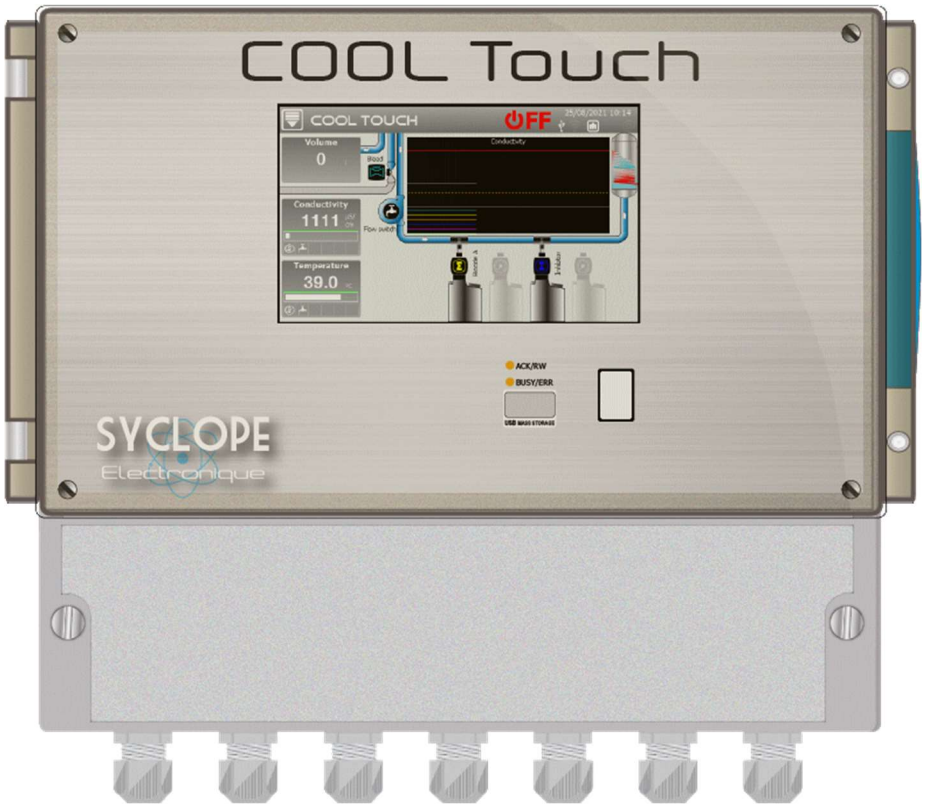
SYCLOPE COOLTouch® Controller for Cooling tower managements (Part 1)



Installation and starting instructions

SYCLOPE Electronique

Reference: DOC0484 Rev: 1

Part of the general documentation

- ► Part 1: Installation and starting instructions
  Part 2: General programming instructions
  Part 3: Communication programming instructions

General information:

SYCLOPE Electronique 2021® Manual of 25/08/2021 Rev 1

Professional controller for cooling towers.
Product line COOLTOUCH®
Part 1: Installation and starting instructions (Ref: DOC0484)

Editor:

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Contents

I. Generality

1) Scope

The range of **SYCLOPE COOLTouch®** controller you have purchased is a high-tech electronic device for the complete management of cooling tower (air/water coolers) and the risks related to the legionella.

Its remarkable adaptability to the various structures of cooling towers enables him to settle in all the difficult cases where the control of the process and the water treatment in a cooling tower are decisive.

Designed according to the needs of the customer, the **COOLTouch®** controller is equipped analogical and numeric inputs for specific sensors for treating water in a cooling tower and also include alarm functions and various controls with cyclic commands transmitted by means of programmable relays to control specific dosing systems used for chemical treatments.

The simplicity of the **COOLTouch®** controller operations, the user friendliness and the remarkable technical aspects of these controllers, will ensure you benefits from their many options, guaranteeing you full control and supervision of the quality of the water.

The following instructions contain all the information required for 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 your benefit from our advice and know-how in the field of measurement and treatment of swimming-pool water.

Contact: Service-technique@syclope.fr

2) FCC conformity

The **SYCLOPE COOLTouch®** controller complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference (2) this device must accept any interference received, including interference that may cause undesired operation FCC Regulations state that unauthorized changes or modifications to this equipment may void the user's authority to operate it.

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 and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect this equipment 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 and modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Remark: To ensure compliance with the FCC regulations on electromagnetic interference for a class B device, use cables properly shielded and connected to the ground as recommended in this manual. The use of a cable that is not properly shielded or earthed for risk of violating the FCC rules.

Radio Frequency (RF) Exposure Compliance of Radiocommunication for mobile Apparatus To satisfy FCC RF Exposure requirements for mobile devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Contains:

- WiFi module: FCC ID : 2AC7Z-ESPWROOM02

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.

- GSM module: FCC ID: UDV-0912142009007

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. (for FCC)

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 equipment's.

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 do
- ➢ Element of a list or enumeration

4) Symbols and signs

Identification of a continuous volage 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 COOLTOUCH** 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 à 70 °C
Air humidity: Maximum of 90% with no condensation

6) Packaging

The device is delivered without power cable.

Caps of the box are pre-drilled and fitted with corresponding cable glands conform to the maintenance of IP65 protection. Cables used must be adapted to them in order to respect the portion index.
Shielded cables for connecting pH and ORP electrodes are not supplied.

The controller is delivered with:

- ✓ **SYCLOPE COOLTouch®** central controller
- ✓ Installation and starting instructions
- ✓ General programming instructions
- ✓ Communication programming instructions (Option)

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 behaviour and no incorrect manipulation
- ➢ Respect for the electrical safety conditions

Consumable material is no longer covered by warranty as soon as it's put into service.

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

SYCLOPE COOLTouch® controller is a microprocessor equipment generating all necessary functions to control a cooling tower.

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.

The 12V Ext must not be used when the product is connected to an electrical network within the following range: 100 – 208V

Do not use the device for measurements on the network directly, but only on the secondary circuit under very low safety voltage.

2) User obligations

The user undertakes not to allow its employees to work with the **SYCLOPE COOLTouch®** 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 COOLTouch®** controller should be only performed by specialized personnel and qualified for this task.
The installation must comply with the current safety standards and instructions!

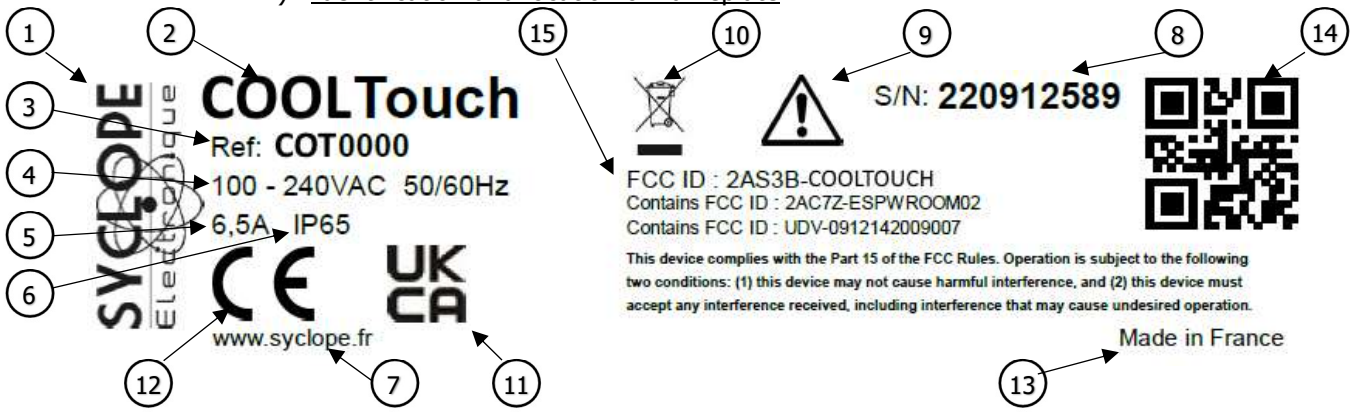
Before opening the controller or manipulate the relay outputs, always remember to switch-off the primary power supply!
Never open the controller when it is powered on!
Maintenance operations and repairs should be only performed by trained and specialized personnel!

Take care when choosing the location for installing the controller!
SYCLOPE COOLTouch® 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.

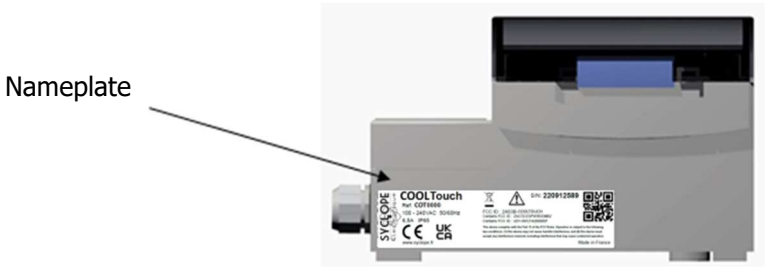
Make sure that the chemical sensors used with this controller correspond well to the chemicals used. Refer to the individual technical note of each sensor. Chemistry of water is very complex, in case of doubt, contact immediately our engineering service or your approved installer/reseller.

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) Identification and location of nameplate



(1) Manufacturer's label	(9) Particular risk. Read the manual
(2) Model of the product / Trade Mark	(10) Product which can be recycled
(3) Reference of the product	(11) UKCA approved
(4) Range of power supply	(12) CE approved
(5) Values of maximum current	(13) Country of manufacture
(6) Class of protection	(14) Manufacturer square code
(7) Identification of the manufacturer	(15) FCC ID
(8) Serial number	



5) Disposal and conformity

The recyclable packaging of the **SYCLOPE COOLTouch®** 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 centre.

According to European directive 2012/19/EC, this symbol means that as of 4 July 2012 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 manatacturer, who will take care of disposing them at no extra expense.

According to European directive 2011/65/EC, this symbol means that the **SYCLOPE COOLTouch®** controller is designed in compliance with the restrictions on hazardous substances.

According to low-voltage directive (2014/35/UE) and the electromagnetic compatibility directive (2014/30/UE), 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.

The product complies with the requirements of IEC 61326-1 relating to immunity and emissions concerning electromagnetic compatibility in a basic environment.

According to low-voltage directive (2014/35/UE) and the electromagnetic compatibility directive (2014/30/UE), this symbol means that the device has been designed in compliance with the previously cited directives.

III. Technical characteristics and functions

1) Technical characteristics

Main features		
Type(s)	**Specification(s)**	**Marker(s)**
Consumption	6,5A Max (Without connected dosing accessories)	-
Power supply requirements	100 - 240 VAC (± 10%) 50/60Hz	-
Electrical protection	Fuse 550mA, Reset by power interruption	F4 & F5
Operating temperature (°C)	-5 °C to 45 °C (23 °F to 113 °F)	-
Case material	Polycarbonate	-
Dimensions of the case	Length: 280 mm (11 inches) Width: 219 mm (8.6 inches) Height: 156 mm (6.1 inches)	-
Case weight empty	0,850 kg	-
Indicator light (LED)	Group 0	
Display	5-inch color LCD screen Resistive touch	-
Environment		
Storage temperature	-10 °C to 70 °C (10 °F to 158 °F)	-
Max operating altitude	2000 meters	
Humidity	Max. 90% without condensation	-
Protection rating	IP 65	-
Product certification	CE	-
Max overvoltage category of the power supply network	CAT II	
Pollution degree	DP 2	
Electromagnetic compatibility	Class B disruption tests comply with EN61326-1 Class B disruption tests comply with EN61326-2-6 Class B disruption tests comply with EN55011 Harmonics tests comply with EN61000-3-2 Harmonics tests comply with EN61000-3-3 Immunity tests comply with EN61000-4-2 Immunity tests comply with EN61000-4-3 Immunity test EN61000-4-4 Immunity tests comply with EN61000-4-5 Immunity tests comply with EN61000-4-6 Immunity tests comply with EN61000-4-8 Immunity tests comply with EN61000-4-11	-
Standard	EN 61000 Electromagnetic compatibility (CEM) EN 61326 Electrical measuring, control and laboratory equipment for a standard environment (class B home use)	-
Inputs		
RTD (Pt100 / Pt1000)	1 isolated input (Impedance Pt100 : 100 to 138 Ω ; Pt 1000 : 1000 to 1385 Ω)	RI1
Contictivity input	1 isolated input (Impedance 40Ω to 1MΩ)	RI2
4-20mA Inputs	2 Isolated inputs 24VDC no-load (0 to 25 mA ; Insulation 35VDC ; Impedance 160Ω)	AI1 & AI2
Digital inputs	5 inputs (0 ro 12 VDC ; Non-isolated ; Impedance 5kΩ)	DI1 to DI5
Serial input	1 input UART 5V TTL	SI1
USB inputs	USB connector on front (Exclusive use of USB key for Firmware Update) (5VDC ; 500mA)	-
Outputs		
Relay outputs	1 self-powered relay output 3A Max ; 240VAC Max	PO1
Relay outputs	4 ON/OFF relay outputs 3A Max ; 48VAC Max	FO1 to FO4

Relay outputs	1 electronic relay output 50mA Max ; 48VAC Max	RO1
Analog outputs	2 0/4…20 mA analog outputs Max ; 12VDC Max ; 500 Ω	AO1 & AO2
Power output	1 24V power output ; 100mA	
Communication port		
RS485	1 RS485 communication port	RS485
Ethernet	1 Ethernet output	ETH
Protection of dosing outputs		
Internal fuse	1 TR5 3,15 A 250 V Time delay fuses	F2
Save		
Button cell	Type BR2032	Bat1

2) Main functions

Main functions		
Function(s)	**Specification(s)**	**Remark(s)**
Controls	Bleed and biocides controls	According version
Type of actuators	1 Powered output relay 90~240V 5 Free of potential output relays	PWM or On/Off functions
Analogical outputs	2 0/4…20mA programmable outputs	Copy or control functions
Purge	Bleed-off function	By setting conductivity or volumetric setpoints

3) Radio technologies in equipment

Radio technologies				
Technologies		**Number of antenna**	**Radiated powers**	**Frequency bands of use**
WIFI		1	< 20dBm	2400 MHz to 2483.5 MHz 2.4 GHz Band Exclusion Band : [2280 MHz – 2603.5 MHz]
2G	GSM900	0	33dBm	900MHz
	DCS1800		30dBm	1800MHz

4) Parameters and measurement scales

Measures and regulations			
Parameters	**Measuring scale**	**Customer measuring scale**	**Accuracy**
Temperature	-5 to 45°C		± 0,5 %
	0 to 100 °C		± 0,5 %
		-10 to 100°C	± 0,5 %
pH	0 to 14 pH		± 0,5 %
	1 to 12 pH		± 0,5 %
		-1 to 15 pH	± 0,5 %
ORP	0 to 1000 mV		± 0,5 %
	-1000 to 1000 mV		± 0,5 %
		-1000 to 1000 mV	± 0,5 %
Free chlorine	0,01 to 0,5 mg/l		± 0,5 %
	0,02 to 2 mg/l		± 0,5 %
	0,05 to 5 mg/l		± 0,5 %
	0,1 to 10 mg/l		± 0,5 %
	0,2 to 20 mg/l		± 0,5 %
	0,5 to 50 mg/l		± 0,5 %
	1 to 100 mg/l		± 0,5 %

