SYCLOPE TERE'O® Controller for swimming pools (Part 2)

Communications instructions

<u>Content of the documentation</u>

Part 1 : Installation, commissioning and operating instructions
▶ Part 2 : Communications instructions

Informations générales :

SYCLOPE Electronique 2017® Manuel of 2017, February 11th   Rev 3.1

Analysers/Controllers for private and public swimming pools.
Product line TERE'O®

Communications instructions manual

Editor :

SYCLOPE Electronique S.A.S.
Z.I. Aéropole pyrénées
Rue du Bruscos
64 230 SAUVAGNON - France –
Tel : +33 (0)5 59 33 70 36
Fax : +33 (0)5 59 33 70 37
Email : syclope@syclope.fr
Internet : http://www.syclope.fr

© 2017 by SYCLOPE Electronique S.A.S.
Subject to modifications

Content

The **SYCLOPE TERE'O®** 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.

I. Use of the document

Please read this entire document before starting to install, adjust or commission your device, in order to ensure the safety of swimmers, users and equipment.

The information provided in this document must be strictly observed. SYCLOPE Electronique France 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

1) Signs and safety symbols

Identify a continuous voltage or a continuous current

Identify an alternative voltage or an alternative 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

2) Storage and transport

It is important to store and transport your **SYCLOPE TERE'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

3) 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.
Grounded cables for connecting pH and ORP (Redox) sensors are not provided.

Content of the packaging :
- ✓ One analyzer/controller **SYCLOPE TERE'O®**
- ✓ Installation and starting instruction notice
- ✓ Programming notice
- ✓ Communication notice (Option)

4) Warranty

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

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

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

II. Safety and environmental instructions

Please:

 ➢ Read this manual carefully before 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 TERE'O ®** system has been designed to measure and regulate pH, Redox (ORP), chlorine (or bromine) 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 TERE'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) Risks prevention

Installation and connection of the SYCLOPE TERE'O® equipment should only be performed by personnel specialised and qualified for this task.
The installation must comply with current safety standards and instructions!

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

Take care when choosing the location for installing the equipment according to the environment!
The **SYCLOPE TERE'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) <u>Identification and localization of the identification plate</u>
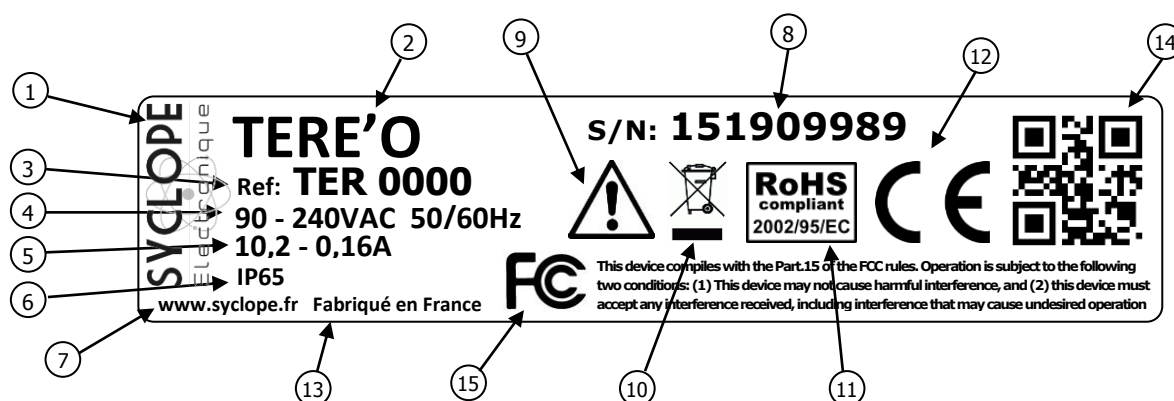
①	Label of the manufacturer	⑨	Particular risks. Read the notice
②	Model of the product	⑩	Product which can be recycled
③	Reference of the product	⑪	Limitation of dangerous substances
④	Range of power supply	⑫	EC compliance
⑤	Values of the maximum current	⑬	Country of the manufacturer
⑥	Class of protection	⑭	Manufacturer square code
⑦	Identification of the manufacturer	⑮	Conformity with the FCC part 15 Class B
⑧	Serial number		

Identification plate

5) Disposal and conformity

The recyclable packaging of the **SYCLOPE TERE'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 TERE'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.

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

III. Fundamental synoptics of communication

TERE'O controllers was designed to be connected on a RS485 bus using ModBus RTU protocol or with Internet site "mysyclope.com". Several controllers can be connected together.

1) Local connection using maintenance software "TerCom"

| Master ModBus | Slave ModBus | Slave ModBus | Slave ModBus |

Connection of one or more **TERE'O** controllers via RS485 BUS.

In order to connect **TERE'O** controller to a computer or a PLC, we propose a USB/RS485 interface module.

