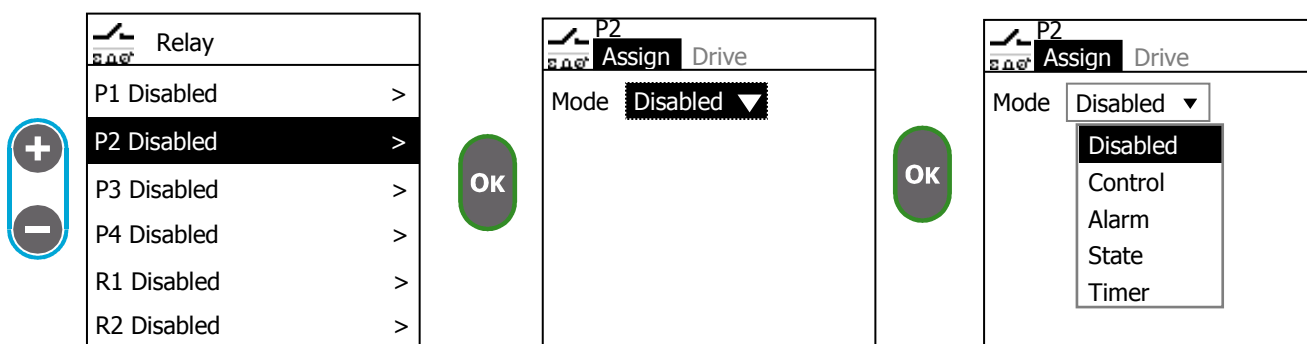
► Select your measurement kind (depends sensors you had configured)



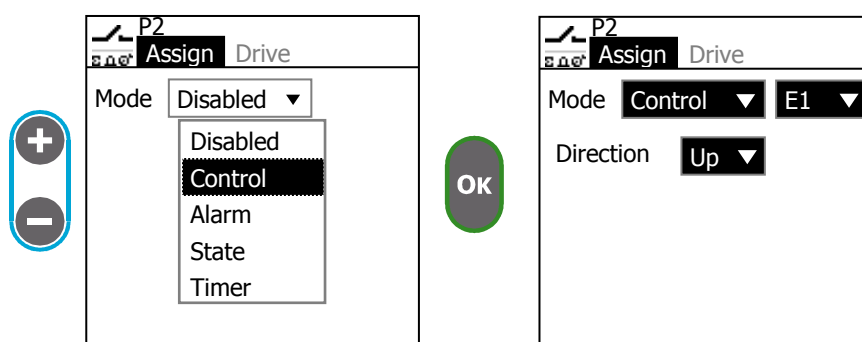
- Select which sensor(s) inputs are used to compute your measure
- Repeat the previous actions for all your measure channels

5) Configure dosing pump's relays► Go to the "**Relay**" screen

► Select the relay driving your pump



- Set mode to "Control"
- Assign the relay to a measurement channel **E(x)**
- Choose the dosing direction (eg. Down to decrease ph value, Up to increase the value)



- Configure the drive specifications of your pump
- Set the control range

P2	
Assign Drive	
Stand	NO ▼
Drive	PWM▼
Control range	
Min	0 ▴ ▾
Max	0 ▴ ▾
Period	10 ▴ ▾ s
Tmin	0 ▴ ▾ s

OK

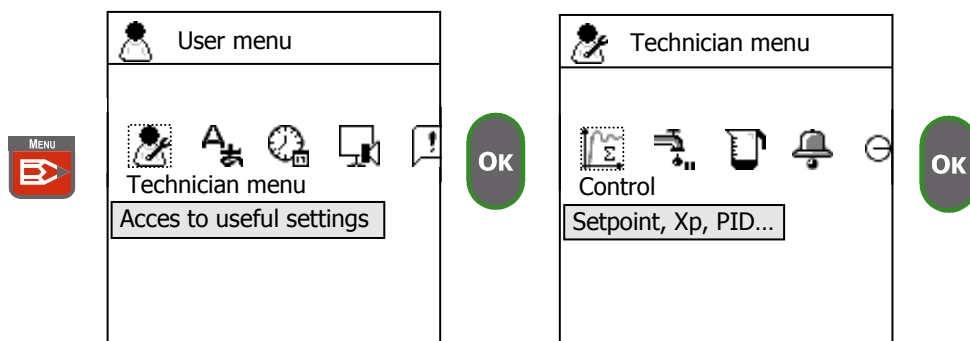
P2	
Assign Drive	
Stand	NO ▼
Drive	PWM▼
Control range	
Min	0 ▴ ▾
Max	100 ▴ ▾
Period	10 ▴ ▾ s
Tmin	0 ▴ ▾ s