		0 to 2000 mg/l	± 0,5 %
Active chlorine	0,02 to 2 mg/l		± 0,5 %
	0,1 to 10 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
Total chlorine	0,01 to 0,5 mg/l		± 0,5 %
	0,02 to 2 mg/l		± 0,5 %
	0,05 to 5 mg/l		± 0,5 %
	0,1 to 10 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
Chlorite	0,01 to 0,5 mg/l		± 0,5 %
	0,02 to 2 mg/l		± 0,5 %
		0 to 2000mg/l	± 0,5 %
ClO2 (Chlorine dioxide)	0,01 to 0,5 mg/l		± 0,5 %
	0,02 to 2 mg/l		± 0,5 %
	0,1 to 10 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
H2O2 (Peroxide)	0,5 to 50 mg/l		± 0,5 %
	2 to 200 mg/l		± 0,5 %
	20 to 2000 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
BCDMH	0,02 to 2 mg/l		± 0,5 %
	0,2 to 10 mg/l		± 0,5 %
	0,4 to 15 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
DBDMH	0,1 to 1 mg/l		± 0,5 %
	0,1 to 5 mg/l		± 0,5 %
	0,1 to 10 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
Free bromine	0,1 to 1 mg/l		± 0,5 %
	0,1 to 5 mg/l		± 0,5 %
	0,1 to 10 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
Peracetic Acid	2 to 200 mg/l		± 0,5 %
	10 to 2000 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
Ozon	0,1 to 2 ppm		± 0,5 %
		0 to 2000 ppm	± 0,5 %
O2 (Oxygen)	0,2 to 10 ppm		± 0,5 %
	0,2 to 20 ppm		± 0,5 %
		0 to 2000 ppm	± 0,5 %
PHMB	1 to 100 mg/l		± 0,5 %
		0 to 2000 mg/l	± 0,5 %
Turbidity	0,2 to 100 NTU		± 0,5 %
		0 to 2000 NTU	± 0,5 %
Conductivity	0 to 5 mS/cm		± 0,5 %
	0 to 10 mS/cm		± 0,5 %
	0 to 20 mS/cm		± 0,5 %
	0 to 50mS/cm		± 0,5 %
	0 to 100 mS/cm		± 0,5 %
	0 to 2000 mS/cm		± 0,5 %
		0 to 2000 mS/cm	± 0,5 %
Flowrate	0 to 20 l/min		± 0,5 %
	0 to 50 l/min		± 0,5 %
	0 to 200 l/min		± 0,5 %
		0 to 2000 l/min	± 0,5 %
Volume		0 to 2000 l	± 0,5 %

IV. Installation et connections

1) Installation conditions

To guarantee the user safety and to ensure correct operation of your **SYCLOPE COOLTouch®**, 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 -5°C and 45°C, with no condensation
- Choose an installation location free from vibration, on a suitable support and with no deformation
- Install the device so that it does not make it difficult to operate the disconnecting circuit (fuse or circuit breaker)

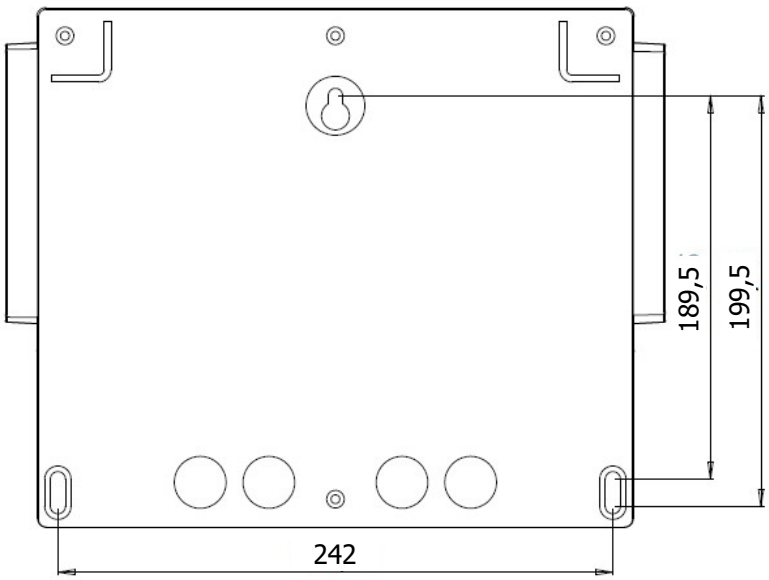
If these instructions are not observed:

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

2) Wall installation of the device

Prior to installing the devices and connections of cables, pipes and fittings, cut power supplies! The IP54 protection class is guaranteed only if the closure caps of the **SYCLOPE COOLTouch®** are closed and the wires correspond to the diameter of the cable gland!

► Drill 3 holes ∅ 5 mm in accordance with the drilling plan below:



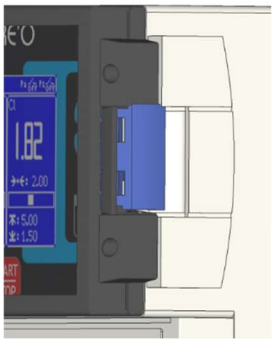
► Introduce the 5mm dowels using a hammer
► Fix the top screw first without tightening it completely
► Place the lower screws and tighten them
► Tighten the upper screw
► Make sure the housing is stable and level

3) Open / Close transparent door

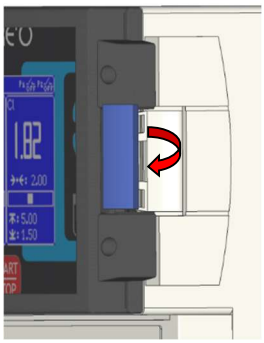
In order to guarantee IP65 class, the transparent door must absolutely be closed after use while ensuring the quality of the closure seal.

The case has a closing system with automatic locking as soon as its handling is carried out correctly.

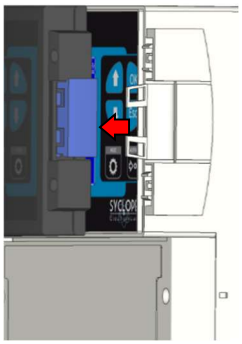
To open the transparent door:



Door locked …

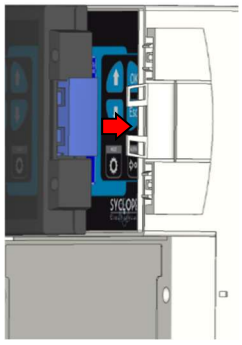


Lift the lock and pull towards the front of the device

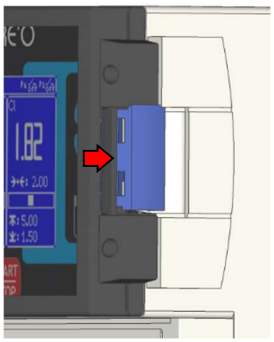


Door opened!

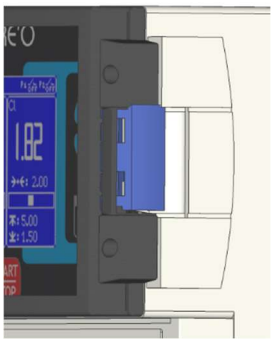
To close and lock the transparent door:



Put your fingers behind the lock, and bring the door with your thumb…



With the palm of your hand, press on the transparent door and tighten with your hand to lock.

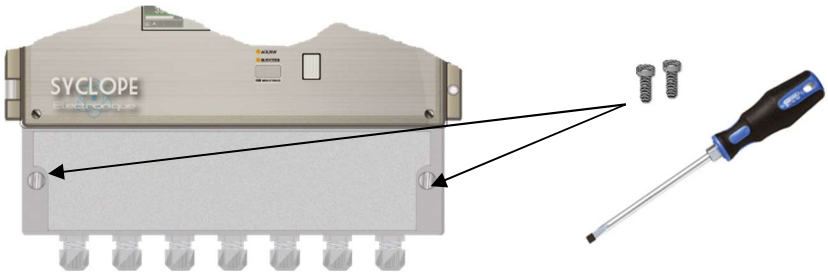


Door locked!

4) Open / Close the terminal cover

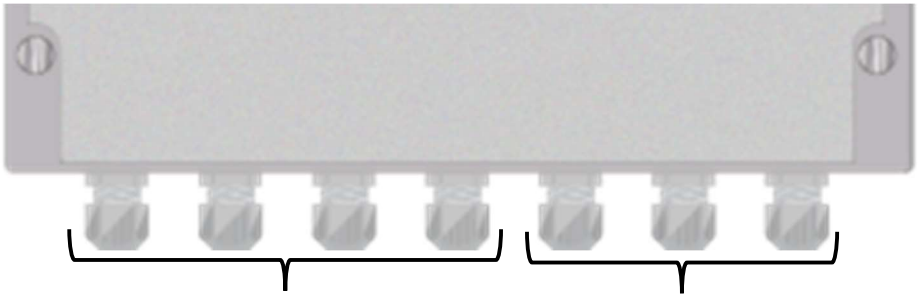
In order to guarantee IP65 class, the terminal cover must absolutely be closed after use while ensuring the quality of the closure seal.

Use an appropriate screwdriver to unscrew the 2 fixing screws and open the terminal cover.



5) Tightening torque

a) Cable gland



Max cable section via cable gland.	3 x (2-5mm)	1 x (9,4-12mm)
Cable gland tightening torque.	0.7 N.m	2 N.m

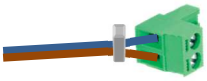
b) Terminal blocks

The tightening torque of the screws of different terminal block is 0.5 N.m

6) Electrical connections

Electrical installations must be carried out in accordance with the standards in force and by authorized personnel!
A 30-mA differential circuit breaker must be installed!
A 10A circuit breaker must be installed near the device and easily accessible in order to cut the primary supply. It must be marked as the cut-off circuit of the device.
Before making the connections, cut off the power supplies!

Preferably use single-strand cables
Otherwise, it is essential to use a crimped cable ends to ensure that no strand can come into contact with neighbouring cables!
Secure the wire connections on the terminal blocks using a cable tie.



SYCLOPE COOLTOUCH® must be slaved to the filtration of the swimming pool using digital input.

Internal protection:

SYCLOPE COOLTouch ® is protected by two resettable fuses (see table "General characteristics" page 14) and by a varistor against overvoltage of 275V.

The self-powered power relay outputs PO1 is protected by a TR5 fuse (see table "General characteristics" page 14).

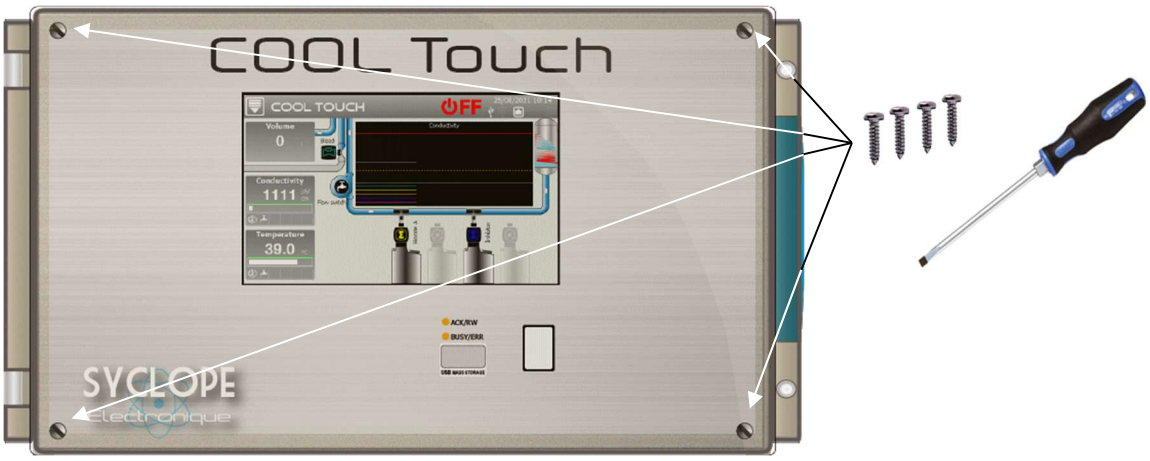
7) Changing the internal fuse of PO1 output

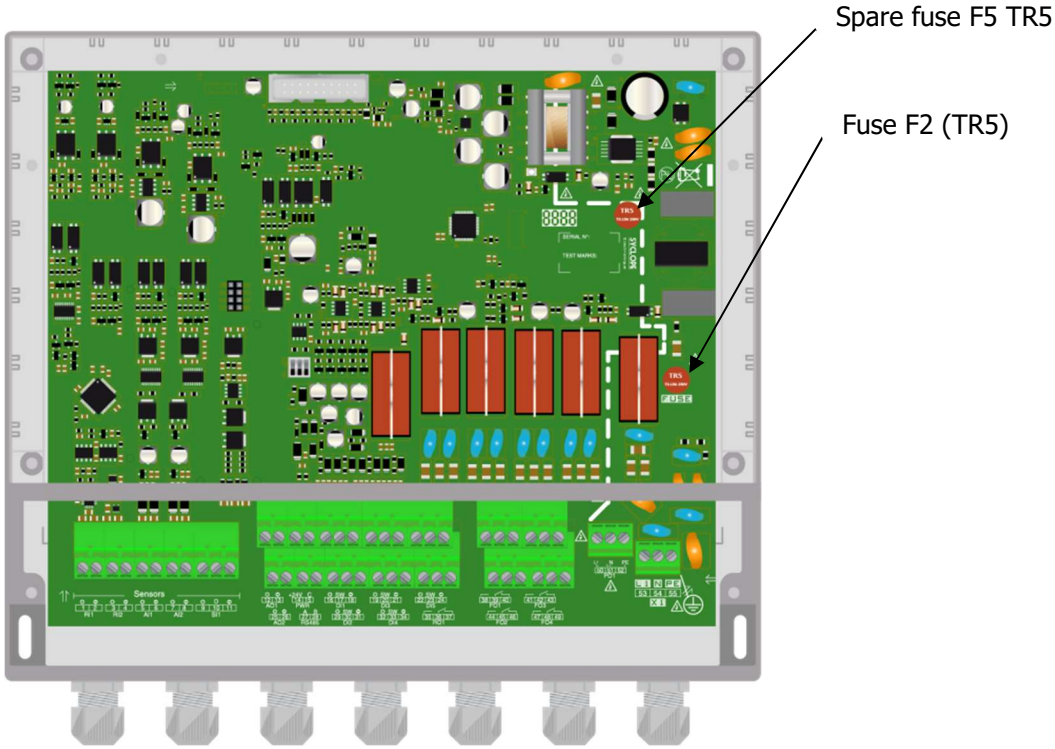
SYCLOPE COOLTouch ® has a spare fuse located in position F5, which allows you to quickly replace a fuse if necessary. If you are led to using it, don't forget to replace it…

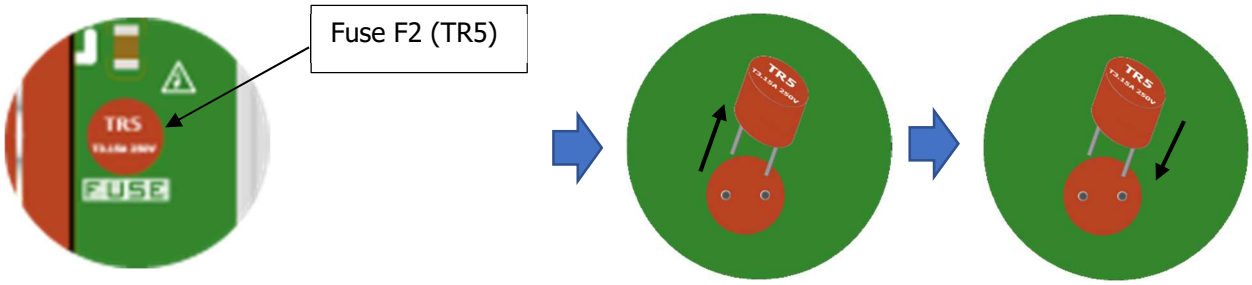
Cut off the power supply, before changing the fuse!

Always use a fuse identical to the original one. Don't replace with a higher intensity!

- Cut off the power supply
- Open the transparent door and unscrew the 4 front screws using an appropriate screwdriver.
- Carefully disconnect the connection flat cable connecting the bottom card and the upper part of the device.