Reference	Designation
INF1021	USB/485 interface module

2) Connection to mysyclope.com data website

Web site
« Mysyclope.com »

SMS

Brousser

Smartphone
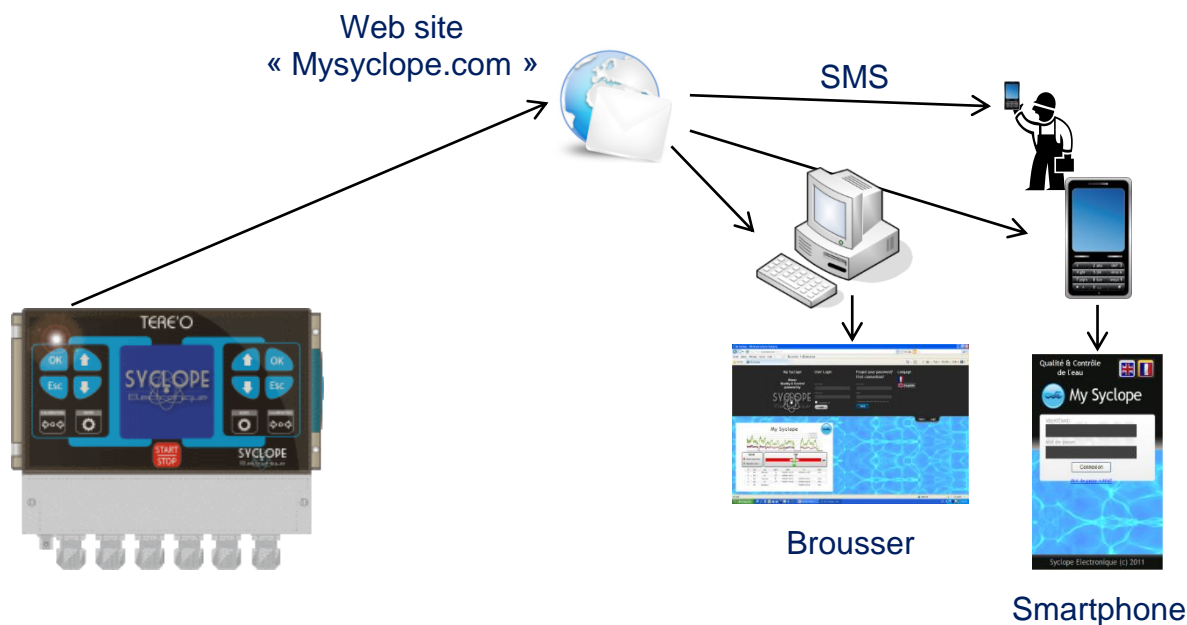
TERE'O controller can be connected to Internet by GSM/WIFI/IP to mysyclope.com.

In order to connect **TERE'O** controller to Internet, several internal connection KIT are available.

Reference	Designation
KMD0020	GSM/GPRS MODEM Kit with cable and local antenna
KMD0040	ETHERNET MODEM Kit
KMD0050	WIFI MODEM Kit with cable and local antenna

IV. Internal modem connections

1) Internal connections of GSM, WIFI and Ethernet modems

TERE'O controller can use various types of modem to establish communications with "mysyclope.com" internet site.

According to the modem type and internet subscription with your provider, data are transmitted to "mysyclope.com" and thus allow a real-time management of the **TERE'O** controller. Some messages can be send to the users by email or SMS and measurements and alarms are recorded.

2) Internal modem connections on electronic plate

The "sockets Modems" are available in option and must be inserted on the electronic plate as shown below. Corresponding cables are provided with modems.
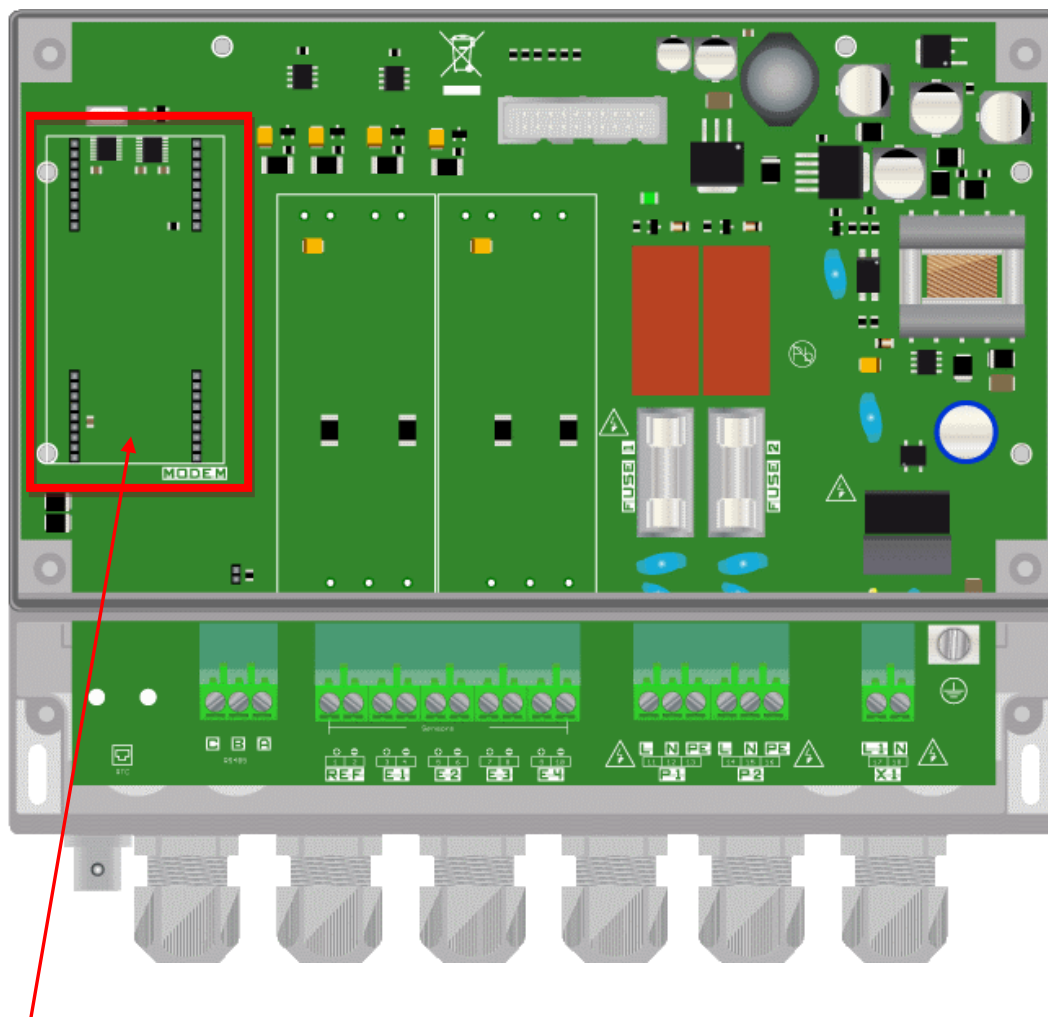
GSM, WIFI or Ethernet socket Modem place on electronic plate.
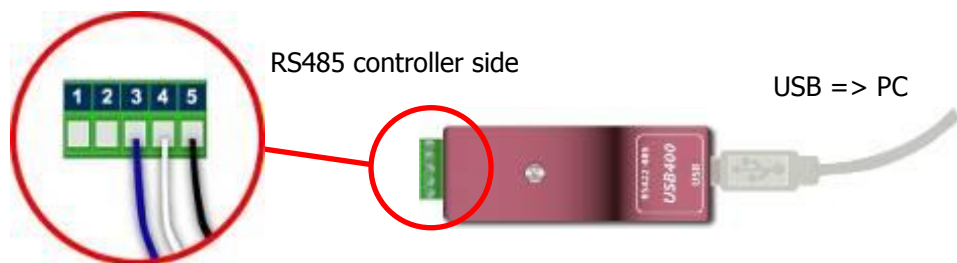
V. Data connections