OK

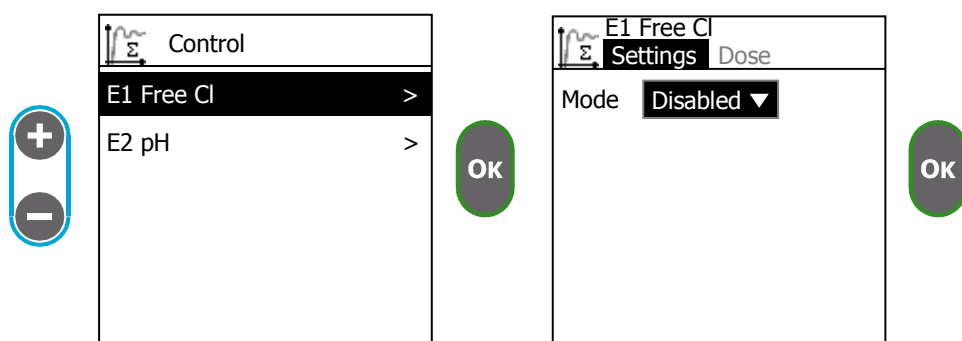
P2	
Assign Drive	
Stand	NO ▼
Drive	PWM▼
Control range	
Min	0 ▴ ▾
Max	100 ▴ ▾
Period	10 ▴ ▾ s
Tmin	0 ▴ ▾ s

6) Configure control settings

► Go to the **"Control"** screen



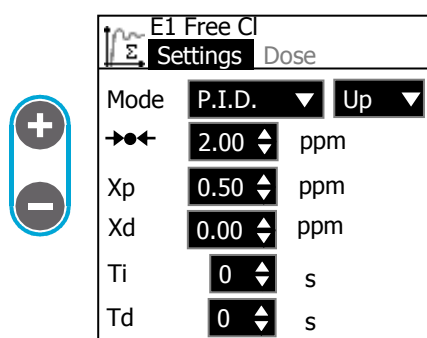
► Select the measure channel you want to control



► Select your control computation method

► Choose the control direction

► Tune the control settings according your process



► Repeat the previous actions for all your measure channels

7) Calibration of measurement channels

Calibration is an essential element for the good process. An incorrect calibration can be hazardous for human health and for the safety of the equipment. In the event of any doubt concerning the operations to perform, please contact our technical department before calibration.




An incorrect calibration can result in excessive doses of the chemical product, and thus harm the environment.



The controller has a direct button on its front panel allowing you to perform a quick calibration.


- Press the **CALIBRATION** button
- Select the measurement channel you want to calibrate
- Set the value



Calibration

E1 Free Cl >

E2 pH >

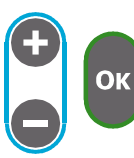


E1 Free Cl

Value **01.48** ppm

Sensor(s)