Locate the fuse to be changed on the lower PCB

Remove the fuse to be changed

Replace the new fuse

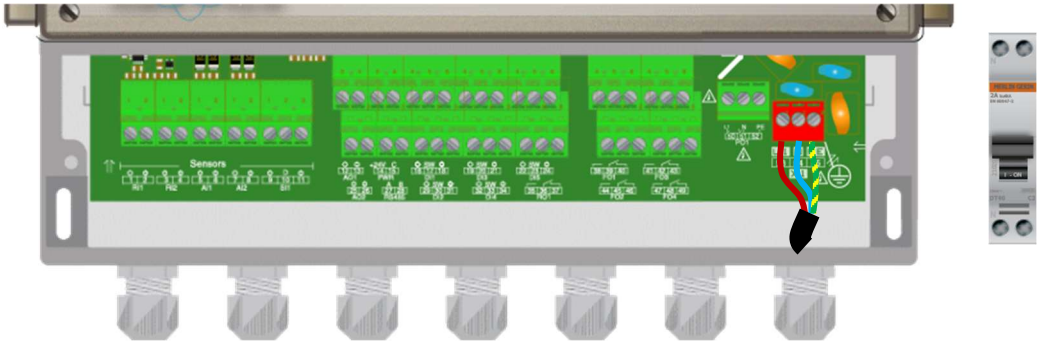
➢ Reconnect the flat cable between the cards and reassemble the front panel using the 4 fixing screws. Don't overtighten because the screws are fixed in the plastic case.

Reconnect the flat cable and replace the front panel before switch On.

8) Primary power connections

SYCLOPE COOLTouch® has a switch-mode power supply. It can be powered by an alternating voltage between 100V and 240V 50/60Hz.

- ► Use a 3-point 1.5 mm^2 to wire the power supply
- ► Strip the 3 wires on 7mm
- ► Pass the 3-point cable through a cable gland
- ► Connect the phase on L1 and the neutral on the N of the main terminal block X1
- ► Connect the earth on the PL1 stud using an M4 eyelet terminal
- ► Tighten the cable gland to seal.



Your **SYCLOPE COOLTouch®** doesn't have a power switch. So, it's directly supplied when it's connected to the mains.

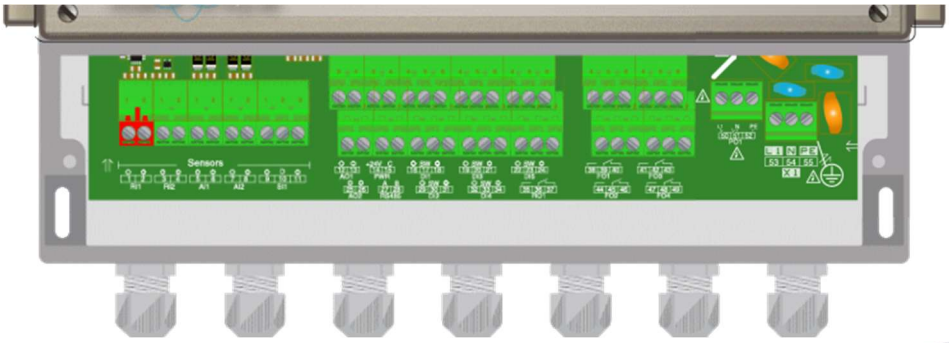
Your **SYCLOPE COOLTouch®** doesn't have a power switch. It is therefore necessary to install a 10A circuit breaker upstream of the device.

9) Measurement inputs connections

SYCLOPE COOLTouch® has ten inputs:

- 1 Input RI1 RTD isolated for (Pt100 / Pt1000)
- 1 Input RI2 isolated for conductivity
- 2 Inputs AI1 & AI2 4-20mA isolated for temperature, chlorine, bromine, etc measure
- 5 Inputs DI1 to DI5 digital for sensor.
- 1 Input SI1 serial for UART 5V TTL

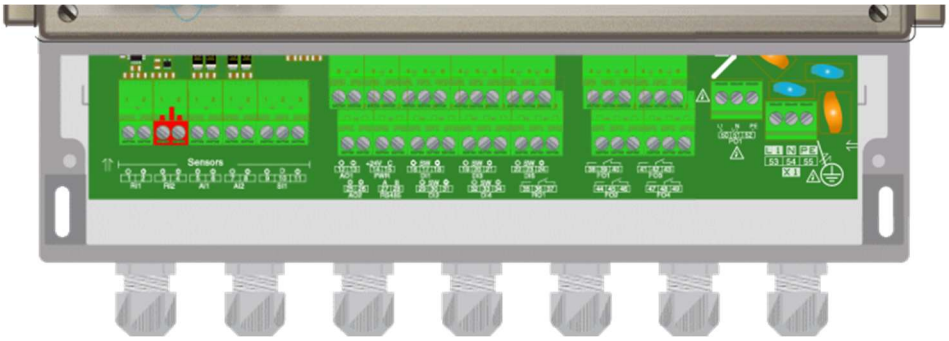
a) PT100 / Pt1000 input RI1



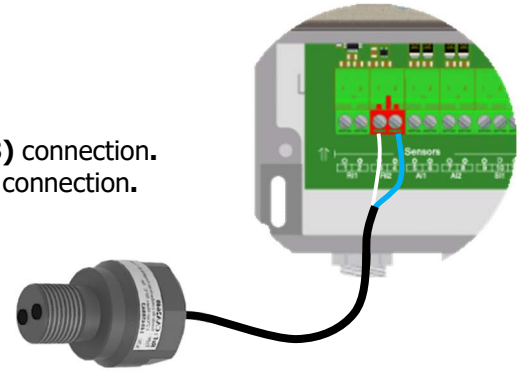
Connection of the sensor on RI1:

- Preferably use a shielded coaxial cable.
- Connect the sensor (+) strand to the **RI1 + (1)** connection.
- Connect the sensor (-) strand to the **RI1 - (2)** connection.
- Tighten the cable gland to seal.

b) Conductivity input RI2

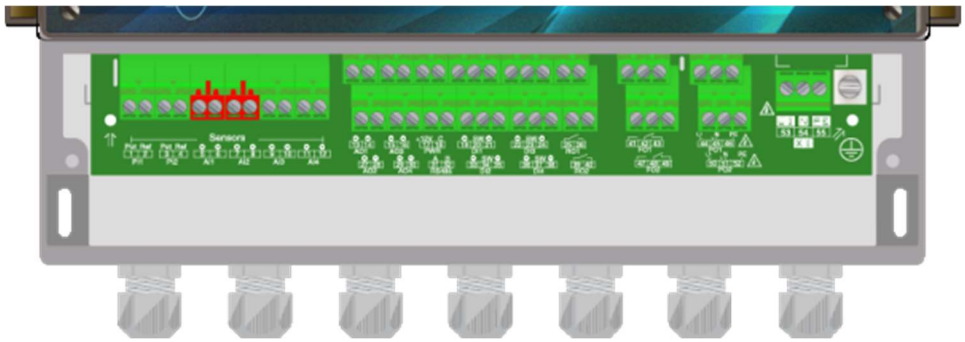


Connection of the sensor on RI2:



- Preferably use a shielded coaxial cable.
- Connect the sensor (+) strand to the **RI2 + (3)** connection.
- Connect the sensor (-) strand to the **RI2 - (4)** connection.
- Tighten the cable gland to seal.

c) Isolated analog inputs 4…20mA AI1 & AI2



Controller has 2 isolated analog inputs 4…20mA on which a chlorine, bromine, ozone, hydrogen peroxide, peracetic acid, dissolved oxygen or PHMB sensor can be connected.

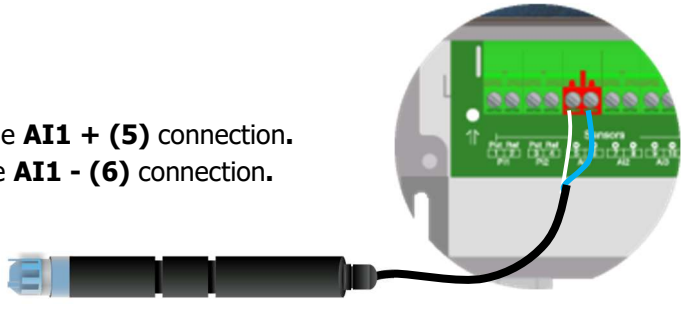
The definition of supported sensors is as follows:

	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								•		•	•	•
Bromine BCDMH			•		•	•						•
Bromine DBDMH		•		•	•							•
Free bromine		•		•	•							•
Peracetic acid										•	•	•
Ozone			•									•
Dissolved oxygen					•		•					•
PHMB									•			•

*The scale of customer can be defined between 0 and 2000 (ppb, ppm, NTU, µg/L, mg/L, g/L or %)

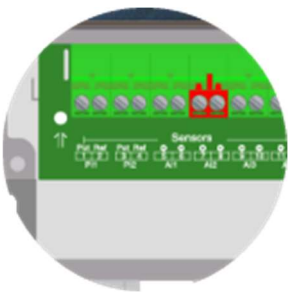
Connection of the sensor on AI1:

- ▶ Preferably use a two-strand cable.
- ▶ Connect the sensor (+) strand to the **AI1 + (5)** connection**.**
- ▶ Connect the sensor (-) strand to the **AI1 - (6)** connection**.**
- ▶ Tighten the cable gland to seal.

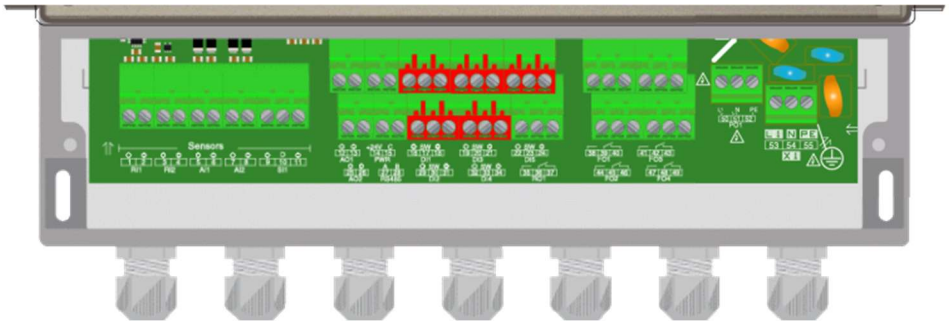


Connection of the sensor on AI2:

- ▶ Preferably use a two-strand cable.
- ▶ Connect the sensor (+) strand to the **AI1 + (7)** connection.
- ▶ Connect the sensor (-) strand to the **AI1 - (8)** connection.
- ▶ Tighten the cable gland to seal.



d) Digital inputs DI1 to DI5



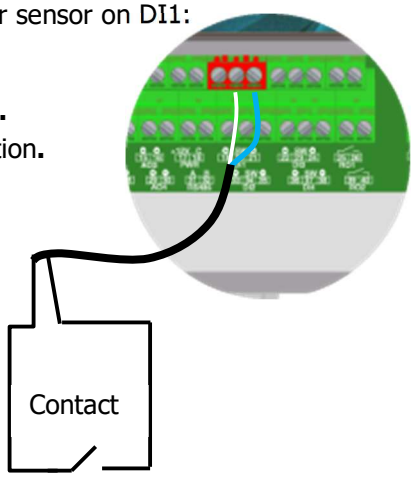
Controller has 5 digital inputs on which a tank bottom, flow, R.I.C (Remote Input Control), or another sensor can be connected.

The definition of supported sensors is as follows:

	0…20l/min	0…50l/min	0…200l/min	0…10m3/H	Customer*
Flow (impulsions)	•		•	•	•
(*): The scale of the customer can be defined between 0 et 2000 (L/min, L/H or m3/H) in 4…20mA or impulse input					

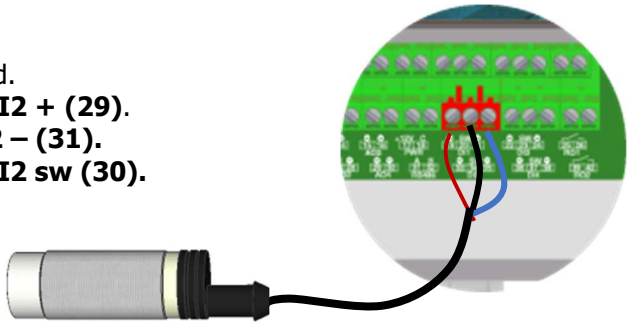
Connection of a R.I.C (Remote Input Control), tank bottom or another sensor on DI1:

- Preferably use a two-strand cable.
- Connect one sensor strand to the **DI1 sw (17)** connection**.**
- Connect the other sensor strand to the **DI1 - (18)** connection**.**
- Tighten the cable gland to seal.



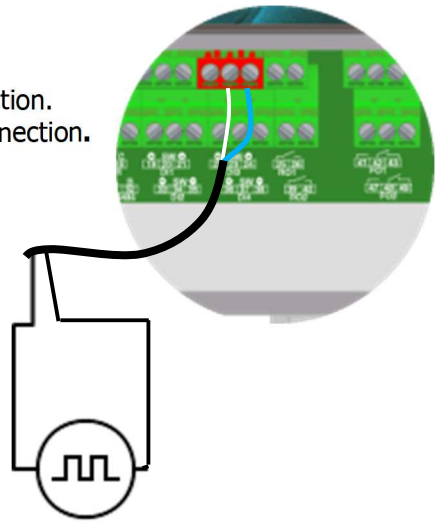
Connection of a flow switch sensor on DI2:

- Remove the protective sheath.
- Strip the wires on 7mm.
- Pass the cable through the cable gland.
- Connect the brown power strand to **DI2 + (29)**.
- Connect the blue power strand to **DI2 – (31).**
- Connect the black contact strand to **DI2 sw (30).**
- Tighten the cable gland to seal

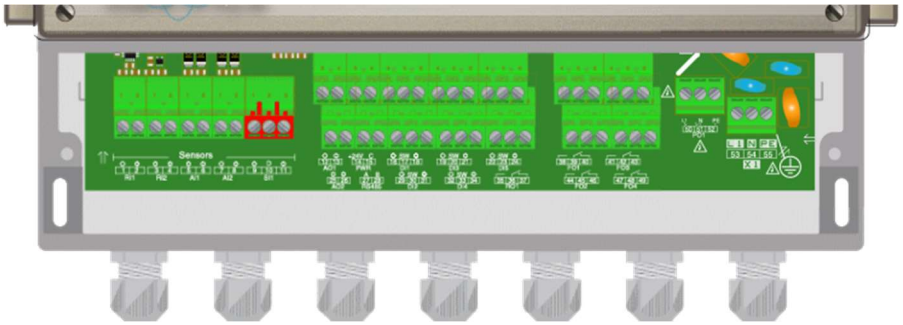


Connection of a flowmeter sensor on DI3:

- Preferably use a two-strand cable.
- Connect one sensor strand to the **DI3 sw (20)** connection.
- Connect the other sensor strand to the **DI3 - (21)** connection.
- Tighten the cable gland to seal.



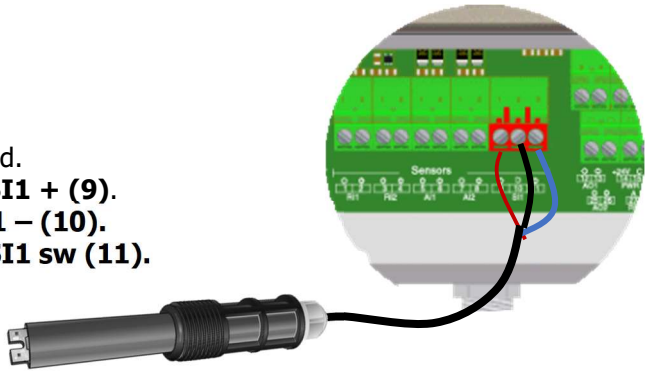
e) Serial input SI1



Controller has 1 serial input on which a CTFS sensor can be connected.