1) RS485 data connection port

Connection into the **TERE'O** must be done according below:

- White : BB' - B
- Blue : AA' - A
- Black : Ground – C
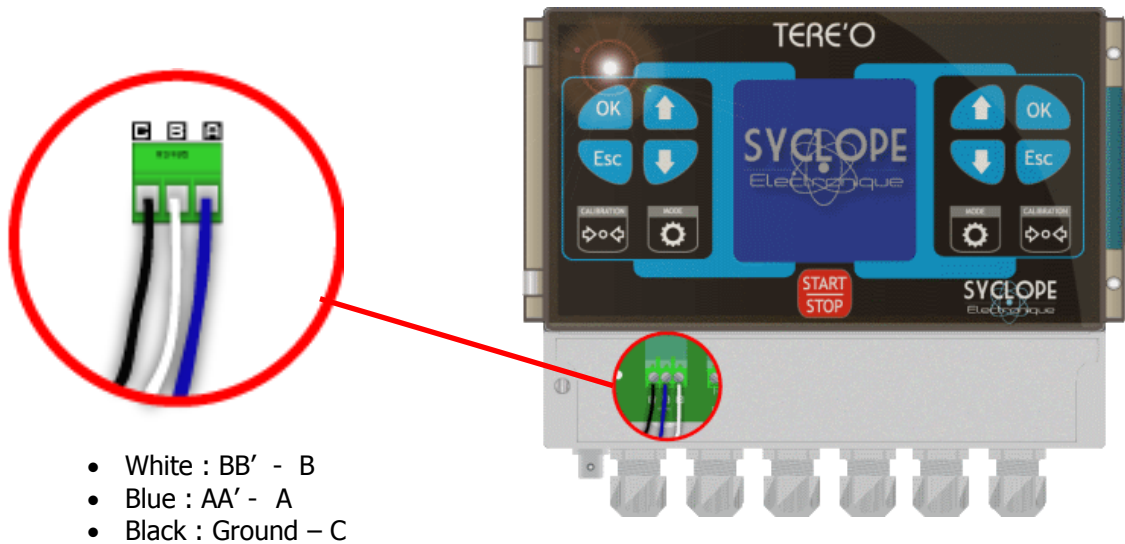
 Controllers can be chained with respect of polarity and wired in parallel.

When using the USB/RS485 converter, connection must be done as bellow:

RS485 controller side

USB => PC

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

Configuration: All switches "**ON"**

 The converter is delivered with an installation CDROM. Use it if necessary!

2) GSM modem connections

Install the socket GSM socket modem on good place. Install the antenna into the gland and connect the cable to the modem. Install the SIM card.