IN1 1.48mg/l

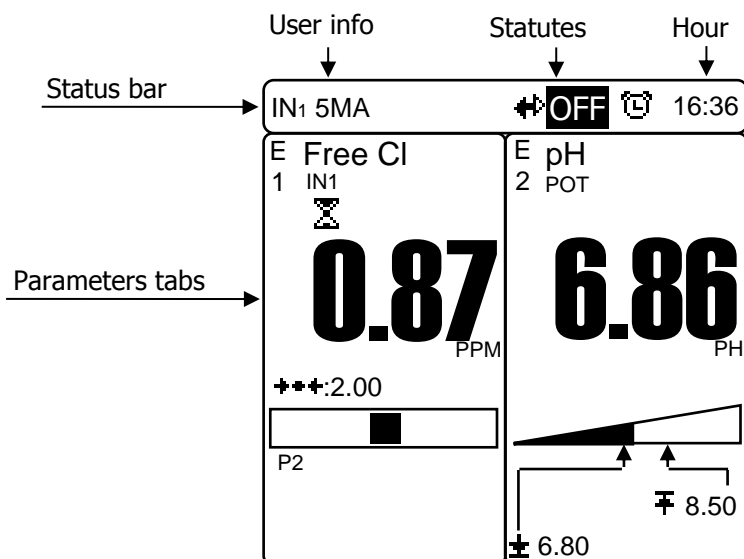
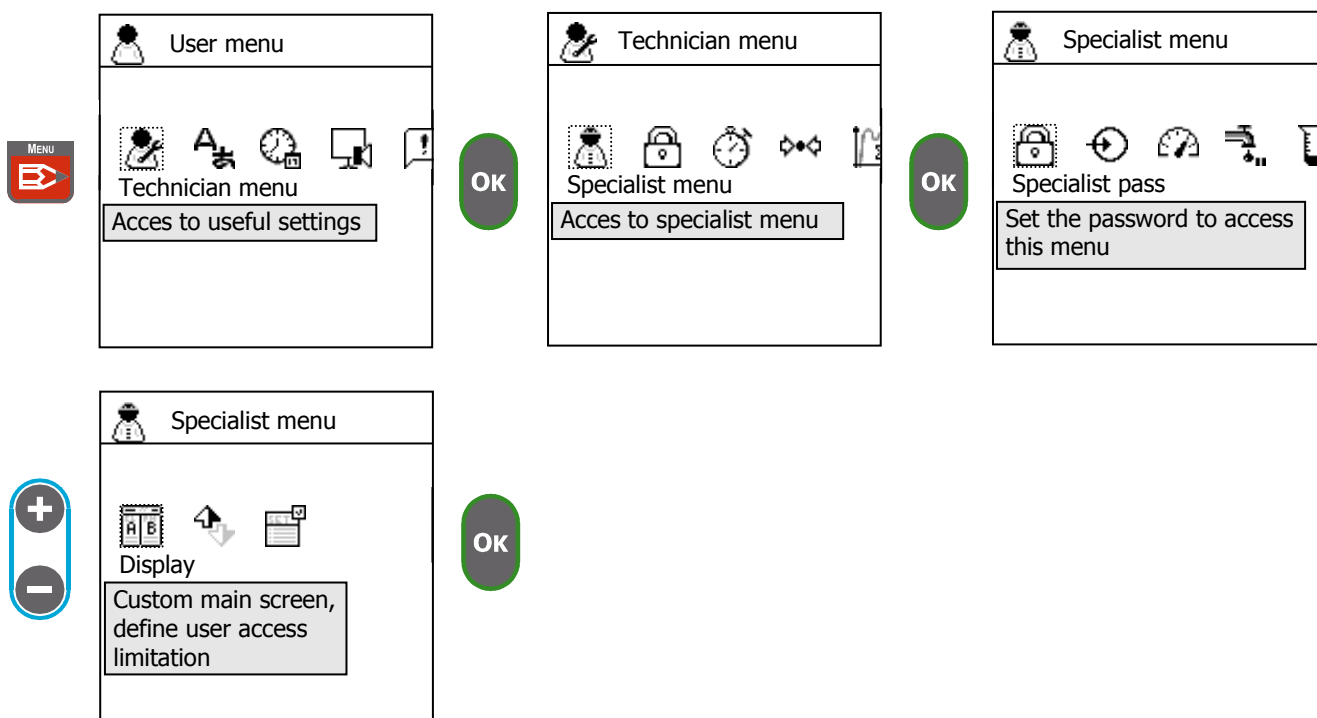




