



## Installation and starting instructions



Parts of the general documentation

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

**General details:**

**SYCLOPE Electronique 2015®** Notice of the 01/12/2015 Rev 2

Controller for semi publics swimming pools.

**Range INDIG'O®**

Part 1 : Installation and starting instructions

Editor:



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Subject to modification

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## I. Generals information

### 1) Field of applications

The **SYCLOPE INDIG'O®** controller you have just purchased is an electronic device especially developed for water treatment in recreational water. It has been carefully manufactured to satisfy all the requirements of this kind of application.

It has been developed to match all different configuration and all needs for analysing and controlling water in semi-public swimming pool, hotels, camping, residential pool, spas...

Designed with an easy to understand interface, the **SYCLOPE INDIG'O®** controller is equipped with one single measuring input for sensor use in water treatment. The unit permanently analyse and control the measured parameter and alert the user in case of problem.

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 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 : [technique@syclope.fr](mailto:technique@syclope.fr)

## 2) Use of the document

Please read this entire document before starting to install, adjusting or commissioning your controller device, in order to ensure the safety of users, the processes and the equipment.

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 is observed.

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

## 3) Symbols and signs



Identification of a continue voltage or current



Identification of an alternative voltage or current



Protective ground



Functional ground



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



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



Risk of incorrect operation or damage for the device.



Comment or particular information.



Recyclable element.

#### 4) Storage and transport



It is important to store and transport your **SYCLOPE INDIG'O®** 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

#### 5) Packaging



The controller is delivered without electrical power cable.

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

Content of the packaging:

- ✓ One analyser/controller **SYCLOPE INDIG'O®**
- ✓ Installation and starting instruction notice
- ✓ Programming notice

#### 6) 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. Environment and safety procedures

Please:

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

Failure to respect these procedures can result in serious injury to users or damage the device.

### 1) Use of the equipment

The **SYCLOPE INDIG'O®** system has been designed to measure and control Chlorine, Bromine, pH, Redox potential, Ozone, etc... 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 damages that result from such uses.



Any use of sensors or interfaces not-in conformity to the features defined in this handbook must also be proscribed.

### 2) User obligations

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



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



Take care when choosing the location for installing the equipment according to the environment!  
The **SYCLOPE INDIG'O®** electronic box 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 location, isolated from corrosive vapours.

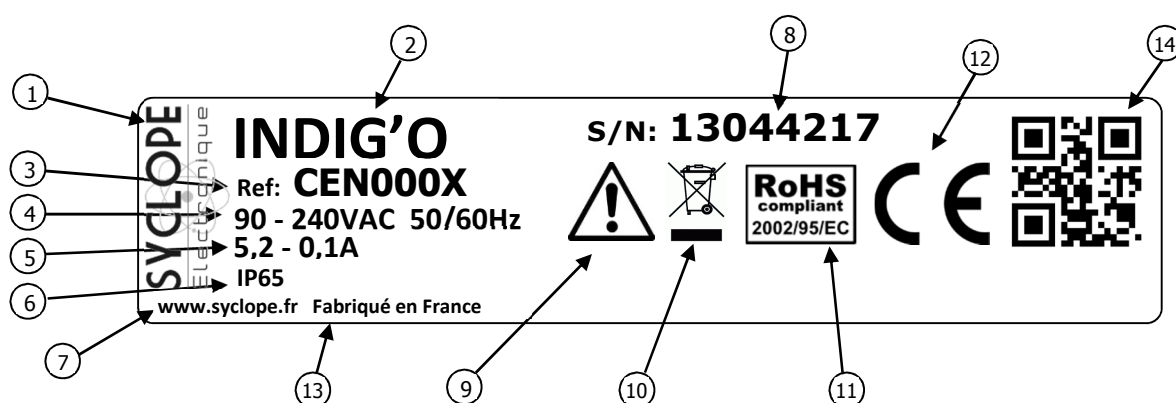


Make sure that the chemical sensors used with this device correspond well to the chemicals used. Refer to the individual technical note of each sensor. Chemistry of water is very complex, in case of doubt, contact immediately our engineering service or your approved installer/reseller.



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 localization of the identification label



① Label of the manufacturer	⑨ Particular risks. Read the notice
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 certified
⑤ Values of the maximum current	⑬ Country of origin
⑥ Classify protection	⑭ Manufacturer square code
⑦ Identification of the manufacturer	
⑧ Serial number	

Identification label





### 5) Disposal and conformity

The recyclable packaging of the **SYCLOPE INDIG'O®** 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.