GSM Socket MODEM

SIM card

Antenna cable

GSM antenna
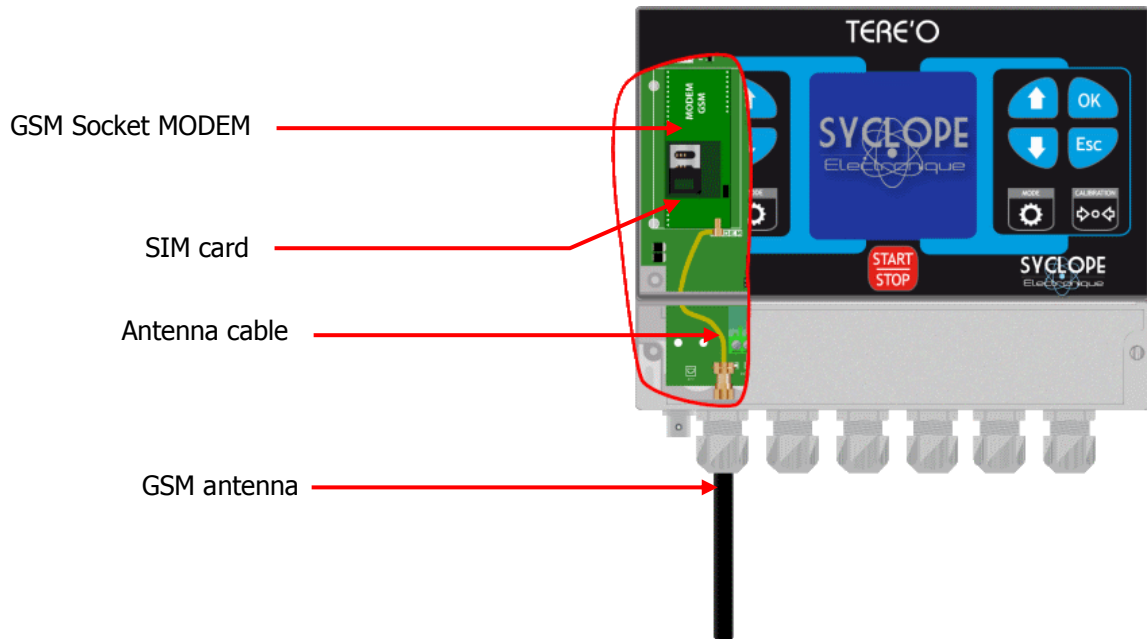
The subscription must be M2M type (Machine to Machine) with minimum capacity of 1Mo/month.
PIN code of SIM card must be deactivated.
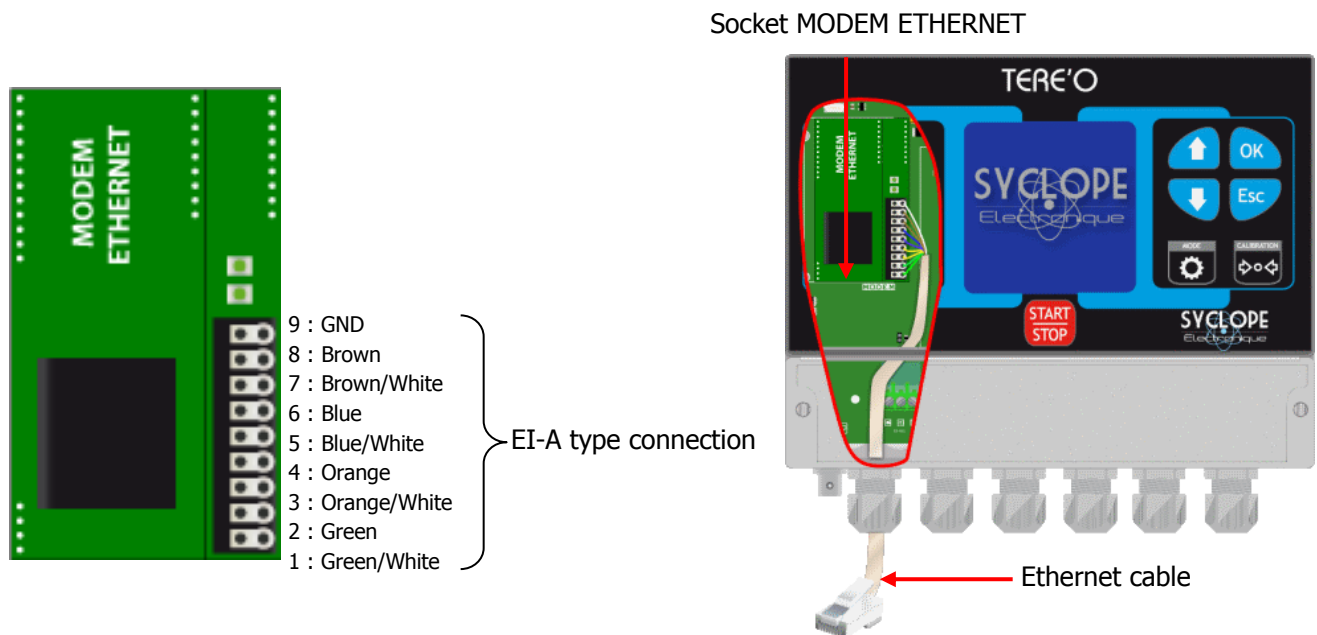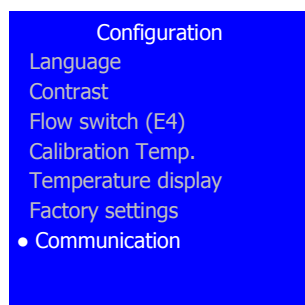Programming connection requires "TerCom" software.

3) WIFI Modem connection

Install the socket WIFI socket modem on good place. Install the antenna into the gland and connect the cable to the modem.