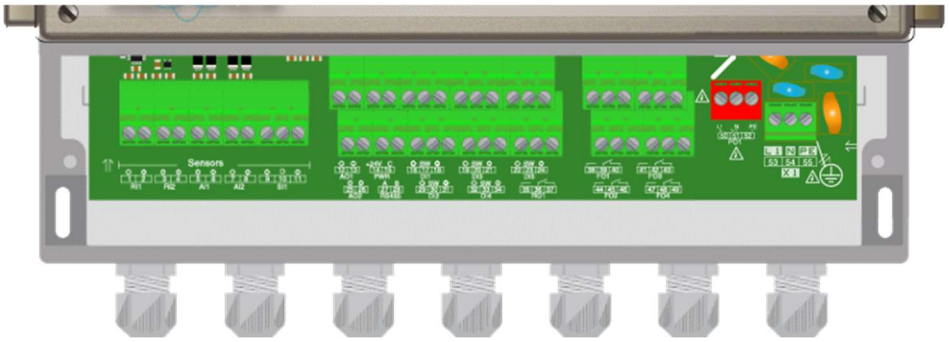
Connection of a CTFS sensor on SI1:

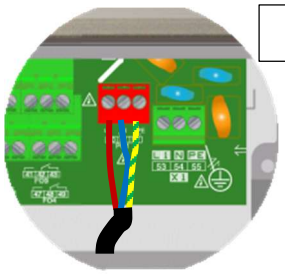
- Remove the protective sheath.
- Strip the wires on 7mm.
- Pass the cable through the cable gland.
- Connect the brown power strand to **SI1 + (9)**.
- Connect the blue power strand to **SI1 – (10).**
- Connect the black contact strand to **SI1 sw (11).**
- Tighten the cable gland to seal.



10) Self-powered relays outputs connections PO1

The self-powered PO1 power relay output (Primary supply voltage = Voltage available on P3) can be used for dosing, alarm, timer…



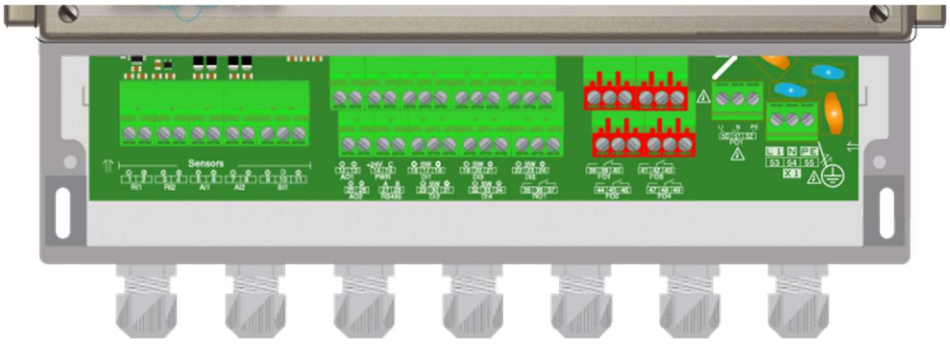


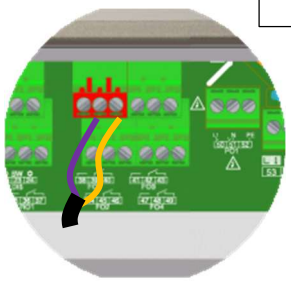
PO1

► Strip the 3 wires of the power cable of the dosing device on 7mm
► Pass the 3-point cable through a cable gland
► Connect the phase on **L1 (50)** and the neutral on **N (51)** of the PO1 mains terminal block
► Connect the earth on **PE (52)** of the PO1 mains terminal block
► Tighten the cable gland to seal.

11) Potential-free relay connections (FO1 to FO4)

The potential-free relay outputs can be used as alarm relays, regulation or be controlled in Timer mode as required.

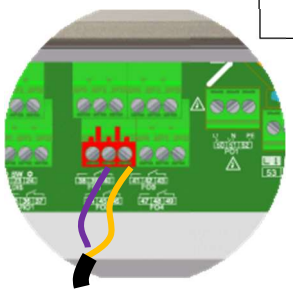




FO1

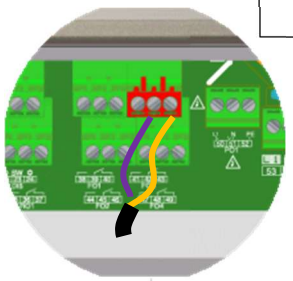
► Use a 2-wire cable with a section appropriate for the voltage and current.
► Remove the protective sheath
► Strip wires on 7mm
► Pass the cable through a cable gland
► Connect a cable on the midpoint **COMMON (39)** of the terminal block
► Connect the second cable on the **WORK (38)** of the terminal block or on the **REST (40)** depending on the function to be performed
► Tighten the cable gland to seal.

FO2



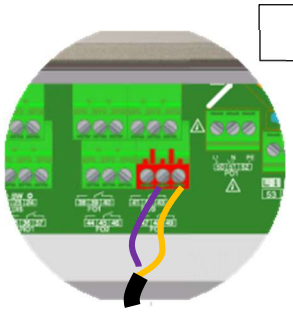
► Use a 2-wire cable with a section appropriate for the voltage and current.
► Remove the protective sheath
► Strip wires on 7mm
► Pass the cable through a cable gland
► Connect a cable on the midpoint **COMMUN (45)** of the terminal block
► Connect the second cable on the **WORK (44)** of the terminal block or on the **REST (46)** depending on the function to be performed
► Tighten the cable gland to seal.

FO3



► Use a 2-wire cable with a section appropriate for the voltage and current.
► Remove the protective sheath
► Strip wires on 7mm
► Pass the cable through a cable gland
► Connect a cable on the midpoint **COMMUN (42)** of the terminal block
► Connect the second cable on the **WORK (41)** of the terminal block or on the **REST (43)** depending on the function to be performed
► Tighten the cable gland to seal.

FO4

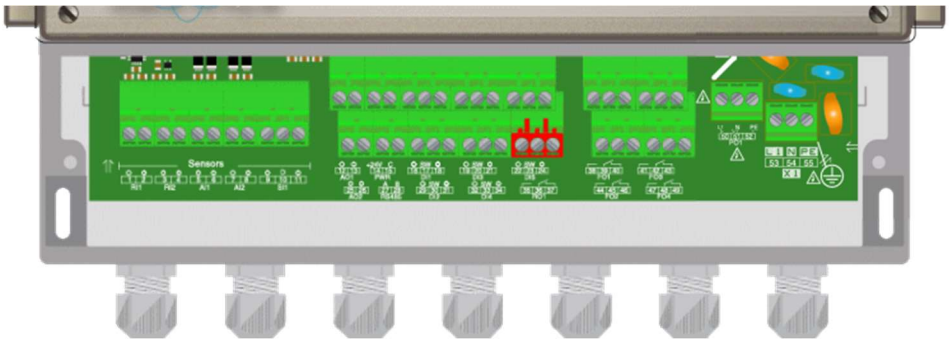


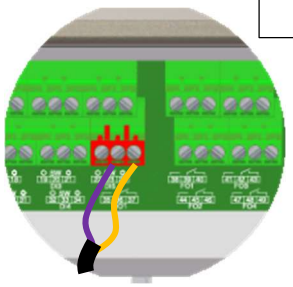
► Use a 2-wire cable with a section appropriate for the voltage and current.
► Remove the protective sheath
► Strip wires on 7mm
► Pass the cable through a cable gland
► Connect a cable on the midpoint **COMMUN (48)** of the terminal block
► Connect the second cable on the **WORK (47)** of the terminal block or on the **REST (49)** depending on the function to be performed
► Tighten the cable gland to seal.

12) Electronic relay outputs connections RO1

The electronic relay output is mainly dedicated to controlling the dosing pumps in impulse mode. It can also serve as alarm relay or be controlled in timer mode according to your needs.

This relay is electronic component to make contact, it is used to drive pumps by their impulse input or to control an external power relay.
This relay can switch a maximum voltage of 48 VAC and a current of 50mA.



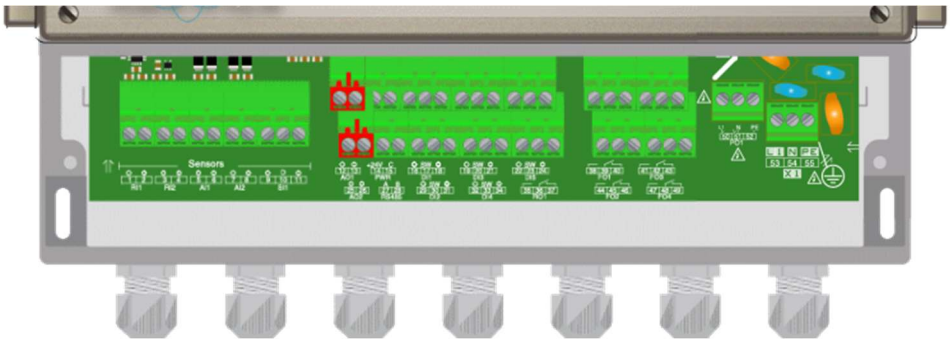


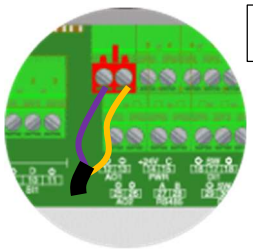
RO1

► Use a 2-wire cable with a section appropriate for the voltage and current
► Remove the protective sheath
► Strip wires on 7mm
► Pass the cable through a cable gland
► Connect a cable on the midpoint **COMMON (36)** of the terminal block
► Connect the second cable on the **WORK (35)** of the terminal block or on the **REST (37)** depending on the function to be performed
► Tighten the cable gland to seal.

13) 4…20mA outputs connections (AO1 to AO2)

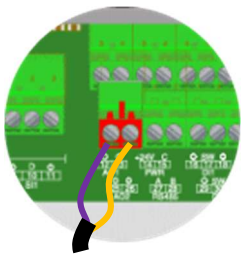
4…20mA outputs are used to send information to a building management system or to control a dosing device via a 4…20mA signal. The analog outputs are generative and operate with an internal voltage of 12 VDC. The maximum load is 500Ω.
4…20mA outputs are fully configurable. You can assign any parameter (measured or calculated) in regulation or data transfer mode.





AO1

- ► Use a 2-wire cable
- ► Remove the protective sheath
- ► Strip wires on 7mm
- ► Pass the cable through a cable gland
- ► Connect the two wires of the 4…20mA loop **to + (12)** and **– (13)**
- ► Tighten the cable gland to seal



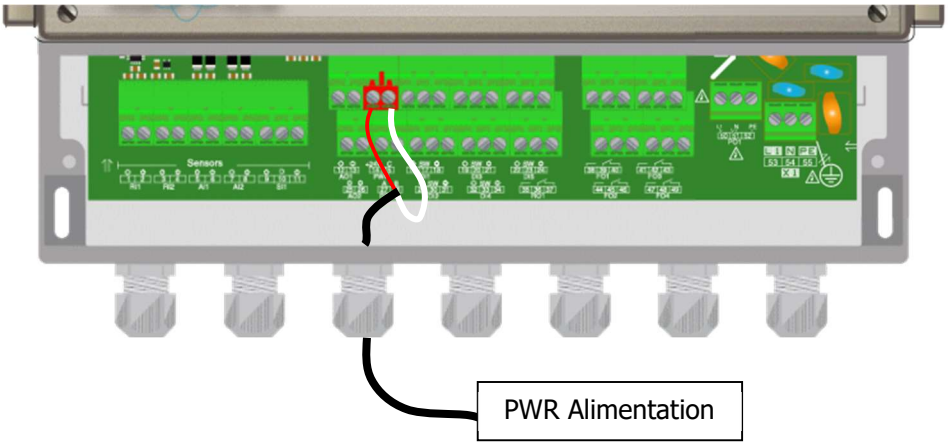
AO2

- ► Use a 2-wire cable
- ► Remove the protective sheath
- ► Strip wires on 7mm
- ► Pass the cable through a cable gland
- ► Connect the two wires of the 4…20mA loop **to + (25)** and **– (26)**
- ► Tighten the cable gland to seal.

14) Power supply output connection (PWR)

If necessary, chlorine or bromine sensors may be used that require external power.

- Use a 2-wire cable.
- Pass the cable through a cable gland
- Connect the strand + of the alimentation on **+24V (17)**
- Connect the strand - of the alimentation on **C (18).**
- Tighten the cable gland to seal.

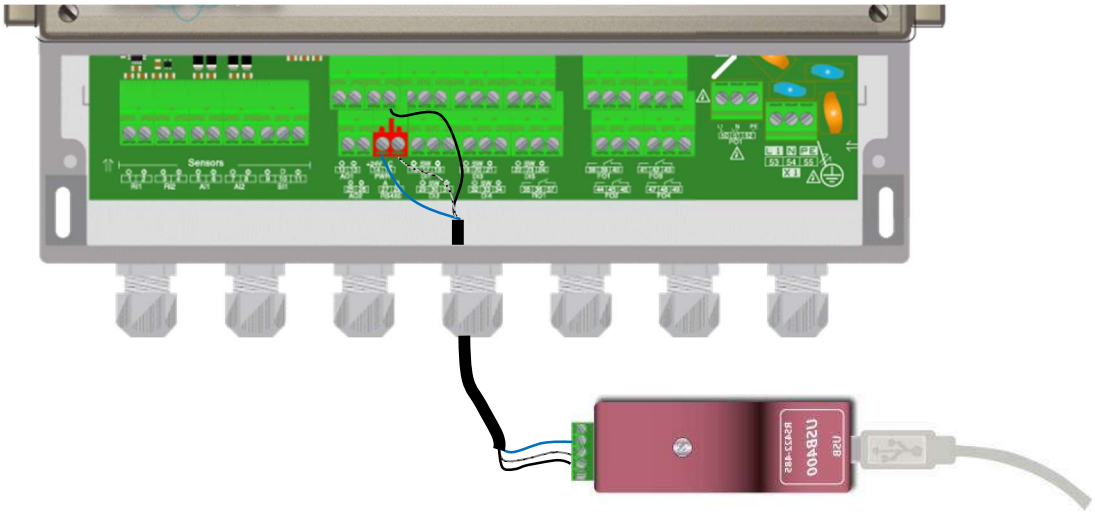


15) RS485 communication bus connections

SYCLOPE COOLTOUCH® has a RS485 communication port to connect it to a computer equipped with a 485 port and a communication software to record the measurement values, alarms and different states of the device.

a) Connection to a USB port on a computer

- ▶ Use a 3-wire cable.
- ▶ Pass the cable through a cable gland.
- ▶ Wire AA' (n°3) of USB/485 converter to **RS485 (A) (27).**
- ▶ Wire BB' (n°4) of USB/485 converter to **RS485 (B) (28).**
- ▶ Wire C (n°5) of USB/485 converter to **PWR (C) (15)**
- ▶ Tighten the cable gland to seal.



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

Configuration: All switches on **"ON"**

Contact us for more information about the product.

Respect the bus wiring.

A USB/RS485 converter is recommended to connect the SYCLOPE **COOLTOUCH®** to a computer. Please refer to converter documentation to realize the connection.