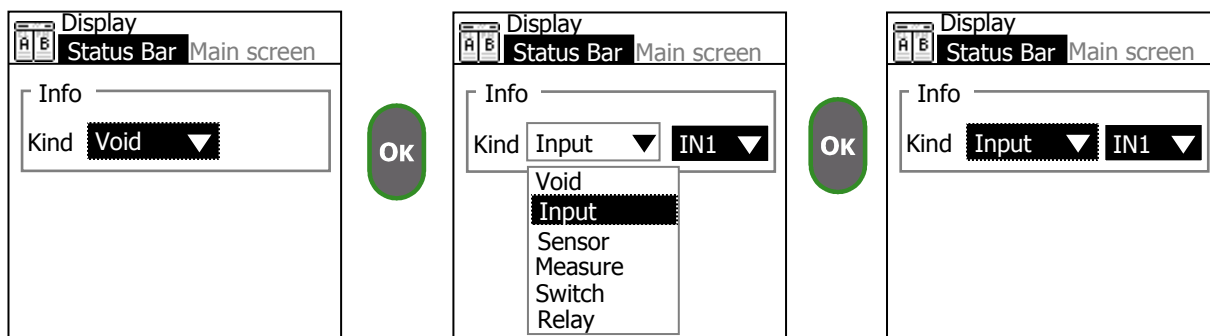
After performing the calibration, the results are displayed

E1 Free Cl	
Results	
Slope	1.192 mg/l/mA
Offset	4.000mA
Isopoint	0.000mg/l
Drift	-0.72%

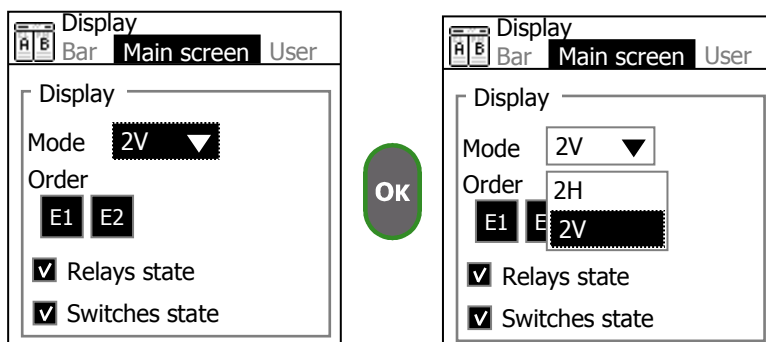
- Repeat the same procedure for all other used parameters.