WIFI Socket MODEM

Antenna cable

WIFI antenna
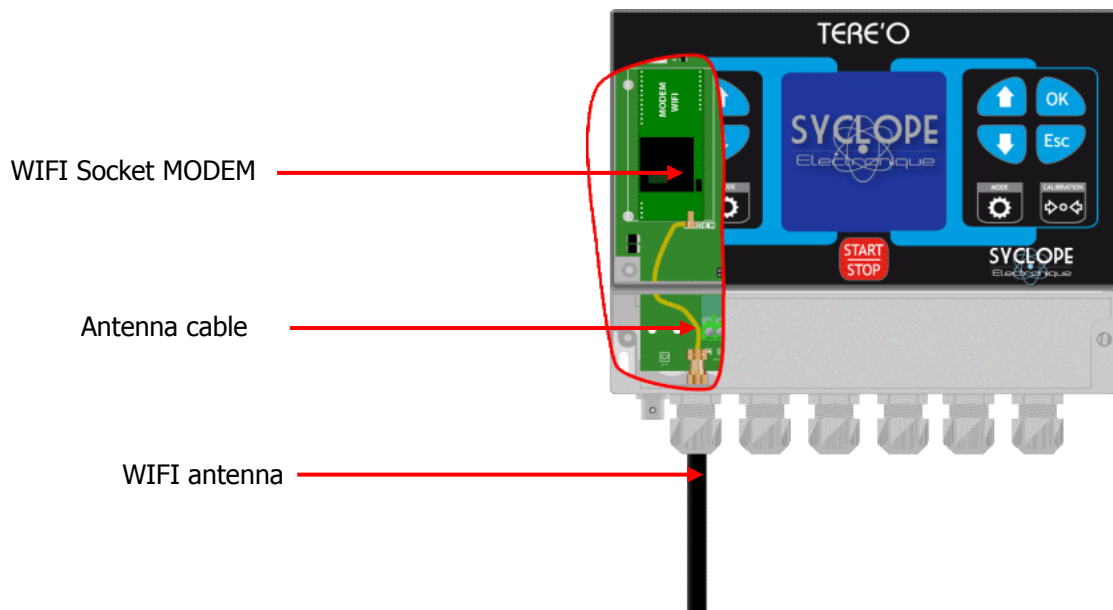
Programming connection requires "TerCom" software.

4) Ethernet Modem connection

Install the ETHERNET socket modem on good place. Install the link wire into the gland and connect the cable to the modem as bellow.

Socket MODEM ETHERNET

9 : GND
8 : Brown
7 : Brown/White
6 : Blue
5 : Blue/White
4 : Orange
3 : Orange/White
2 : Green
1 : Green/White

EI-A type connection

Ethernet cable

Programming connection requires "TerCom" software.

VI. Programming TERE'O controller

1) Communication menu

The general communication menu of the controller allows to program the RS485 communication port and to display the state of the socket Modem if it is used.

A long push on one of the two [Esc] keys gives access to the main programming menu…

Configuration
Language
Contrast
Flow switch (E4)
Calibration Temp.
Temperature display
Factory settings
● Communication

The keys [↑] and [↓] allow to navigate in the menu.

The [OK] key allows you to confirm your choice

The [Esc] key allows you to leave the configuration menu

By pressing on **OK** key whereas the line **"Communication"** is in intensified brightness allows to have access to communication RS485 ModBus configuration.

This window also allows to verify the connection statute of the socket modem when activated.

2) RS485 Communication port

To connect a **TERE'O** controller on the local BUS, you must configure the data of the RS485 communication port of the controller as well as the others with the same data.

| • Speed : 9600 |
| Parity : Even |
| Adress : 1 |
| Protocol : RTU |
| Modem : No Modem |

By using ↑ and ↓ keys allow to select the parameter to be modified, when the desired parameter is in intensified brightness. Press on **OK** key to enter in modification mode.
In modification mode (line blinking) the ↑ and ↓ keys allow to modify the value.

To validate, press **OK** key!
To cancel and to return to the previous menu, press **ESC** key!

3) Test GPRS modem

If the **TERE'O** controller uses a GPRS Socket Modem, the **"Communication"** menu will show you the statutes of the Modem.

| • Speed : 9600 |
| Parity : None |
| Adress : 1 |
| Protocol : RTU |
| Modem : GPRS |
| Pin : READY |
| Rssi : 20 |

Statutes informations of the SIM card through PIN code.
- READY   => SIM Card / Code PIN OK
- SIM PIN   => CODE PIN Error
- SIM PUK   => CODE PUK Error

Information about GSM signal level.
- Rssi < 16   => Poor Signal
- 16 < Rssi < 25   => Average Signal
- Rssi >25   => Good Signal

4) Test WIFI modem

If the **TERE'O** controller uses a WIFI Socket Modem, the **"Communication"** menu will show you the statutes of the Modem.

| • Speed : 9600 |
| Parity : None |
| Adress : 1 |
| Protocol : RTU |
| Modem : Wifi |
| IP : 10.10.1.23 |
| Rssi : -68 dBm |

IP data (With or without DHCP).
- IP : xx.xx.xx.xx   => IP system

Information about WIFI signal level.
- Rssi < -100 => Good Signal
- -100 < Rssi < -130 => Average Signal
- Rssi <-130 => Poor Signal

5) Test Ethernet modem

If the **TERE'O** controller uses a GPRS Socket Modem, the **"Communication"** menu will show you the statutes of the Modem

| • Speed : 9600 |
| Parity : None |
| Adress : 1 |
| Protocol : RTU |
| Modem : Ethernet |
| IP : 10.10.1.23 |

IP data (With or without DHCP).
- IP : xx.xx.xx.xx   => IP system

VI. Programming software "TerCom"

1) Introduction

The "TerCom" Software allows you to perform maintenance and programming of **TERE'O** controllers by using local RS485 communication port. This software is free of charge and it can be downloaded from our website http://www.syclope.fr

 Programming data for the softwa

 Accessing keys to specific functions of the software

 Communication mode of the software

 Information about version of the connected controller.