According to European directive 2002/95/EC, this symbol means that the **SYCLOPE INDIG'O®** 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

### III. Technical specifications and main functions

#### 1) Technical specifications

General characteristics		
Type	Features(s)	Marker (s)
Consumption	5 W Max. (Without equipment connected on P1)	-
Power supply	90-240 VAC 50 or 60Hz	X1 Secteur
Electric protection	Fuse 160 mA. Rearmament by power supply cut-off.	F6
Working T°C	-5 °C to 45 °C (23 °F to 113 °F)	-
Storage T°C	-10 °C to 70 °C (10 °F to 158 °F)	-
Humidity	Max. 90% without condensation	-
Enclosure material	ABS or Polycarbonate (US and Canada)	-
Dimensions	Length : 188 mm (7,4 inch)	-
	Width : 160 mm (6,3 inch)	
	Height : 106 mm (4,2 inch)	
Weight	800 g	-
Protection class	IP 65	-
Display	LCD Screen 128x128 with back-light (White/Blue)	-
Inputs		
Measuring input	1x powered (24V) analog input 4...20 mA	Iin1 Capteur
	Or	
	1x potentiometric input for pH or Redox (ORP)	J1 Capteur
Conditional input	1x flow switch input (NO or NC)	K1 Pause
Outputs		
Relays outputs	1x powered relay output max. 2A/250 VAC 1x Free potential dry contacts	P1 Dosage R1 Alarme
Analog output	1x 0/4...20mA outputs Max 500 Ω	Iout1
Electrical protection for powered relay output	Quick-fuse 5A Glass 5x20mm.	F2

2) Mains functions

<b>Mains functions</b>		
Function	Specification(s)	Remarque(s)
Analyse	Analyse of one single parameter	Parameters depend of version
Control	1x powered (24V) analog input 4...20 mA	PWM control with proportional regulation or On/Off hysteresis regulation
Alarms	1x Free potential dry contacts	Set in real values Low, high or overdosing alarm
Conditional input	Flow switch	Control of injections with an external flow switch.
Maintenance	Assistance during maintenance	Test function with control of each output Clear message displayed with pictures

3) Parameters and measuring ranges

Reference	Type	Parameter	Range
CEN0000	4-20 mA powered analog input	Free chlorine	0 to 1 / 2 / 10 / 20 ppm
		Active chlorine	0 to 1 / 2 / 10 / 20 ppm
		Total chlorine	0 to 1 / 2 / 10 / 20 ppm
		Chlorine dioxide	0 to 1 / 2 / 10 / 20 ppm
		BCDMH Bromine	0 to 1 / 2 / 10 / 20 ppm
		DBDMH Bromine	0 to 1 / 2 / 10 / 20 ppm
		Free bromine	0 to 1 / 2 / 10 / 20 ppm
		Ozone	0 to 1 / 2 ppm
		Turbidity	0 to 50 / 100 / 200 / 500 / 1000 NTU
CEN0001	Potentiometric input (pH)	pH	0 to 14 pH
CEN0005	Potentiometric input (Redox)	Redox (ORP)	0 to 1000 mV

#### IV. Installation and connections

##### 1) Requirements of installation



To guarantee user safety and ensure correct operation of your **SYCLOPE UNIS'EAU®** 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:

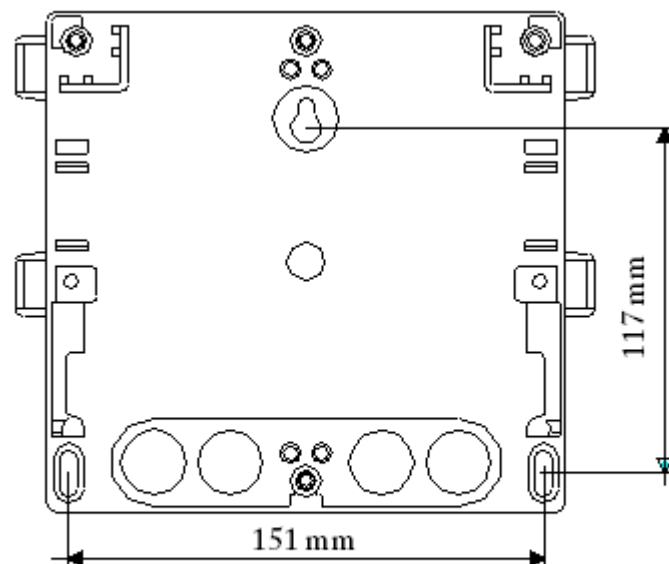
- The controller is at risk of being damaged
- The measurements can be disrupted
- The warranty is not applicable!