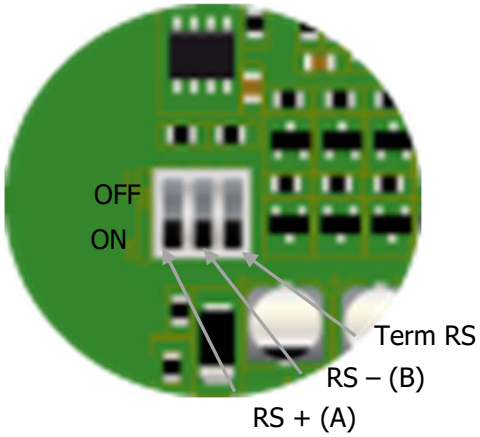
Reference	Name
INF1021	Converter USB => 485

Devices can be chained respecting the order of cables (Parallel wiring).

b) Polarization and termination of the RS485 bus

The bus can be polarized from your device if necessary. To do this you must switch the two micro-switches (**Pol. RS+ (A)** and **Pol. RS-(B)**) of the electronic card in ON position.

If your device is the last on the line on the RS485 bus you can switch the **Term. RS** switch on ON to activate line termination.



For security reasons, it's imperative to turn OFF the power of your device before opening the case to switch the micro-switches!

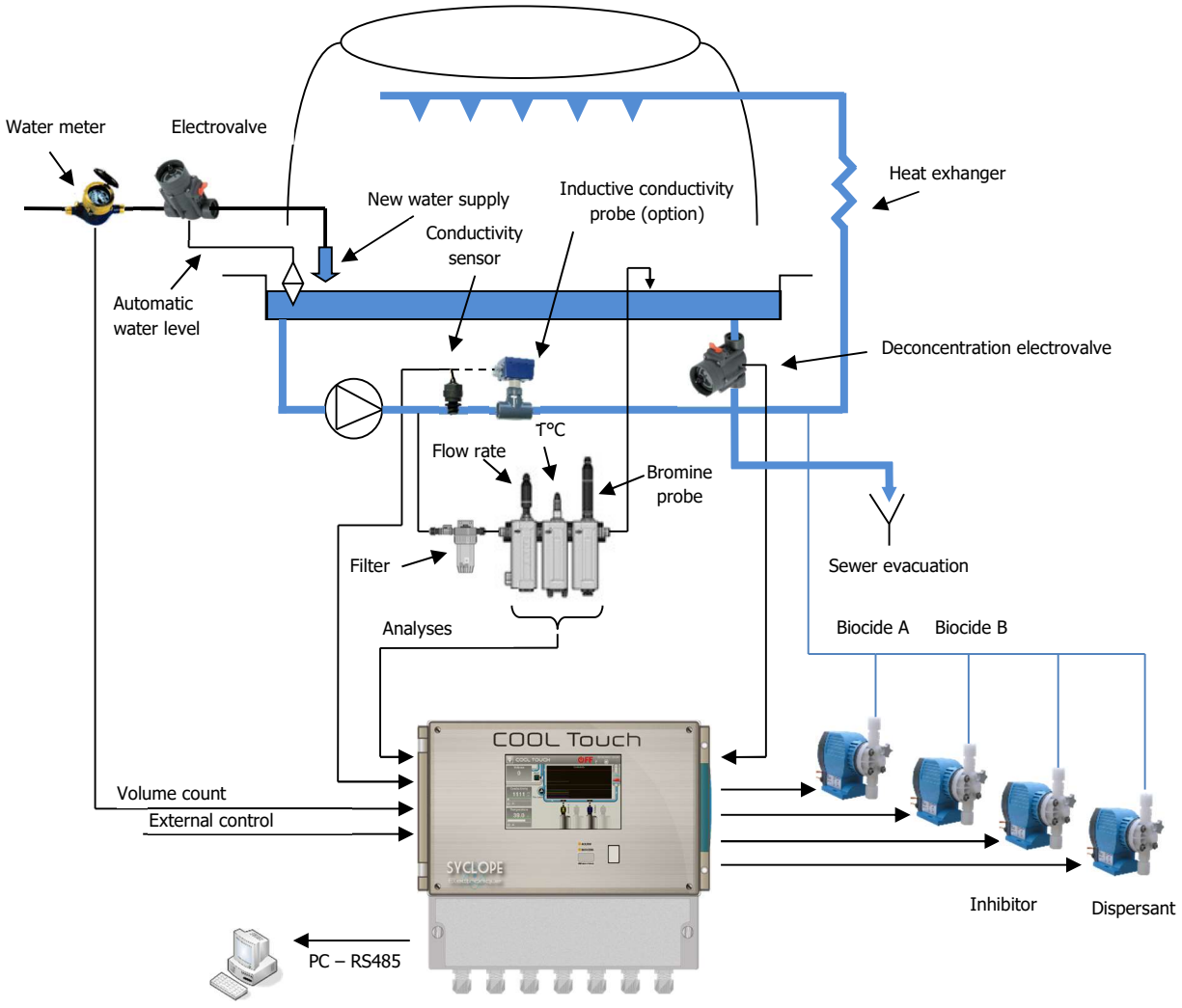
For more information about the RS485 converter configuration, see « DOC0461 Communication programming instructions COOLTOUCH ENG Rev1 ».

V. General use

SYCLOPE COOLTOUCH® is intended for measurement, regulation and treatment of swimming pool water. The installation of **SYCLOPE COOLTOUCH®** equipment is based on the principle of measurement and regulation on the pool filter circuit.

The evaporated water from the cooling tower is supplemented by new water. A stand-alone level switch keeps the water level constant. These operations increase the mineral salt content of the circulating water. To reduce this content, the deconcentration valve must be opened at defined intervals. This loss is compensated by the supply of new water.

To prevent corrosion and tartar formation in the cooling tower, an inhibitor and/or dispersant should be added in proportion to the new water supply. To ensure that the cooling tower water does not become infected with germs, it must be regularly added oxidizing or non-oxidizing biocides following a predefined cycle.



VI. Commissioning the SYCLOPE COOLTouch®

You have just made the electrical connections and the connections of the various measurement and regulation devices. You are ready to realize the commissioning of your **SYCLOPE COOLTouch®**.

- Switch ON the device.
- Check that everything is good, your control panel is switched ON and other elements of your installation haven't been disturbed.

SYCLOPE COOLTouch® regulator doesn't automatically start the treatment and dosing of chemical product when you switch ON. Only the user can initiate the treatment after ensuring that the control unit is properly programmed according to his needs.

SYCLOPE COOLTouch® regulator is fully configurable. When you switch ON, the predefined measured parameters are displayed and the regulation processes are inactive.

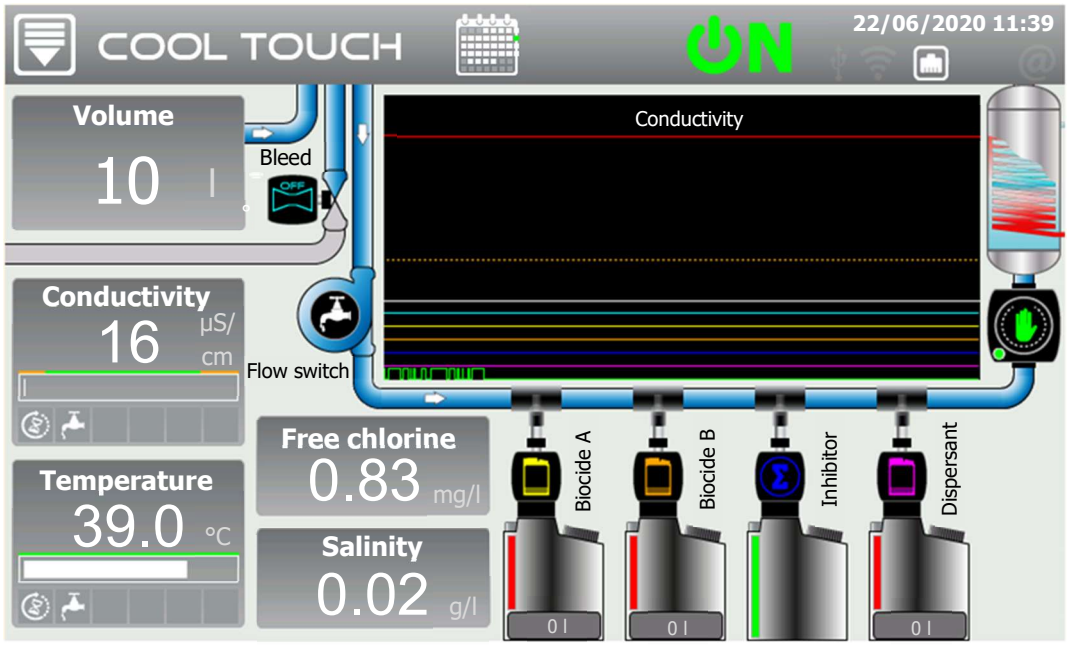
SYCLOPE COOLTouch® regulator is delivered with standard programming. The user should modify this programming is it doesn't correspond with his needs. To modify the programming of your controller, please refer to the following chapter.

VII. Display mode and type

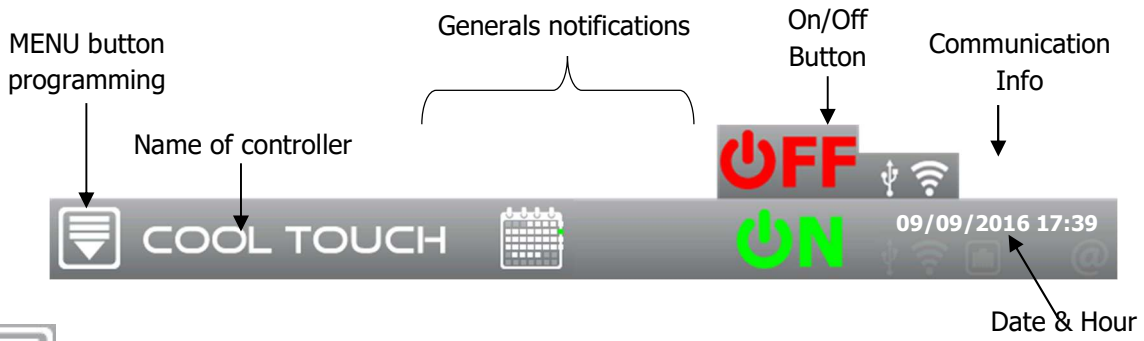
SYCLOPE COOLTOUCH® regulator are fitted with a color touch screen graphic, all programming actions are realized with by pressing the screen. The touch screen is a resistive technology, you must press firmly on the screen to validate the action.

Make sure that your **SYCLOPE COOLTOUCH®** controller is correctly programmed! An excess of product, or even a mixture, can cause harmful actions on human health and the environment.

1) Main screen display



a) The upper banner



Menu button programming – Press to open the menu

For more information about this part, see « DOC0485 - General programming instructions COOLTOUCH ENG Rev1»

General notifications

Active alarm(s) *

* Depending on User configuration

Calendar Icon

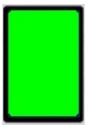
Calendar – Tap to access the maintenance schedule.

On/Off button

Controller switched off – Press it to switch the controller ON

Controller switched on – Press it to switch the controller OFF

External touch button

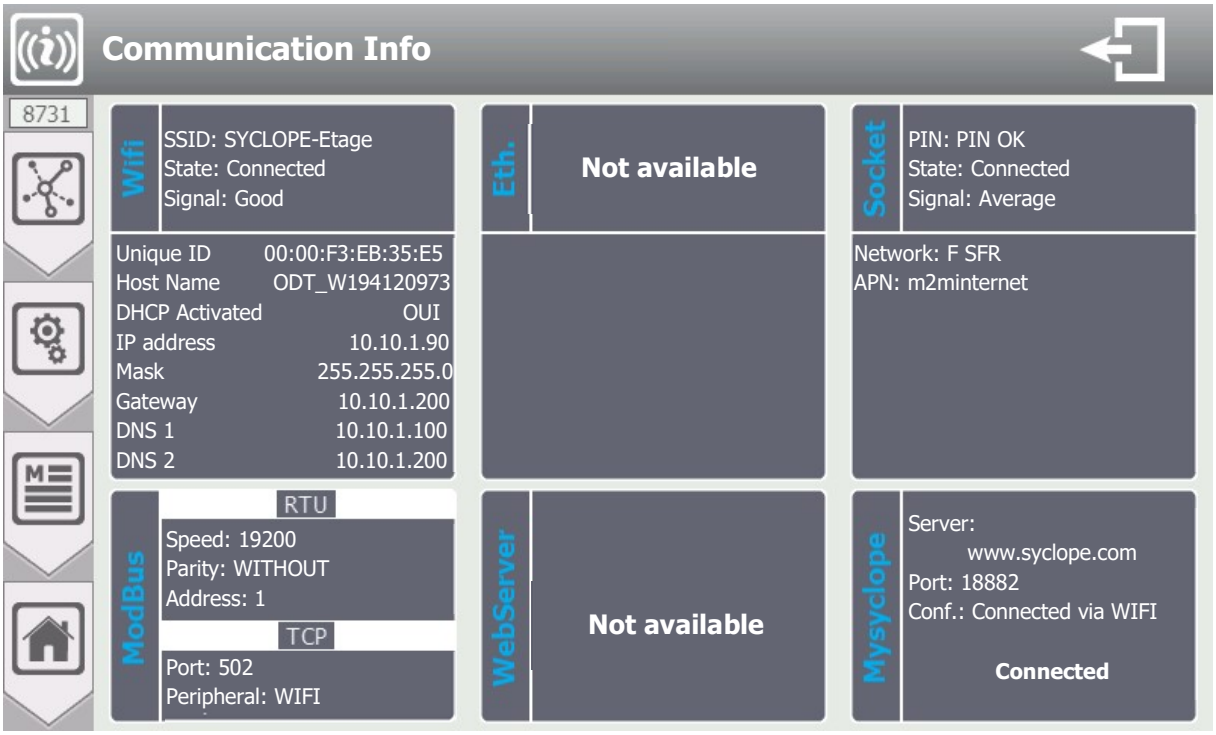


Realize the option configured in « Menu User »; « General configuration »; « Button ». Start/Stop function set as standard.

See "DOC0485 - General programming instructions COOLTOUCH ENG Rev1" for more information.

Communication Info

Press it to display communication information



For more information about this part, see « DOC0485 - General programming instructions COOLTOUCH ENG Rev1 »

Notifications

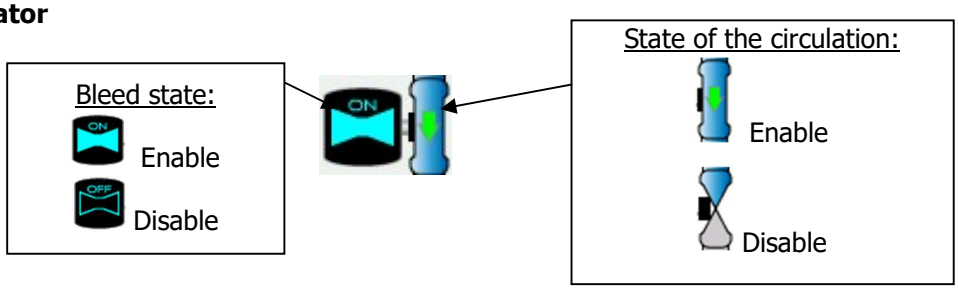
Inactive		Active
	USB connection	
	Wifi connection	
	Ethernet connection	
	GSM connection	
	MySyclope connection	

 No connections to MySyclope server (See. *DOC0461 - Communication programming instructions COOLTOUCH* for more information)

 USB key detected but not compatible, not readable (USB key must be formatted in FAT32)

 Connections to WIFI impossible (See. *DOC0461 - Communication programming instructions COOLTOUCH* for more information)

Bleed indicator



- **Flow switch indicator**

 Flow switch is ON.

 Flow switch is OFF.

- **Biocide, inhibitor, dispersant and dosing indicator**

 Waiting for end of bleed.

 Injection is ON

 Injection is OFF.

 Injection time is full.