System address

| 1 | ModBus system address of the connected controller for communication.

2) Programming communication port

 Click on « Programming » button

Local Port (Connecting by RS485 bus):

- Select the Com Port used by the computer
- Select the speed (Must be identical to the connected controller on the data bus)
- Select the parity (Must be identical to the connected controller on the data bus)

Validate your configuration by pressing "Save"!
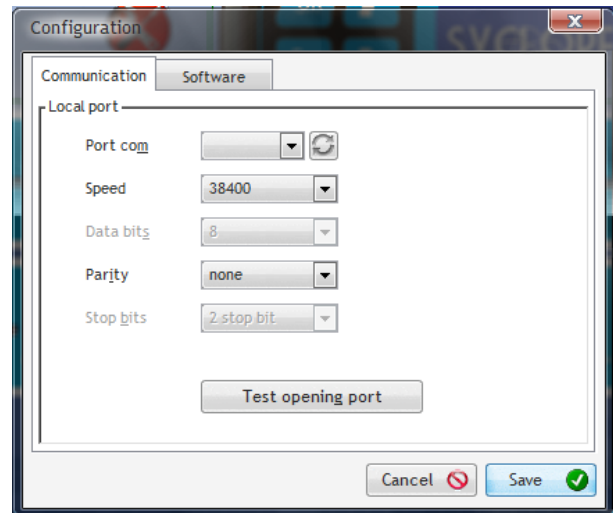
 If the RS485 converter doesn't appear into the list of Port Com connected, click on the "Actualise" button to refresh the list.

3) Setting ModBus system address

System address (ModBus Address):

- Before testing the communication, you must indicate the address of the controller (ModBus address)
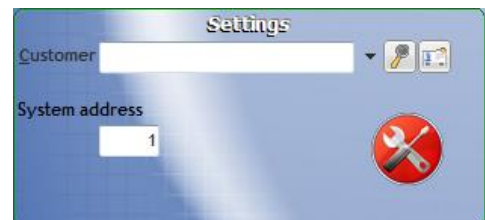
4) Test of the connection

 Click on the information button to display ID, name and version of the controller.
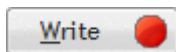
5) General Programmation
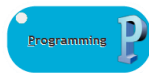
 Click of the Programming button
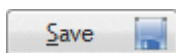

Read		Allows to upload the configuration from the connected controller.
Write		Allows to program the connected controller with the present parameters.
Load		Allows to load a configuration file already recorded.
Save		Allows to save the present configuration file into the laptop.

 Calibration of the sensors is not possible with the software.
Calibration parameters are saved and downloaded with the same values.

 Please, refer to the standard programming Manuel for commissioning the controller.

6) Programming Internet connection

Internet programming connection with the keypad of the controller is not available. You must connect the **TERE'O** controller to the RS485 port by using **TerCom** software to perform the programming.

The **TERE'O** controller will be identified on the data website by his serial number!

> System serial number
>
> **12-49-01234**

The other parameters to be programmed are the website address and the port number. By default, these parameters are written in the memory and must not be changed except a request of the technical service of SYCLOPE Electronique.

| WEB server | www.mysyclope.com | Port | 18880 |

Mode of internet remote connection must be selected with corresponding data in the windows.

Selecting GPRS mode:

- Select GPRS Modem
- Enter the APN of your SIM Card.

Remote connection	
Mode	GPRS MODEM
ANP	

The APN (Access Point Name) of the SIM Card is given by your provider.
Don't forget to ask it to your provider for programming the connection.

Selecting ETHERNET mode:

- Select ETHERNET modem

Remote connection	
Mode	ETHERNET MODEM
ANP	

- If the Network use a DHCP ...
  Select:
  "Get an IP address automatically"

- If the network use a static IP ...
  Select:
  "Use the following IP address"
  ... and enter:
  - IP Address
  - Subnet Mask
  - Default Gateway

- Enter DNS of the network or from the provider to access internet.

IP configuration	
⦿ Get an IP address automatically	
○ Use the following IP address:	
IP address :	0.0.0.0
Subnet Mask:	255.255.255.0
Default Gateway:	0.0.0.0
○ No DNS server	
⦿ Use the following DNS server addresses:	
Preferred DNS server:	0.0.0.0
Alternate DNS server:	0.0.0.0

Selecting WIFI mode:

- Select WIFI Modem

- If the Network use a DHCP …
  Select:
    "Get an IP address automatically"

- If the network use a static IP …
  Select:
  "Use the following IP address"
  … and enter:
    - IP Address
    - Subnet Mask
    - Default Gateway

- Enter DNS of the network or from the provider to access internet.