##### 2) Installation of the wall-mounted controllers



Before performing the installation and electrical connections, remember to turn off the power! The rating of IP65 is only guaranteed when the closing cover and the glass of the electric box are closed and when the cable glands match the diameters of your cables and are correctly sealed

- Drilling three holes (Ø 5-mm) 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
- Check the correct and accurate fixing to the wall.

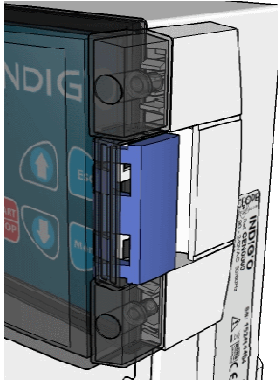
### 3) Opening and closing of the transparent door



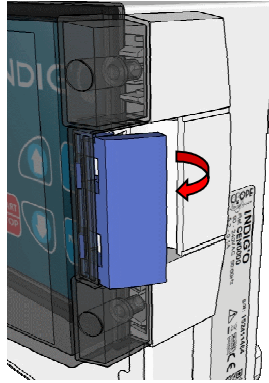
To ensure the IP65 protection class, the transparent door must be closed after usage and being sure of the O-ring quality each time.

The controller box is equipped with an automatic lock system which must be understood to manipulate it.

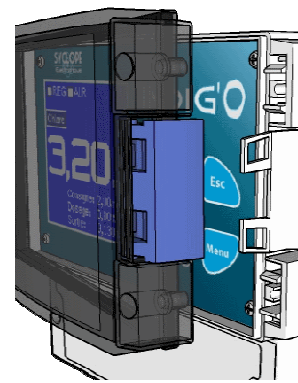
For opening the transparent door:



Door locked

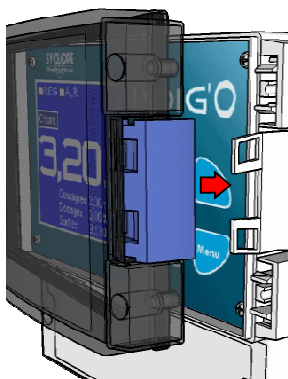


Raise the lock and pull forward it.

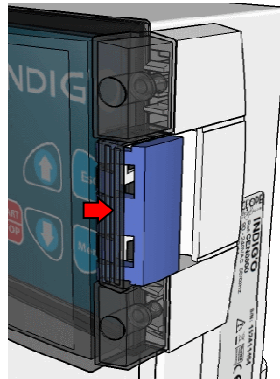


Door opened

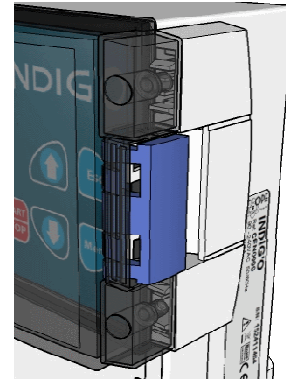
For opening and locking transparent door:



Pass the fingers behind the lock and bring the door with the inch



Press on the lock with the palm of the hand



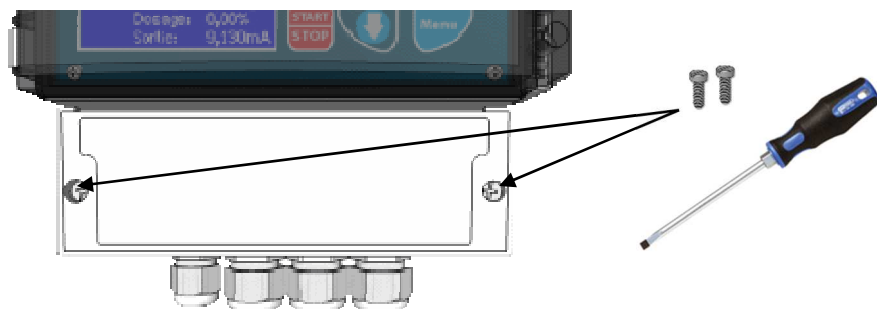
Door locked

### 4) Opening and closing of the connections cover



To ensure IP65 protection class, the connection cover must be closed after usage and the O-ring must be checked each time.