8) Programming display settings► Go to the **"Display"** screen

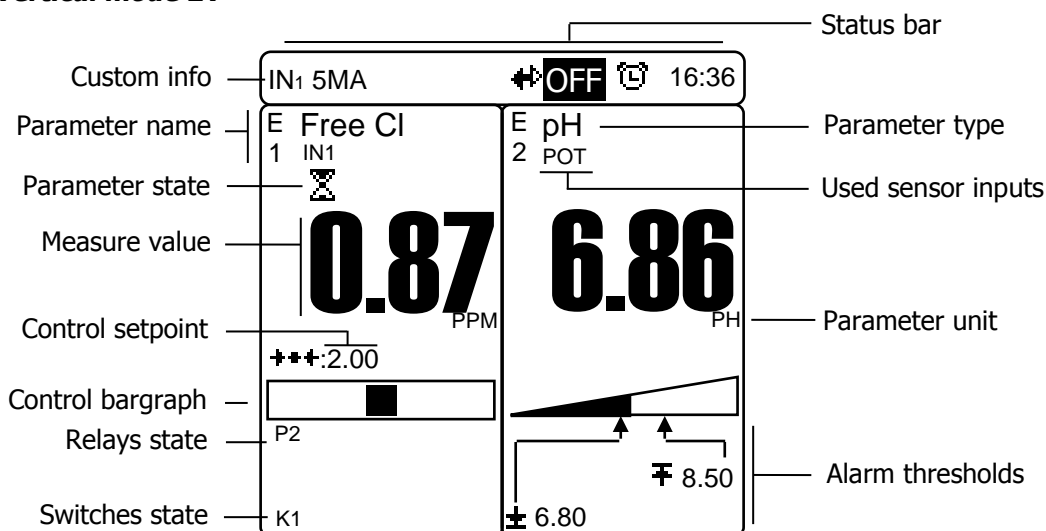
► Choose status bar info



- Select the main screen display mode



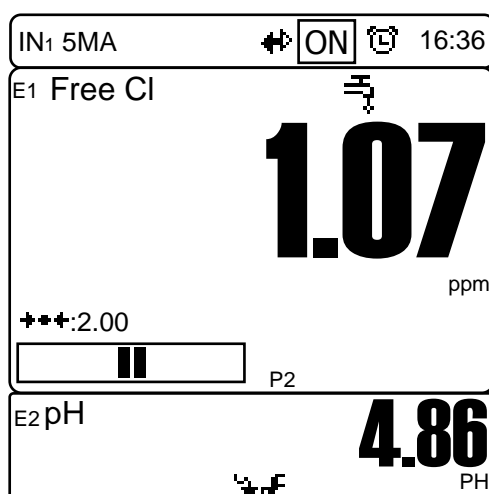
- **Vertical mode 2V**



If you want to invert order of your parameters, press touch




- **Horizontal mode 2H**




9) Symbols and statutes of working➤ **Icons of the statutes bar**

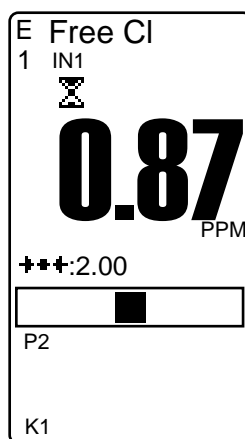
 → RS485 communication is active.

 → A working timer is in progress. Parameters using timers can process controls and alarms.

The number of active timer blink in the center of symbol.

 → The device is ON state, controls and alarms are permitted.

 → The device is OFF state, controls, alarms, relay and analogues outputs are disabled.

➤ **Statutes of parameter channel****Measured value**











0.87 → Measured real value

↑↑.↑↑ → Measured value over the displaying range

↓↓.↓↓ → Measured value under the displaying range

--.-- → Measured value off (Technical alarm)

State of chanel

-  High threshold crossed
-  Low threshold crossed
-  Sensor fault, out of range or disconnected
-  Max dosing time exceeded or empty tank detected
-  Control stopped due to a timer
-  Remote control in progress
-  Water flowing stop
-  Sensor starting up
-  Sensor calibration required
-  Measurement value unstable

Control bargraph

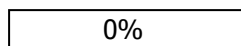
➔ Control stopped



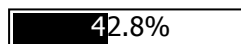
➔ Setting point not programmed



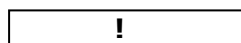
➔ Pause control mode for the parameter



➔ No treatment needs



➔ Active treatment with 42,8% of needs



➔ No control. Parameter in alarm!


10) Starting regulation and dosing.

Once you have made entered all the preceding settings, you are ready to begin the controlling calculation and the dosing by means of the **SYCLOPE DOUBLEAU®** controller unit.





Before beginning processing, please make sure that all the parameters and various safety features mentioned in this documentation have been observed.



When the user enters in the menu by pressing the  controller stops automatically. This to secure the system in case of changing control parameters.

The symbol  in the status bar indicate controller is disabled, means all the actuators are stopped.

The symbol  in the status bar indicate controller is enabled, controls and alarms process are permitted.

► Press the  key to start the controller.

► Check everything works properly and that the central unit begins to works as required.

VII. Spare parts and accessories

Reference	Name
FUS5X20T2000	Time lag fuse 2A 5x20
USB2062	Clé USB 4GB
INF1021	Convertisseur USB->RS485
REL1003	Relais 12V 5A 2RT

Consult us for others references.

VIII. Maintenance.

The controller does not require any specific maintenance.

Repairs may only be performed only by qualified technicians, and must be carried out exclusively at our plant.

If you have any problems with the controller and/or chemical sensors or if you need treatment tips, do not hesitate to contact our after-sales department.

Email : contact@syclope.fr

CERTIFICATION CE

NOTES

[illegible]

[illegible]



SYCLOPE Electronique S.A.S.

Z.I. Aéroport pyrénées
Rue du Bruscos
64 230 SAUVAGNON - France –
Tel : +33 (0) 559 337 036
Fax : +33 (0) 559 337 037
Email : contact@syclope.fr
Internet : <http://www.syclope.fr>

© 2014 by SYCLOPE Electronique S.A.S.