- Enter all parameters concerning active WIFI connection…
  … and enter:
    - SSID : Name of the port
    - Speed : Speed of communication
    - Channel : WIFI Channel selected
    - Country : Rules of the country
    - Mode : Network type
    - Security : Encryption
    - Key : Password or network code
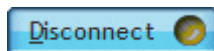
7) Maintenance

"TerCom" software allows to access to the "Maintenance" module where all data are displayed in real time (If connected!).
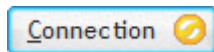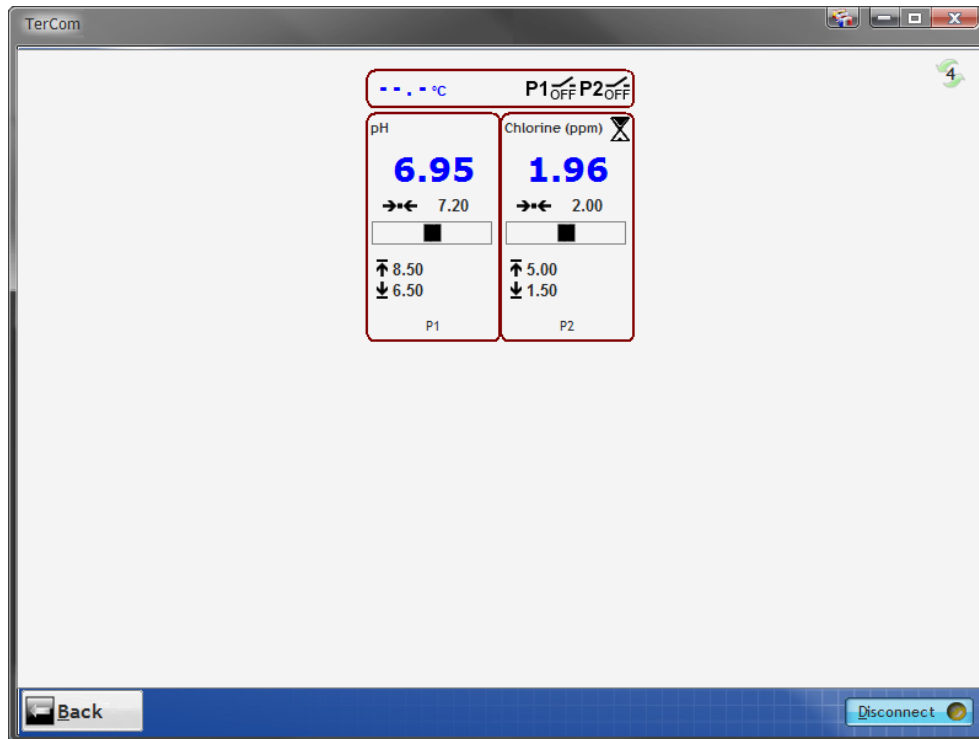
Connection — This button appears when the screen is opened. It allows to start the test of remote maintenance.

Disconnect — Click on this button to stop the remote reading of data.

Please, refer to the programming manuel for knowing the signification of each icon or use the mouse by passing on to see the function.

Any modification of the configuration on the **TERE'O** controller by the keypad during connection will be ignored until the next Disconnection/connection.