Use a specific screwdriver to remove the two screws for opening the cover.



### 5) Identification of electrical connections



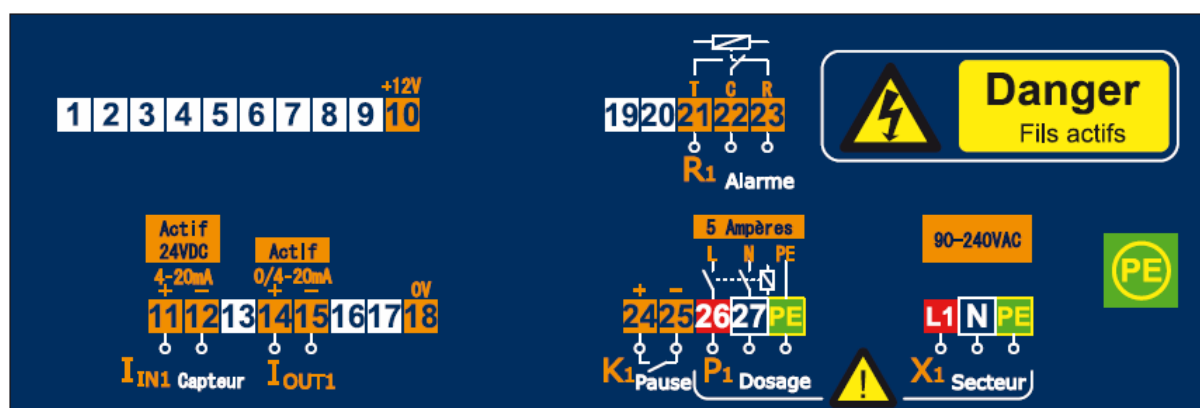
Electrical installation must be performed in accordance with current standards by authorized personnel!

A 30 mA differential circuit breaker must be installed!

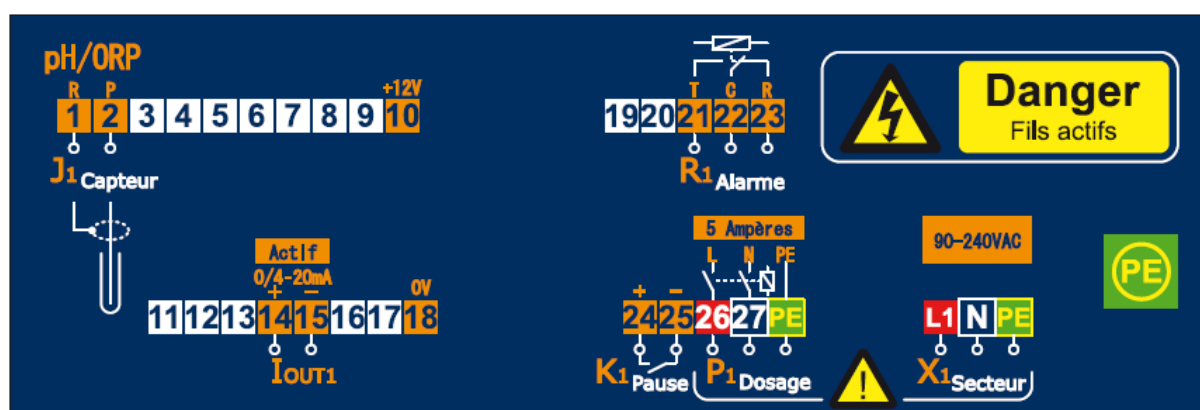
A breaker circuit of maximum 6A must be installed near the controller and easily accessible to stop the main power. It must be identified as a circuit-breaker for the controller!

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

Reference : CEN0000 with 4-20 mA analog input



References : CEN0001 and CEN0005 with pH or ORP entry



#### Internal protection:



**INDIG'O** controller is protected against short-circuits by an automatic restart fuse of 160mA and against surges by a varistor of 275V.

1



Powered relay output P1 is protected by a glass quick-fuse of 5A max. 250V.

Reference	Name
-----------	------

FUS5X20R5000	Quick-fuse 5A 5x20 Glass
--------------	--------------------------



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

In case of varistor destroyed, please return the controller to our technical after-sales department for repairing!