➢ **Tower indicators**

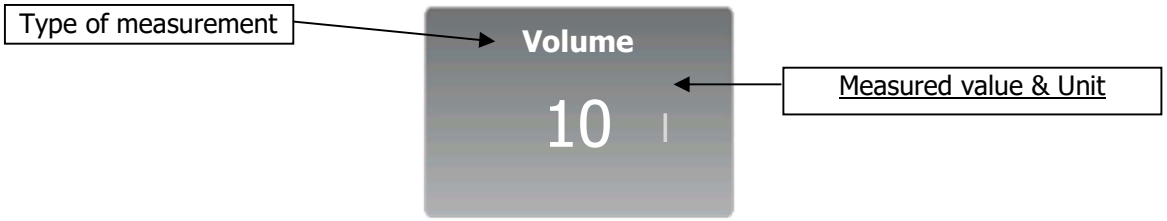
Manual operation

Operation on timer

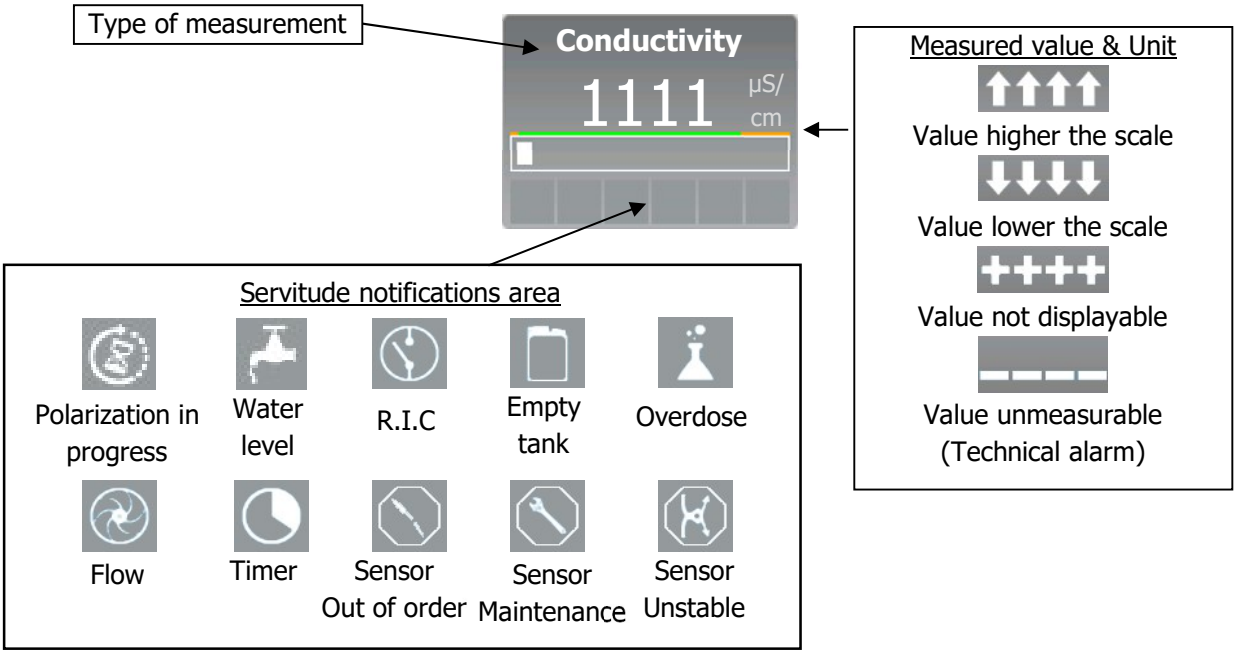
Stop

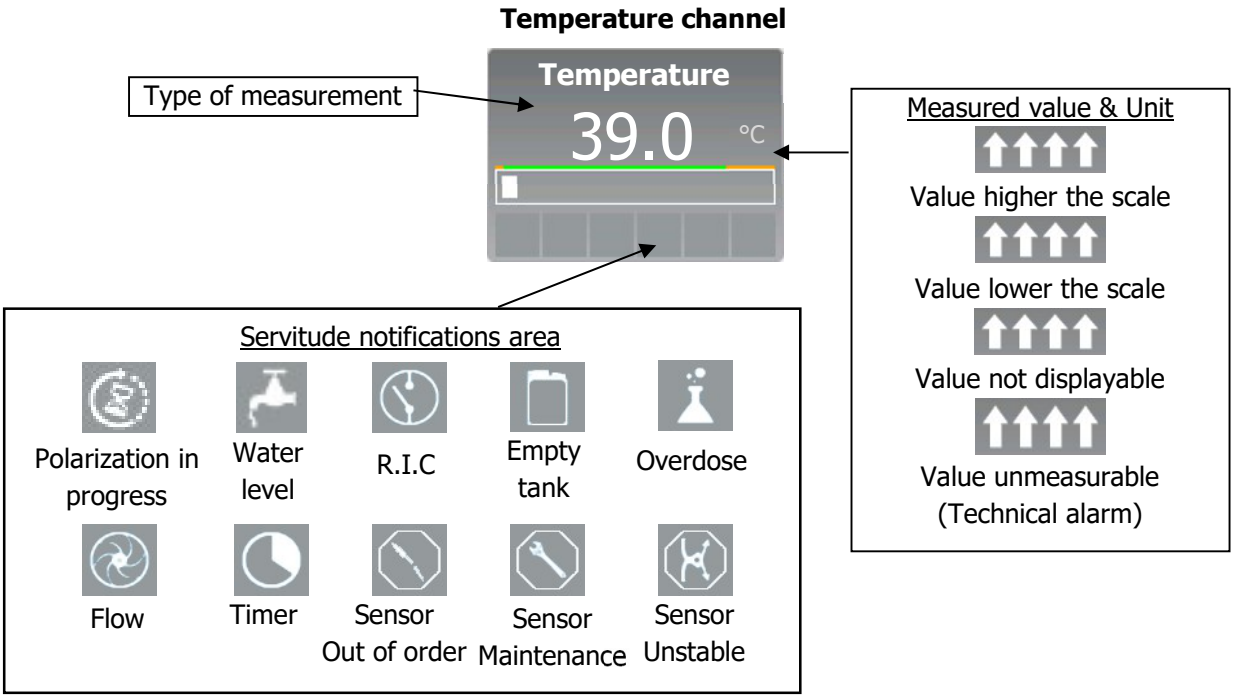
b) Display details of the channels

Volume channel



Conductivity channel



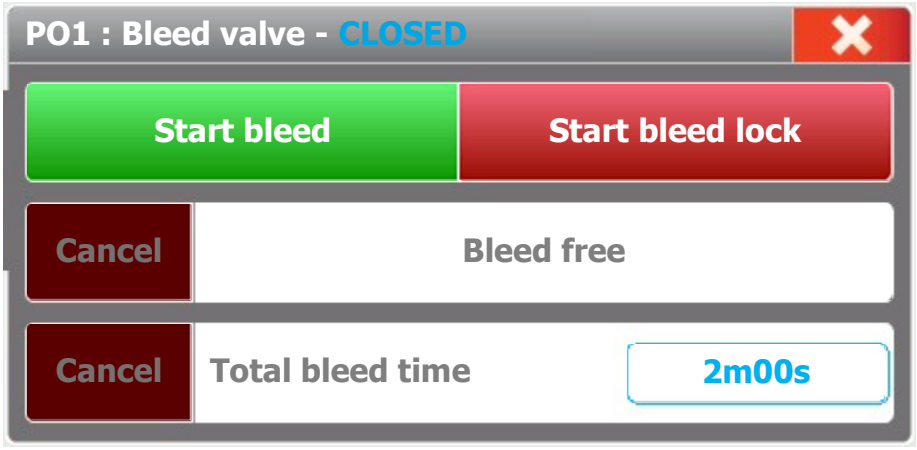


2) "Detailed" display of a channel

a) Bleed valve

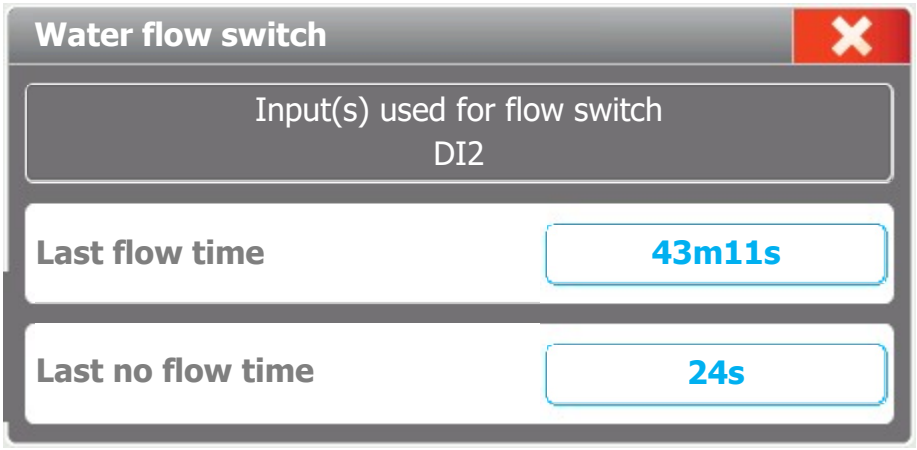
To open the detailed display screen, press on 

of the main screen.



b) Water flow switch

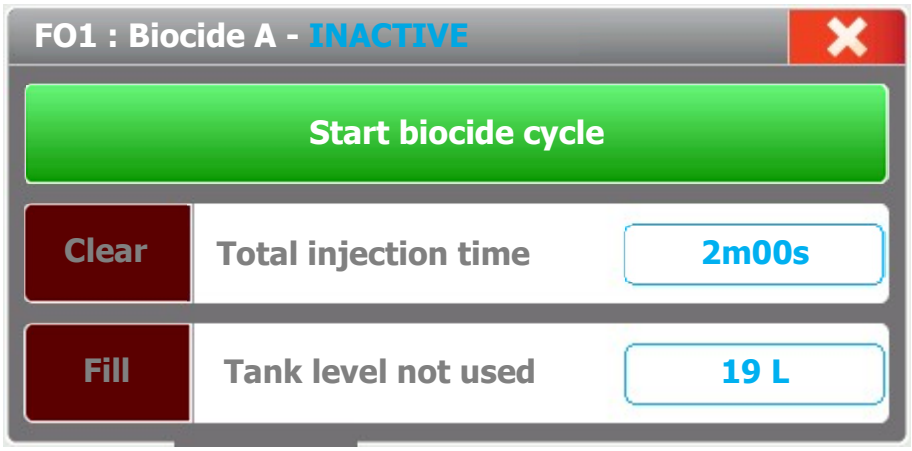
To open the detailed display screen, press on  of the main screen.



c) Biocide

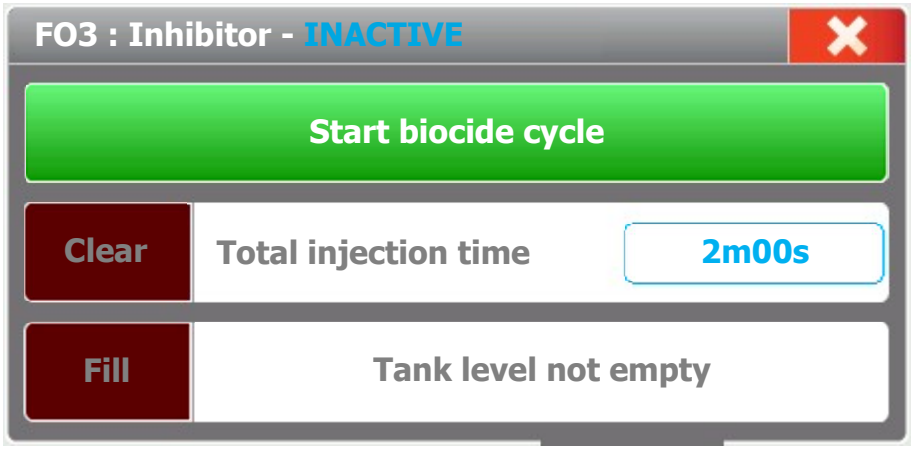
Example with Biocide A

To open the detailed display screen, press on  of the main screen.



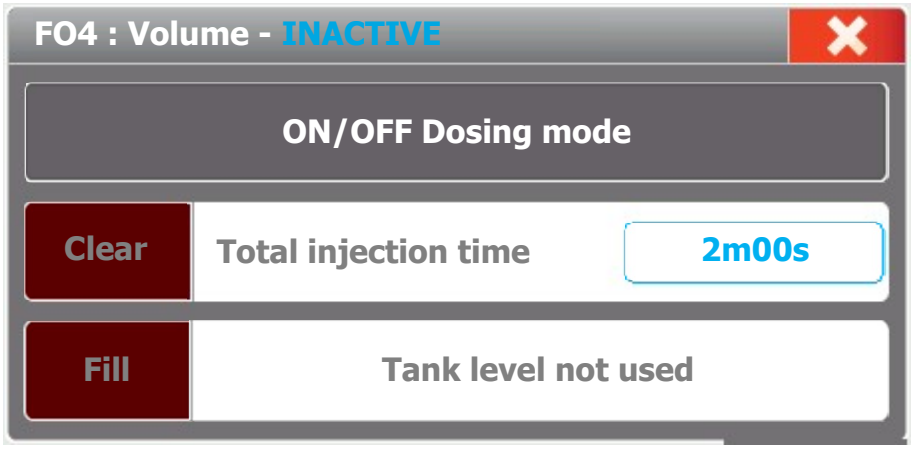
d) Inhibitor / Dispersant

To open the detailed display screen, press on  of the main screen.



e) Dosing mode

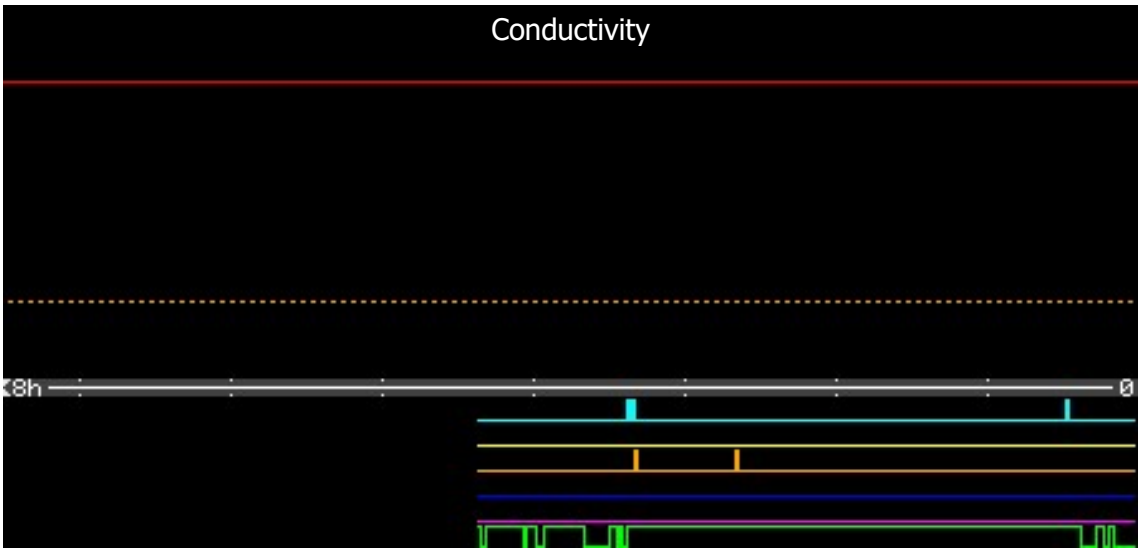
To open the detailed display screen, press on  of the main screen.