## VII.   Access to the Data web site mysyclope.com

1)   Activating your subscription

You must provide some informations to the technical service of SYCLOPE Electronique for activating your subscription.
- Note the serial number of the TERE'O controller,
- Contact I.T. service of SYCLOPE Electronique and give us the informations:
  - Serial number of the TERE'O controller,
  - Name of your I.T. responsible,
  - Indicate his email.
- I.T. service of SYCLOPE registers the controller in the data base, activates your account and gives you the Username.
- Connect to the web site www.mysyclope.com with your browser.
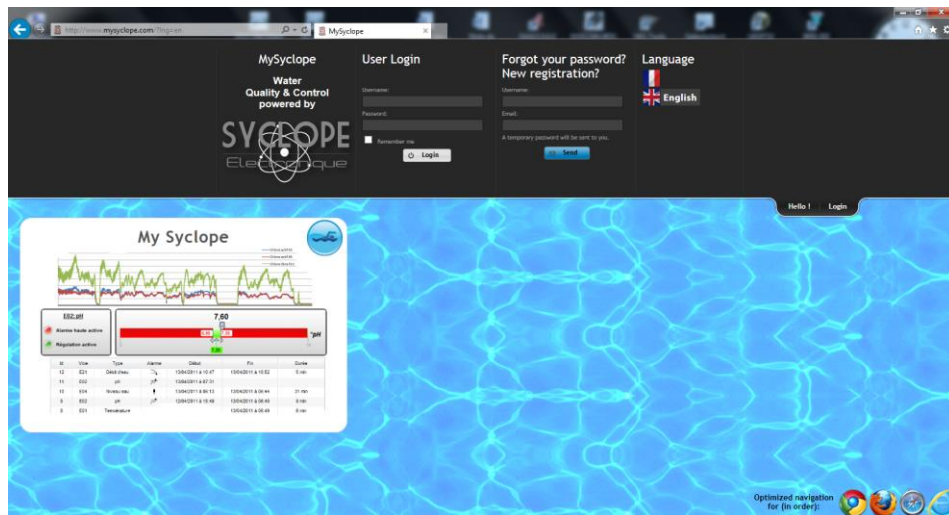
- Enter this Username in the field « Username » into the column "Forgot your password? Or New registration", indicate your email for receiving your new password.
- Click on "Send".
- Check your email reception and read your password…
- Login to the web site www.mysyclope.com …
- Enter your Username and the password you have just received.
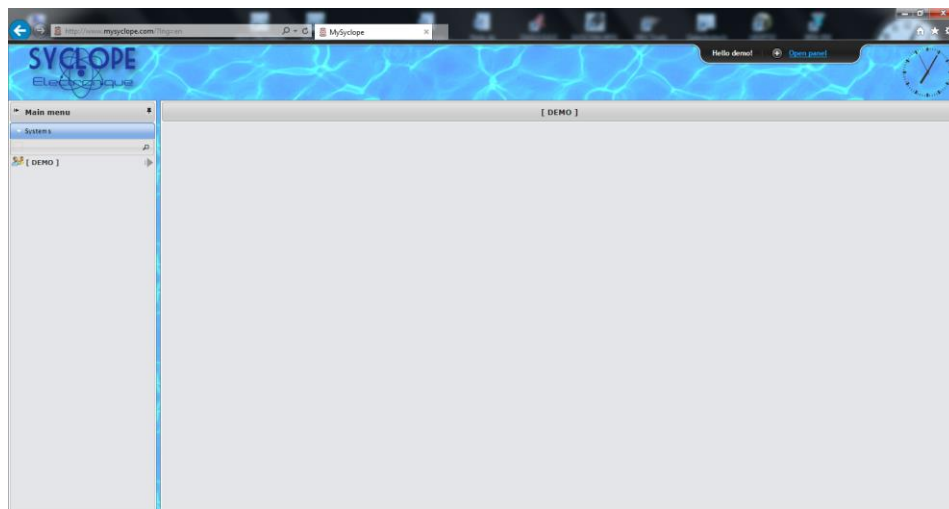
- Click on « Systems » bar in the « Main menu » windows…
- Read the connected sites or connected controllers.
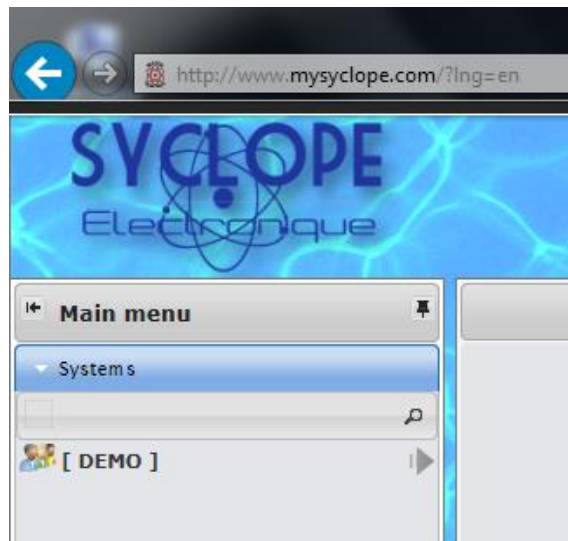
- Data from the controllers are now available for consulting.

VIII. ModBus communication registers

Name	Register	Format	Size	R/W	Description
Type of channel E1	40013	uint	1	R	0: pH 0-14 1:Redox 2:Br 2ppm 3:Br 10ppm 4:Cl 2ppm 5:Cl 10ppm
Low alarm threshold E1	40014	float	2	R	
High alam threshold E1	40016	float	2	R	
Mode of control E1	40018	uint	1	R	0: Stop 1: Auto 2 : Manual
Direction of control E1	40019	uint	1	R	
Set point E1	40020	float	2	R	
Proportional band E1	40022	uint	1	R	
Cycle period E1	40023	uint	1	R	Duration of one cycle in s
Measurement E1	40025	float	2	R	
Type of channel E2	40030	uint	1	R	0: pH 0-14 1:Redox 2:Br 2ppm 3:Br 10ppm 4:Cl 2ppm 5:Cl 10ppm
Low alarm threshold E2	40031	float	2	R	
High alarm threshold E2	40033	float	2	R	
Mode of control E2	40035	uint	1	R	0: Stop 1: Auto 2 : Manual
Direction of control E2	40036	uint	1	R	
Set point E2	40037	float	2	R	
Proportional band E2	40039	uint	1	R	
Cycle period E2	40040	uint	1	R	Duration of one cycle in s
Measurement E2	40042	float	2	R	
Measurement Temperature	40047	Float	2	R	

Uint => unsigned integer
Float => inverted float

EC Certificate of conformity

Designation of the products: TEREO

Declaration :

SYCLOPE Electronique SAS, Z.I. Aéropole Pyrénées in SAUVAGNON - France -, hereby certifies by the present that the following models "UNIS'EAU and INDIG'O", controllers for the analysis and controls of physicochemical measurements are 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 Ed3 : 2010**
2006/95/EC Low voltage directive,
Safety requirements for electrical equipment for measurement, control, and laboratory use

2004/108/EC: **Harmonized standards EN55022 : 2010, EN55024 : 2010**
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)
Harmonized standard ETSI EN 301 511 V9.0.2.
Harmonized standards ETSI EN 300 328 V1.7.1.
Harmonized standards EN62311(2008), EN50385(2002) and EN50383(2002)

2002/95/CE: **RoHS** Directive (Limitation of dangerous substances).

Date of the first sale: 2013, March.

The present declaration engages the responsibility of :

SYCLOPE Electronique S.A.
Z.I. Aéropole Pyrénées
64 230 SAUVAGNON

Represented by :

Georges BRETON
President

Sauvagnon : 2013/04/17

$C \in$

NOTES