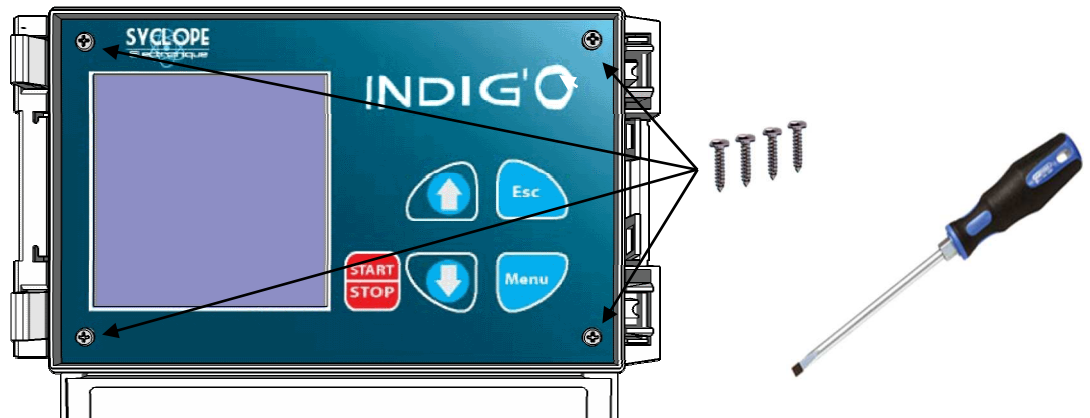
6) Changing internal fuse of powered relay output P<sub>1Dosage</sub>

Before changing the fuse, be sure power supply is disconnected!

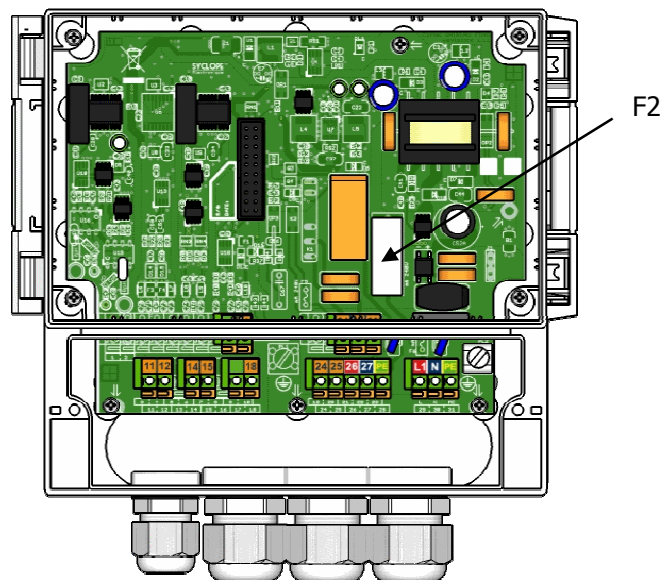


Use only an original fuse. Don't replace it by another one with higher protection value!

- ▶ Open the transparent door and unscrew the 4 screws of the front face with a compatible screwdriver.
- ▶ Disconnect the flat cable between the 2 electronic plates



- ▶ Localise the fuse on the bottom electronic card
- ▶ Remove the protection cover on the fuse
- ▶ Change the fuse and replace the protection cover



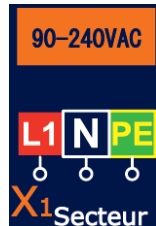
- ▶ Reconnect the flat cable between electronic cards and replace the 4 screws to fix the front face
- ▶ Do not screw them hardy because the electronic box is made in plastic material



7) Connecting of the primary power supply X<sub>1Secteur</sub>

The **SYCLOPE UNIS'EAU**® controller is equipped with a switching power supply. It is therefore able to be supplied by AC voltage comprised between 90V to 240V - 50/60Hz.

- ▶ Use a 3-point 1.5 mm<sup>2</sup> cable to wire the power supply
- ▶ Strip the 3 wires on 7 mm
- ▶ Pass the 3-point cable through a cable gland
- ▶ Wire the live cable **L1** and the neutral cable **N** to the terminal block **X<sub>1Secteur</sub>**
- ▶ Wire the ground cable **PE** to the terminal block **X<sub>1Secteur</sub>**
- ▶ Tighten the cable gland to ensure tightness when done



The **SYCLOPE INDIG'O**® controller does not have its own independent power switch. It is directly powered when connected to the main power supply.

8) Connecting of the powered relay P<sub>1Dosage</sub>

The powered relay (Entry voltage = output voltage) is used to control the measured parameter driving a dosing pump or a solenoid valve for example.