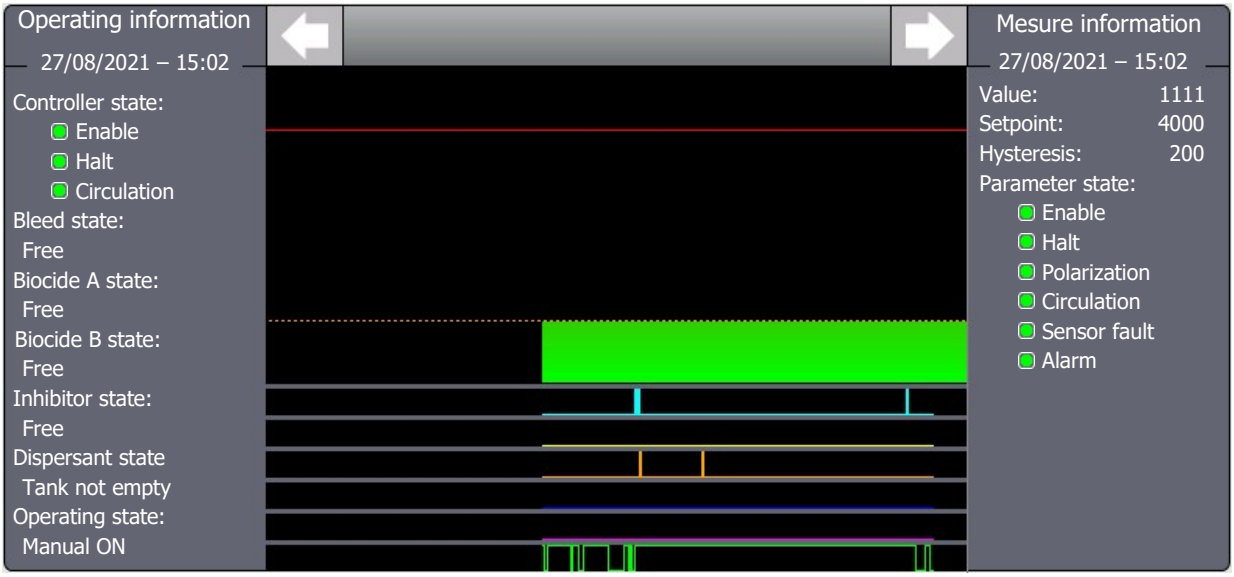
f) Tower management

To open the detailed display screen, press on  of the main screen.

3) Graphical part



Press it to open following screen:

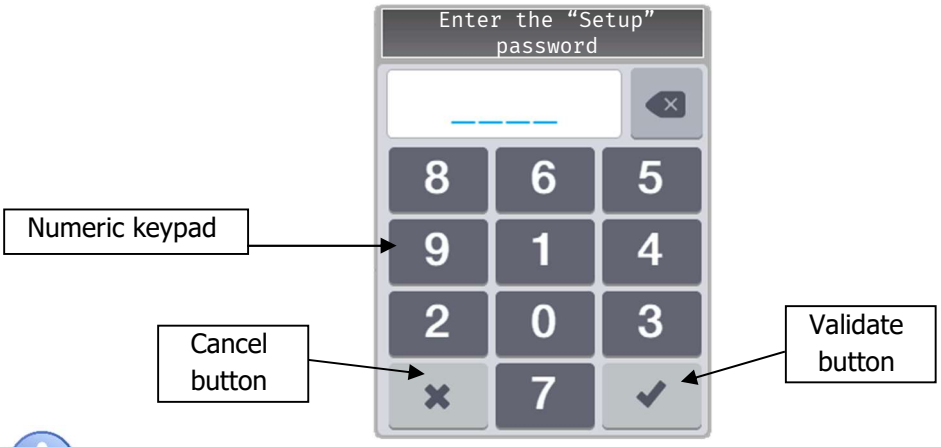


VIII. Input mode

The **SYCLOPE COOLTOUCH®** controller has a 5" touch screen. All orders are made by pressing areas of the screen provided.

1) Setup or Settings code entry screen

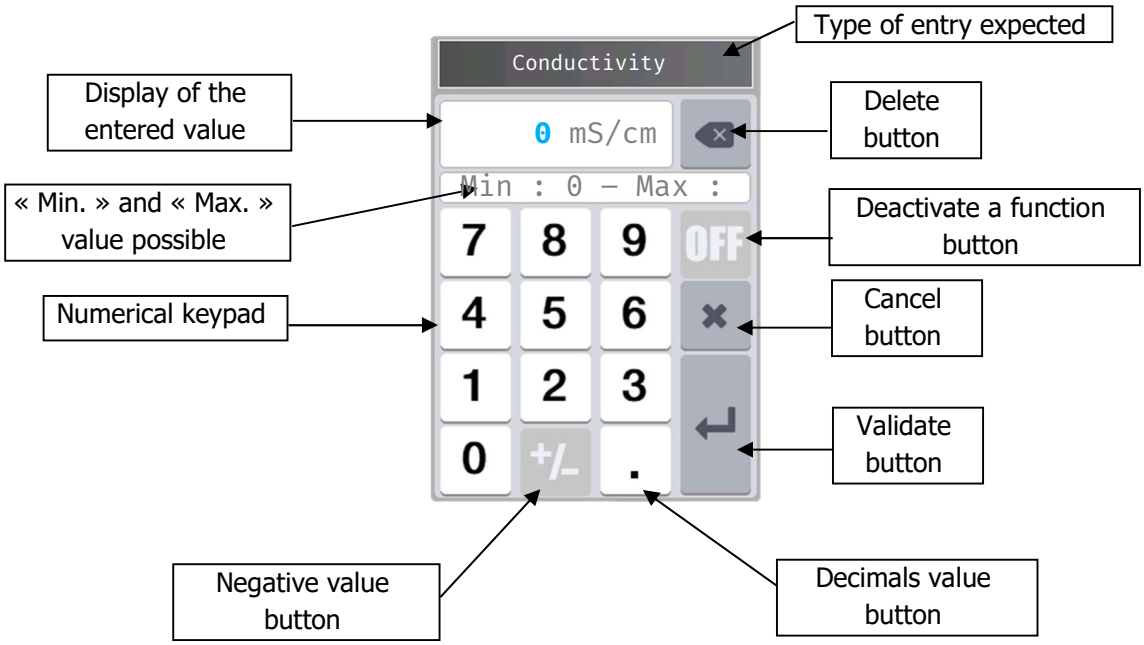
This screen will appear if a Setup or Setting code is programmed.



For more security, numbers are displayed randomly each time this screen appears.

2) Numerical value entry screen

This screen will appear when entering a numeric value.



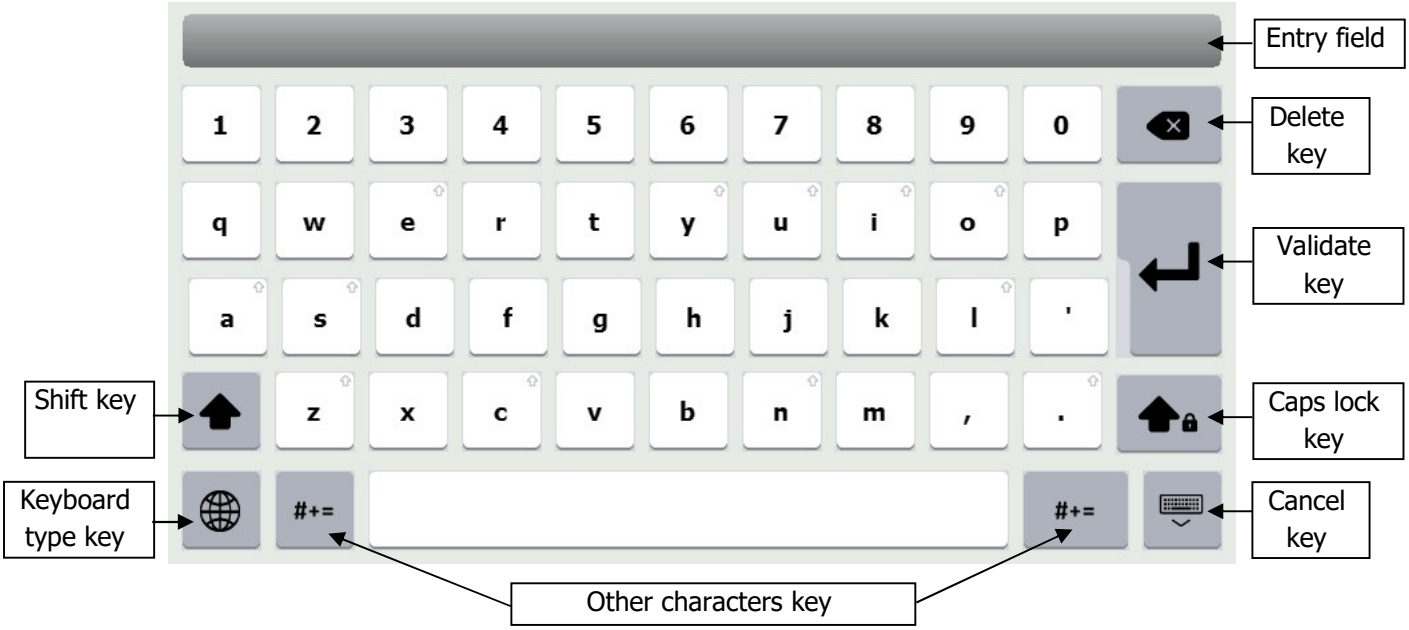
Depending on the values to be entered, some keys may be greyed out because they are not used for the expected value.

The decimal symbol changes automatically according to the language.

If an incorrect or out-of-scale value is entered, the « Min : 0 – Max : 14.00 » is displayed in red when you press « Enter »

« OFF » button used to deactivate a value, example, deactivate an alarm threshold.

3) Alphanumeric keyboard



a) « Shift » key

This key switch the keyboard from lowercase to uppercase and vice versa. When this key is pressed, it will automatically switch again after pressing an alphanumeric key.


Key released and inactive => press


Key pressed and active


Key not available ins this keyboard configuration

b) « Caps lock » key

This key switch the keyboard from lowercase to uppercase and keep it in uppercase. In this position the "Shift" kay allows a temporary toggle from capital to small.


Key released and inactive => press


Key pressed and active


Key not available ins this keyboard configuration

c) « Keyboard type » key

This key allows you to change keyboard type. Each language has its corresponding keyboard (AZERTY, QWERTY, QUERTZ…). It's also possible to display the keyboards of the other language by pressing the key below.


Key released => press change keyboard type.

d) « Other characters » key

This key switch the keyboard to symbols or other characters not available in the lower and upper case.

Key released lowercase uppercase mode active.

=> Press

Key pressed other character mode active.

e) « Back » key

This key deletes the last character entered.
Press to delete the last character.

f) « Enter » key

This key closes the keyboard while saving the changes.

Tap to close and save.

g) « Close » key

This key closes the keyboard without saving the changes.
Press to close without saving.

h) Special case of access to accented character keys.

To access accented characters, press and hold the corresponding unaccented character for more than 2 seconds to display the list of available characters. This list close automatically when any character is pressed.

Example: Press the lowercase “a” key for 2 seconds

All keys with this symbol at the top right have additional characters accessible by pressing them for 2 seconds.

4) Main input elements

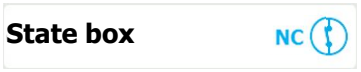
a) Opening a selection list

Press  to open a list.

b) Multi selection button

Press  to change the state Inactive/Active 

Multi selection version, press the item to select



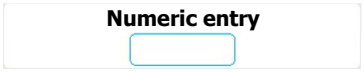
Press  to change the state NO / NC 

Press  to change the direction 

c) Unique selection button

Press  to active state select 

d) Input button



Press 

to open numerical keyboard.

e) Action button

Save a configuration

Delete a configuration

Back button, back to the previous screen.

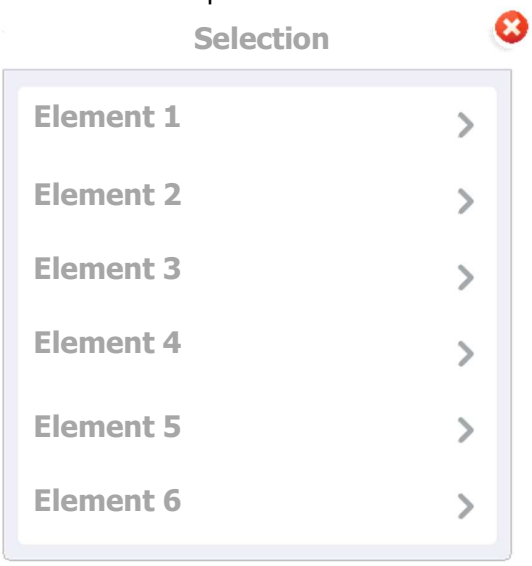
« Save » et « Back » button,
When a modification is made on a screen, the « Back » button is displayed in orange and « Save » button appears.
Press « Back » to leave without save.
Press « Save » to exit saving changes.

f) Selection list

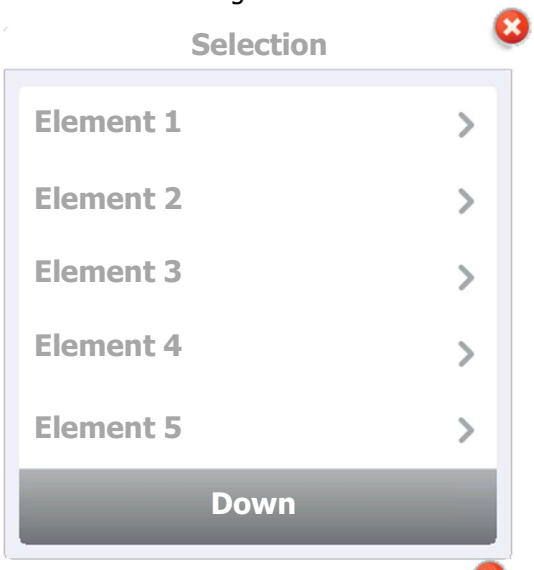
When an action is symbolized by this type of button, a list will open with the corresponding elements.

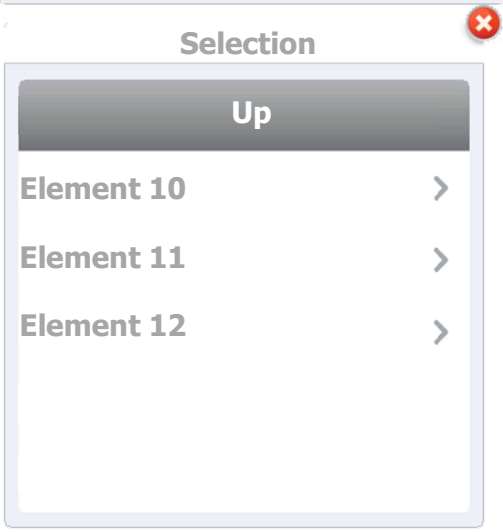
The "simple" list offers maximum of 6 items, in the event that the list is longer, navigation buttons will appear to move through the list.

« Simple » list



List with navigation buttons



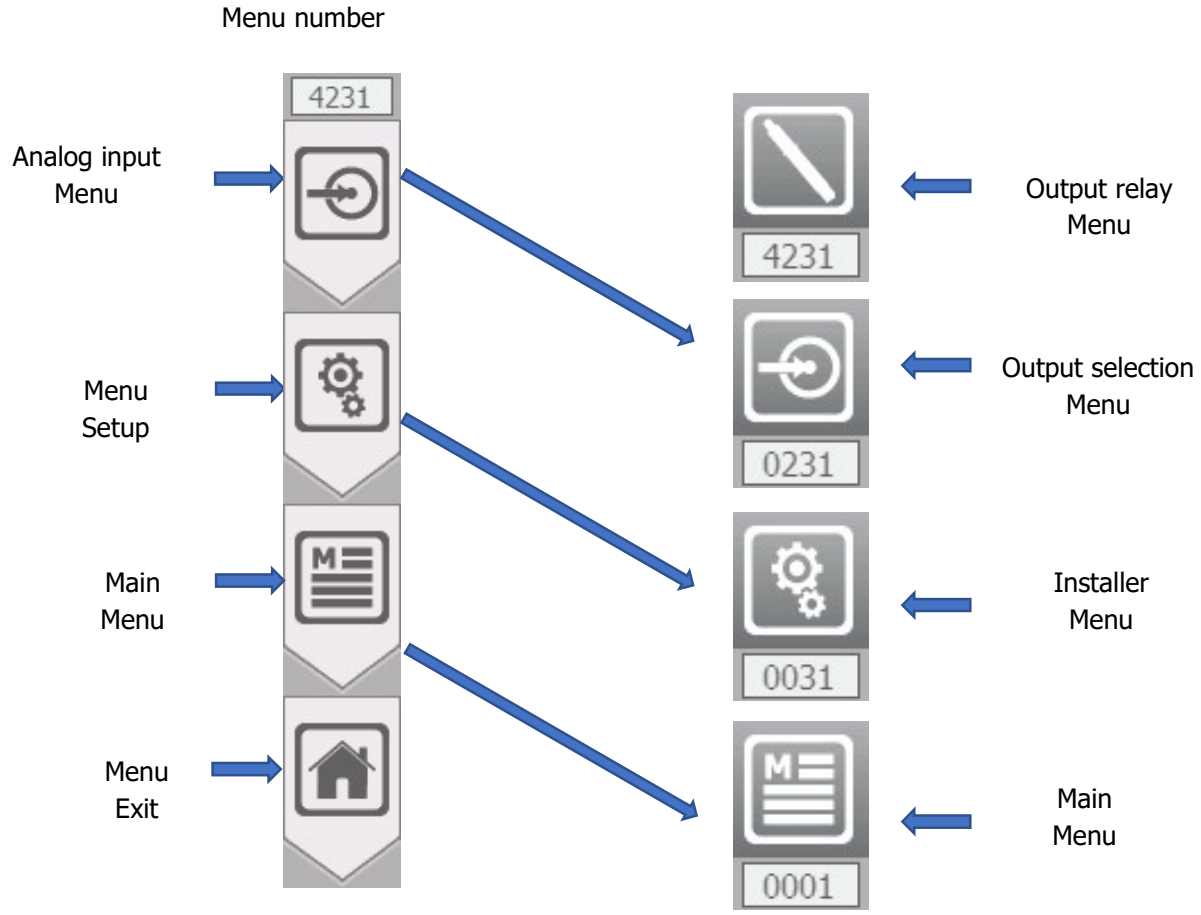


- Close the list without selection
- DOWN Move the list down
- UP Move the list up
- **To select an element press it**

g) Navigation bar

In the programming menu each selection of a function adds a button in the navigation bar.
It's possible at any time to go down one or more levels in the programming by clicking on one of the menu buttons.

Example:



Icons in the navigation bar correspond to the identification icons in the top left of each screen.

h) Lock symbol

Padlock symbol is used when a menu is locked by a password or when an option is locked by configuration.

IX. Annexes

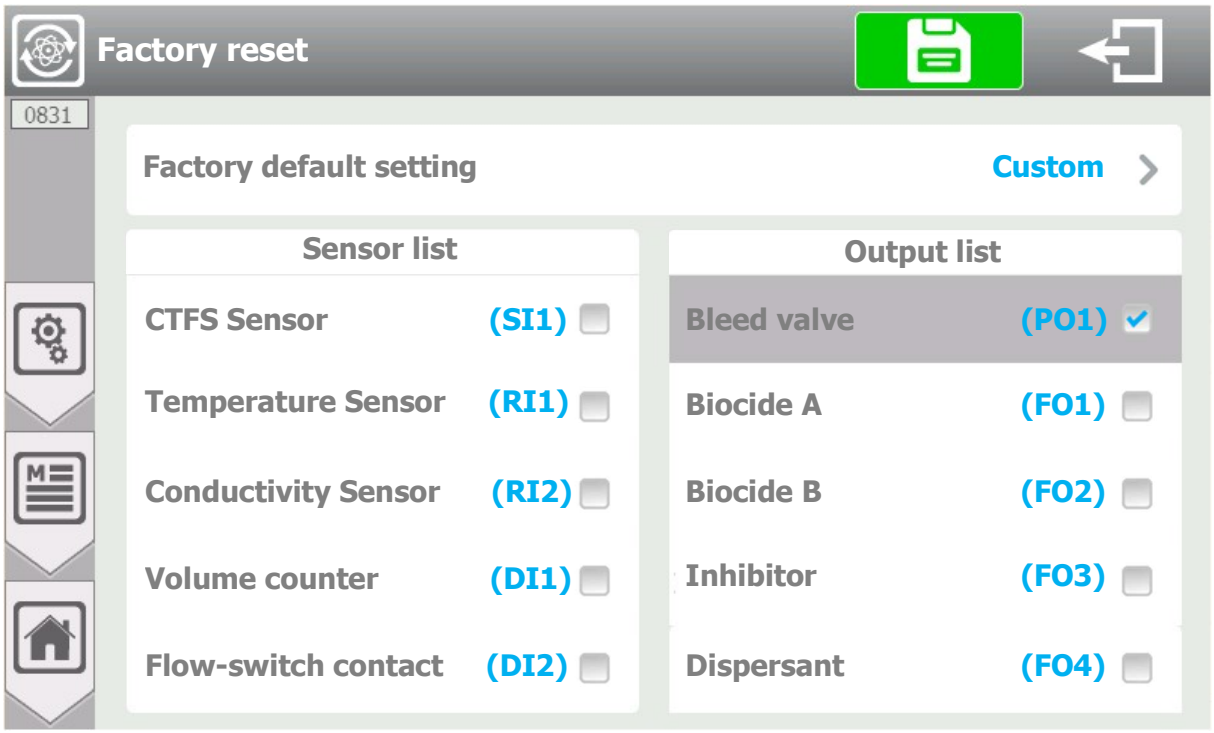
5) "Configuration & Installation" – "Reset Factory" menu [0831]

Press  then 

and 

to open following screen.

« RESET FACTORY » menu will allow you to reset the regulator configuration by choosing some pre-set operating options.



- **Factory defaut setting**
  - Click on it to select the desired default setting:
    - **Custom** (select sensors and outputs)
    - **Configuration 1 : CTFS conductivity Volume – Bio A - Inhibitor**
    - **Configuration 2 : CTFS conductivity Volume – Bio A – Inhibitor - ORP**
    - **Configuration 3 : CTFS conductivity Volume – Bio A – Inhibitor - Chlorine**
    - **Configuration 4 : Volumetric mode Volume – Bio A – Inhibitor**
    - **Configuration 5 : Resistive conductivity Volume – Bio A – Inhibitor**

- **Sensors list**
  - Select desired sensor configuration from predefined configuration:
    - **CTFS Sensor (SI1)**
    - **Temperature Sensor (RI1)**
    - **Conductivity Sensor (RI2)**
    - **Volume counter (DI1)**
    - **Flow-switch contact (DI2)**

- **Output list**
  - Select desired output configuration from predefined configuration:

- **Biocide A (FO1)**
- **Biocide B (FO2)**
- **Inhibitor (FO3)**
- **Dispersant (FO4)**

Bleed valve (PO1) is always selected.

➢ **Press « SAVE » button to validate your configuration.**

The following window appears asking you if you really want to clear the current configuration.

- You may or may not reset the "User" or "Communication" configurations in addition to the "Setup and Configuration" section

It's also possible, if technical support is needed or requested, to reset only the communication or user part by checking only the box concerned.

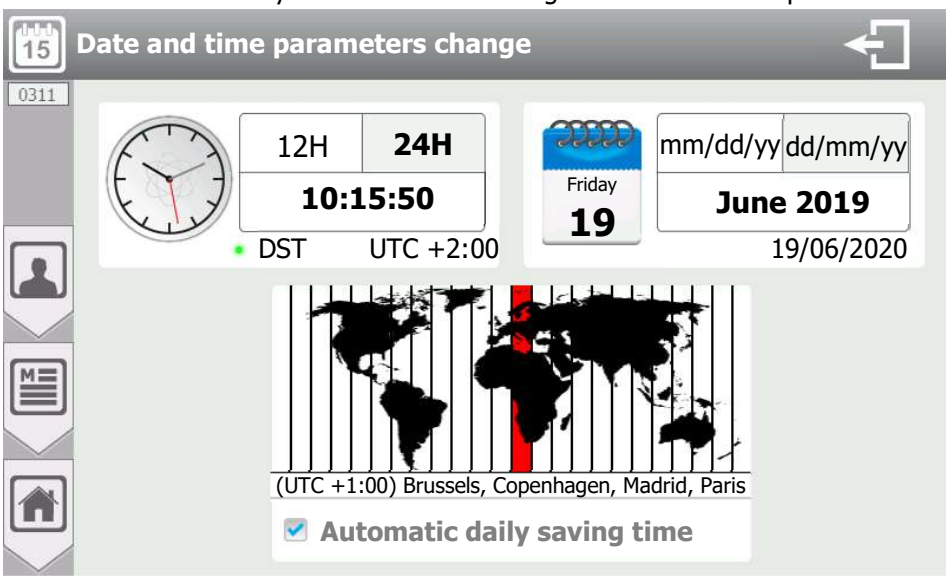
6) « User » - « DATE & TIME » menu [0311]

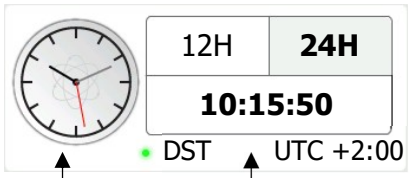
Press  then 

and 

to open following screen

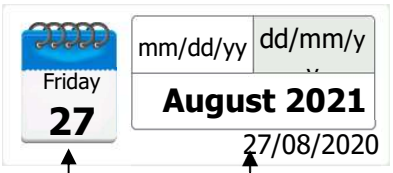
« DATE & TIME » menu will allow you to access the configuration of the time parameters.





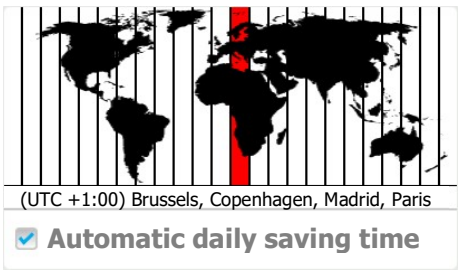
Press the time to switch display mode from 12h to 24H

Press the clock to change the time



Press the date to switch display mode from mm/jj/aa to jj/mm/aa

Press the calendar to change the date



Press the map to change the time zone

➢ **Automatic time change**

- If the selected time zone has Summer Time / Winter Time, your dispatcher will automatically change time. You can cancel this automatic time change by unchecking this box.

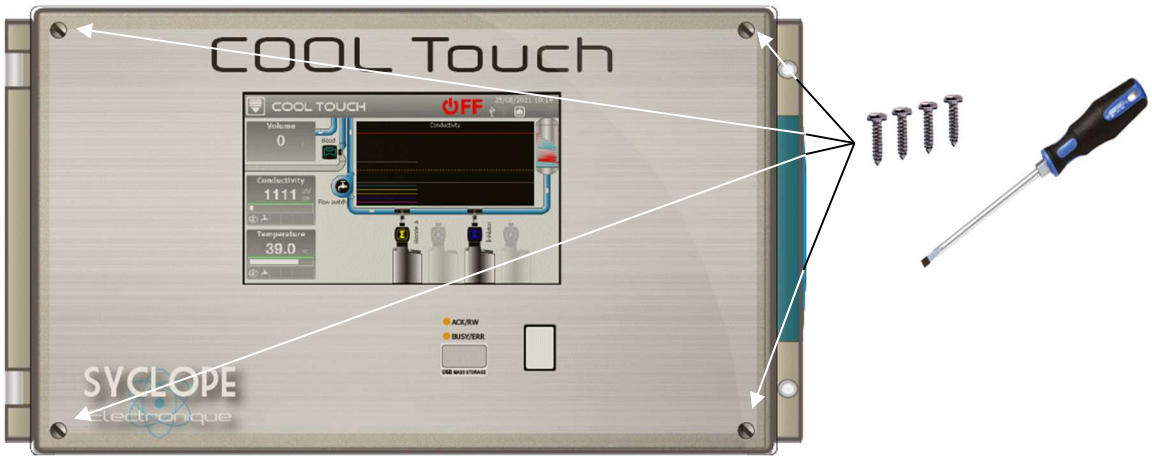
- **Automatic time change**
  - Press the time zone map
  - Scroll the list up or down, remaining pressed until the desired time zone is on the centre part of the selection.
  - Wait for automatically shutdown to account for new time zone.

7) Backup battery change

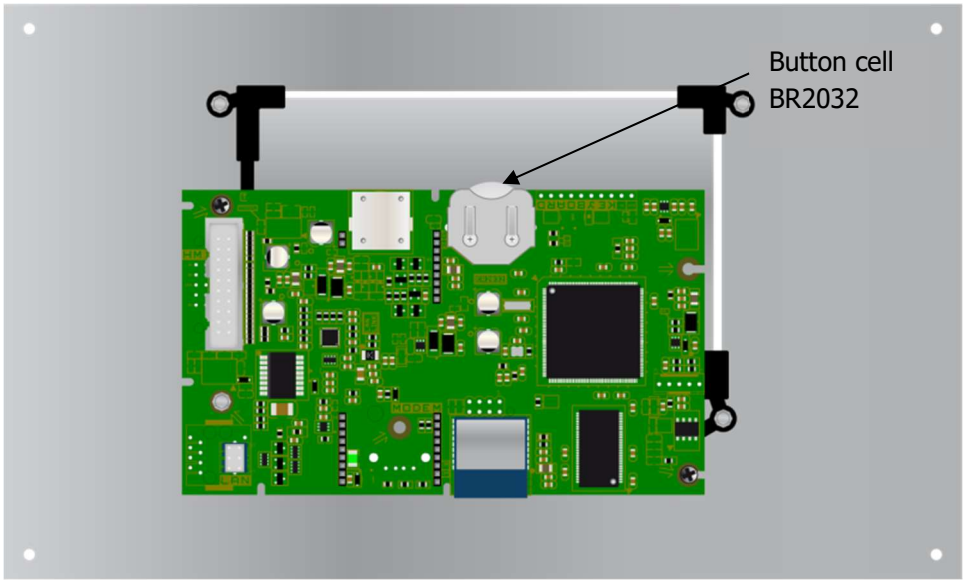
Before changing the battery, switch off the power supply!

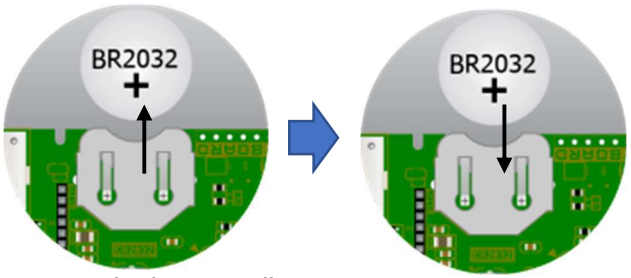
Always use the same battery as the original.

Open the transparent door and unscrew the 4 front screws using an appropriate screwdriver. Carefully disconnect the connection flat cable connecting the bottom card and the upper part of the device,



- Locate the button cell to be changed





➢ Remove the button cell ➢ Put the new button cell

➢ Reconnect the flat cable between the cards and reassemble the front panel using the 4 fixing screws. Don't overtighten because the screws are fixed in the plastic case.

Reconnect the flat cable and replace the front panel before switching on the power supply.

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