- ▶ Strip the 3 wires of the dosing unit on 7 mm
- ▶ Pass the 3-point cable through a cable gland
- ▶ Wire the live cable on **26** and the neutral cable on the **27** to the terminal block **P<sub>1Dosage</sub>**
- ▶ Wire the ground cable **PE** to the terminal block **P<sub>1Dosage</sub>**
- ▶ Tighten the cable gland to ensure tightness when done

9) Connecting of the free dry contact relay R<sub>1Alarme</sub>

The free dry contact relay is used to send alarms.

- ▶ Strip the 2 wires of the alarm unit on 7 mm
- ▶ Pass the 2 wires cable through a cable gland
- ▶ Wire on **22** the common point on the terminal block **R<sub>1Alarme</sub>**
- ▶ If you want a NC function (Normally closed), wire on **23** the other point on **R<sub>1Alarme</sub>**
- ▶ If you want a NO function (Normally opened), wire on **21** the other point **R<sub>1Alarme</sub>**
- ▶ Tighten the cable gland to ensure tightness when done



### 10) Connecting of the measuring input $I_{In1Capteur}$ Or $J_{1Capteur}$

The type of measuring input you have on the **SYCLOPE INDIG'O®** depend of the ordered reference. It can be a powered (24V) 4-20 mA analog input or a potentiometric input for connecting a pH or an ORP sensor.



The 4-20 mA analog input  $I_{In1capteur}$  is powered and should not be supply!

The potentiometric input could only receive pH or ORP sensor designed for this kind of input.

Inputs  $I_{In1capteur}$  and  $J_{1Capteur}$  are galvanically isolated.

No claim will be accepted in case of failure of the sensor by a wrong connection!

#### ➤ For the 4-20 mA version

- ▶ Strip the 2 wires coming from the sensor on 7 mm
- ▶ Pass the 2 wires cable through a cable gland
- ▶ Wire on **11** the (+) and on **12** the (-) from the sensor (respect polarity) on terminal block  $I_{In1capteur}$
- ▶ Tighten the cable gland to ensure tightness when done



#### ➤ For the pH or ORP version

- ▶ Strip carefully the coaxial cable and separate the shield cable to obtain 2 distinct wires
- ▶ Pass the 2-points coaxial cable through a free cable gland
- ▶ Wire the shield part to **R** (1) and the hot wire to **P** (2) on terminal block  $J_{1Capteur}$
- ▶ Tighten the cable gland to ensure tightness when done



### 11) Connecting of the analog output $I_{OUT1}$

The analog output  $I_{OUT1}$  is used to send the measured value to a recorder or a PLC by a 0/4-20 mA signal.

- ▶ Strip the 2 wires coming from the PLC on 7 mm
- ▶ Pass the 2 wires cable through a cable gland
- ▶ Wire on **14** (+) and **15** (-) (respect polarity) on the terminal block  $I_{OUT1}$ .
- ▶ Tighten the cable gland to ensure tightness when done



12) Connecting the conditional input **K<sub>1Pause</sub>**

Controller **SYCLOPE INDIG'O®** is equipped with a conditional input **K<sub>1Pause</sub>** that stop the dosing when the flow in the measuring housing is not correct. This input could be programmed as a NO or NC function to match different type of flow switch.



It is necessary to stop dosing when the flow is not correct in the measuring housing.



The **K<sub>1Pause</sub>** input is designed to receive a dry contact (NO or NC) or a NPN signal from an inductive flow switch.

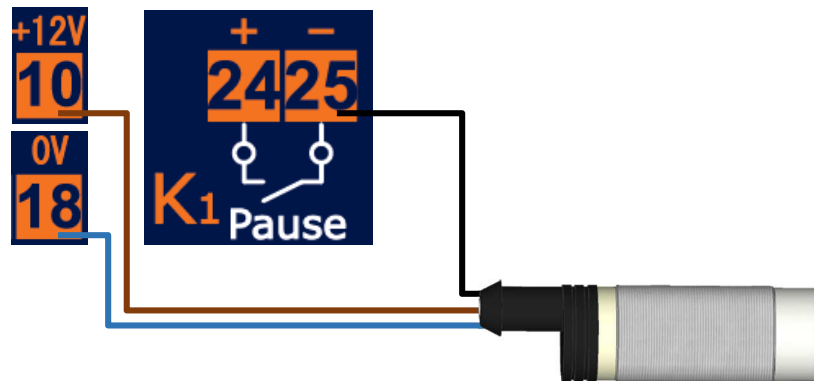
➤ Connecting of a dry contact

- ▶ Strip the 2 wires coming from the flow switch on 7 mm
- ▶ Pass the 2 wires cable through a cable gland
- ▶ Wire on **24** (+) and **25** (-) the cable from the flow switch
- ▶ Tighten the cable gland to ensure tightness when done



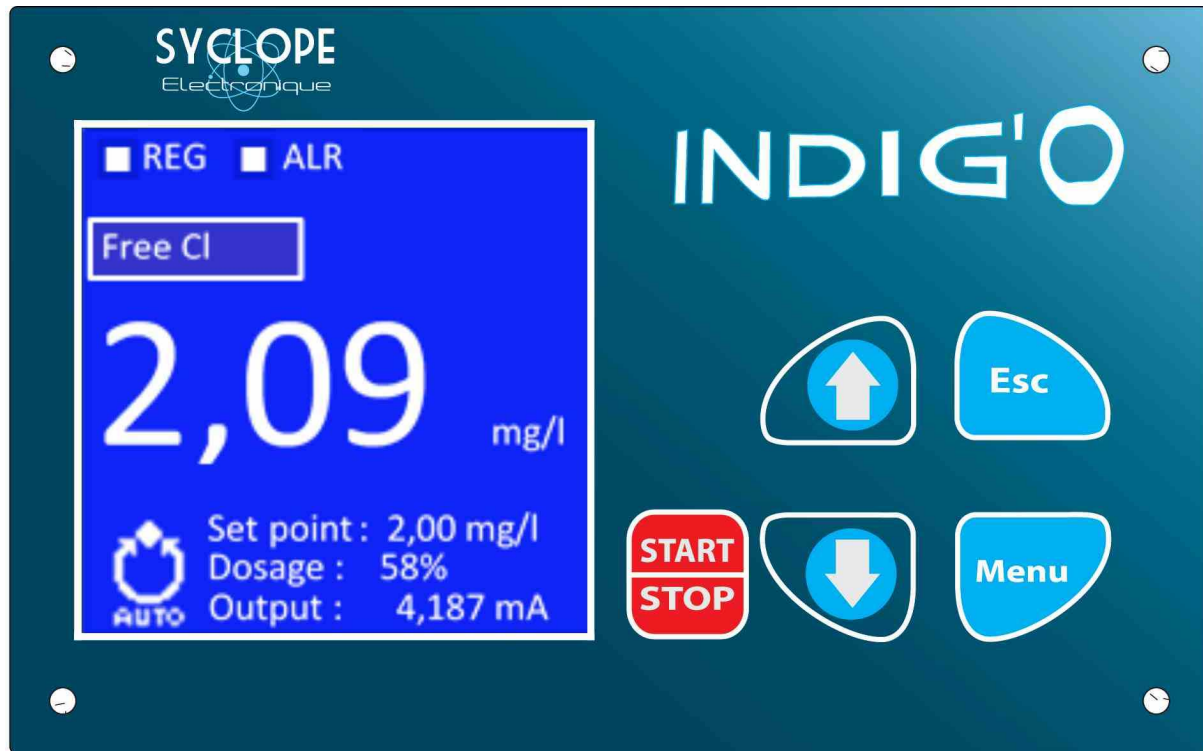
➤ Connecting of a NPN contact coming from an inductive flow switch

- ▶ Strip the 3 wires coming from the flow switch on 7 mm
- ▶ Pass the 3 wires cable through a cable gland
- ▶ Wire on **10** (+12V) the brown wire of the flow switch (Power supply)
- ▶ Wire on **18** (0V) the blue wire of the flow switch (Ground GND)
- ▶ Wire on **25** (-) the black wire of the flow switch (Signal)
- ▶ Program the way of the **K<sub>1Pause</sub>** in NC in the Configuration Menu (See programming instructions)



## V. Presentation of the Human/Machine interface

### 1) Keyboard



Display 128x128



Key "Menu" : Allow to go in the different menu or to valid a setting



Key "START/STOP" : Allow to start or stop the control. Allow also to acquit the alarms



Key "Esc" : Allow to return at the permanent display



Arrow key "TOP": Allow to increment a value or change a setting





Arrow key "BOTTOM": Allow to decrement a value or change a setting

2) Permanent display, pictograms and messages







On this display, you can see all the working of your controller:

- The measuring value
- The set point
- The dosing value
- The parameter and his unit
- The status of the relay
- Pictograms and messages for alarms



Visualisation	Signification
Value	Measuring value and unity
Parameter	Showing the measured parameter
Status of relay	Showing status of the relay. Checkmark means that relay is activated
Alarms	Showing the actives alarms
M/A Indicator	Showing status of the control. Auto  or STOP 
Set point	Value to reach
Dosage	Percent of control on the metering unit
Output	Value sent to the PLC

3) Alarms

Visualisation	Signification	Menu of modification	Value	Action
	Polarization time	<b>Configuration</b> Menu <b>Sensor</b> Page	Time	Stop dosing
	Incorrect flow	<b>Configuration</b> Menu <b>Flow switch</b> Page	NO or NC	Stop dosing
	Sensor Maintenance	-	-	Calibration Limit
	Low alarm threshold	<b>Settings</b> Menu <b>Alarms</b> Page	Value	Activate R1 relay
	High alarm threshold	<b>Settings</b> Menu <b>Alarms</b> Page	Value	Activate R1 relay
	Temps de dosage	<b>Settings</b> Menu <b>Alarms</b> Page	Time	Stop dosing Activate R1 relay
Polarization in progress or defective sensor I<3,7 mA	Polarization or default of the sensor	-	-	Stop dosing
Sensor out of range or short circuit. I>20 mA	Sensor out of range or short circuit	-	-	Stop dosing
Disconnected or defective sensor	Bad connection or sensor in default	-	-	Stop dosing

## VI. Commissioning

You have just finished to connect the power cable, the dosing units and the sensors. You are ready to start the commissioning of your **SYCLOPE INDIG'O®**.

The commissioning consist in doing the basics settings to start the measuring and the control of your water:

- Setting of the parameter, scale and display contrast
- Setting of the control set point
- Calibration of the sensor
- Setting of the alarms thresholds



- ▶ Switch on the power supply.
- ▶ Check that the display is lighted and that everything looks ok



The controller **SYCLOPE INDIG'O®** can start the dosing directly after switch on his power. The user has to control that he working is correct and that the controller is correctly set following the requirements of the swimming pool.

For programming, see the document:

Controller **SYCLOPE Indig'O®** for semi-public swimming pool (Partie 2)

## Programming instructions

## **VII. Maintenance.**

No specific maintenance is needed.

His good working depends of the good programming and all of the peripheral equipments (Sensors, dosing systems, etc...). Take informations about the maintenance of each of them and be sure to do them to ensure the good working of your process.

Repairs of the controller must be done by agreed technicians and must be done exclusively in our factory.

In case of any doubts concerning your device, don not hesitate to contact our technical after-sales service.



**VIII. CE compliance certificate**

## EC Certificate of conformity

**Designation of the product:** INDIG'O

**Declaration :**

SYCLOPE Electronique SAS, Z.I. Aéroport Pyrénées in SAUVAGNON - France -, hereby certifies by the present that the following model "INDIG'O", controller for the measurements and the controls of physicochemical parameters is in conformity with the standards and safety as defined by the European directives 2006/95/EC (Low voltage directive), 2004/108/EC (Electromagnetic compatibility) and 2002/95/CE (RoHS directive).

The present declaration is valid for all of the specimens manufactured after the date of this certificate and according to the original documents of manufacture.

The following standards were used for the examination:

- 2006/95/EC:** Harmonized standards EN61010-1:2001  
2006/95/EC Low voltage directive,  
Safety requirements for electrical equipment for measurement, control, and laboratory use  
Test report n° 2008-29 of 2008, 26th June.
- 2004/108/EC:** Harmonized standards EN61326-1:2006  
EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8,  
EN61000-4-11, EN61000-3-2 and EN61000-3-3  
2004/108/EC Electromagnetic compatibility (EMC Directive)  
Test report n° 2008-24 of 2008, 8th June.
- 2002/95/CE:** RoHS Directive (Limitation of dangerous substances).

**Date of the first sale:** 2008, July.

The present declaration engages the responsibility of :



**SYCLOPE Electronique S.A.**  
**Z.I. Aéroport Pyrénées**  
**64 230 SAUVAGNON**

Represented by :

Georges BRETON  
President and General Manager

Sauvagnon : 2008/09/09









**SYCLOPE Electronique S.A.S.**

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