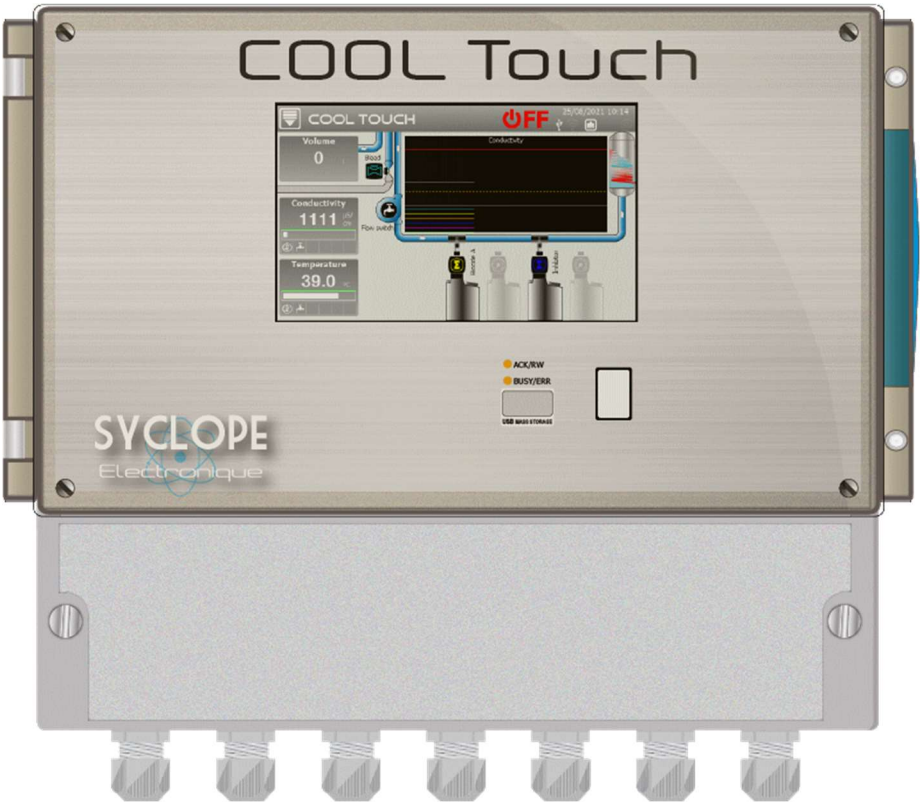
SYCLOPE COOLTouch® Controller for Cooling tower managements (Part 3)



Communication programming instructions

Reference: DOC0486

Rev: 1.1

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 25/05/2021 Rev 1.1

Analysers/Controllers for swimming pools.
Product line COOLTouch®

Part 3: Communication programming instructions (Ref: DOC0486)

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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: contact@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!

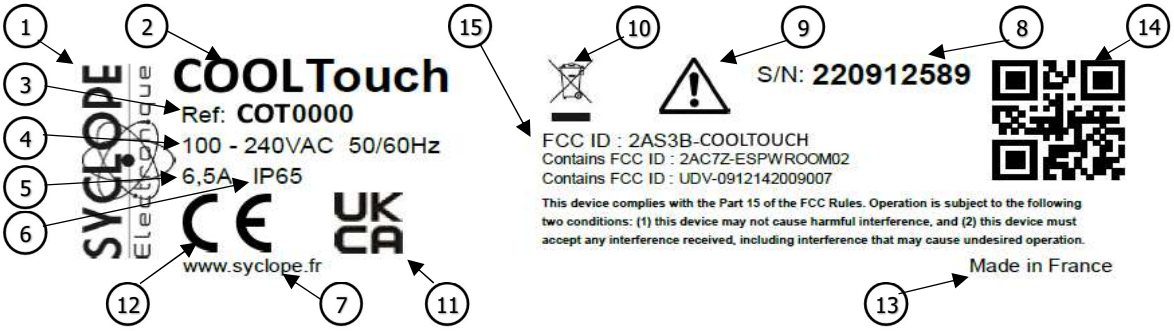
Before opening the controller or manipulate the relay outputs, always remember to switch-off the primary power supply!
Never open the controller when it is powered on!
Maintenance operations and repairs should be only performed by trained and specialized personnel!

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.

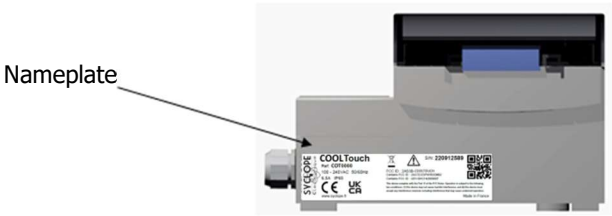
Make sure that the chemical sensors used with this controller correspond well to the chemicals used. Refer to the individual technical note of each sensor. Chemistry of water is very complex, in case of doubt, contact immediately our engineering service or your approved installer/reseller.

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 manufacturer, 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.

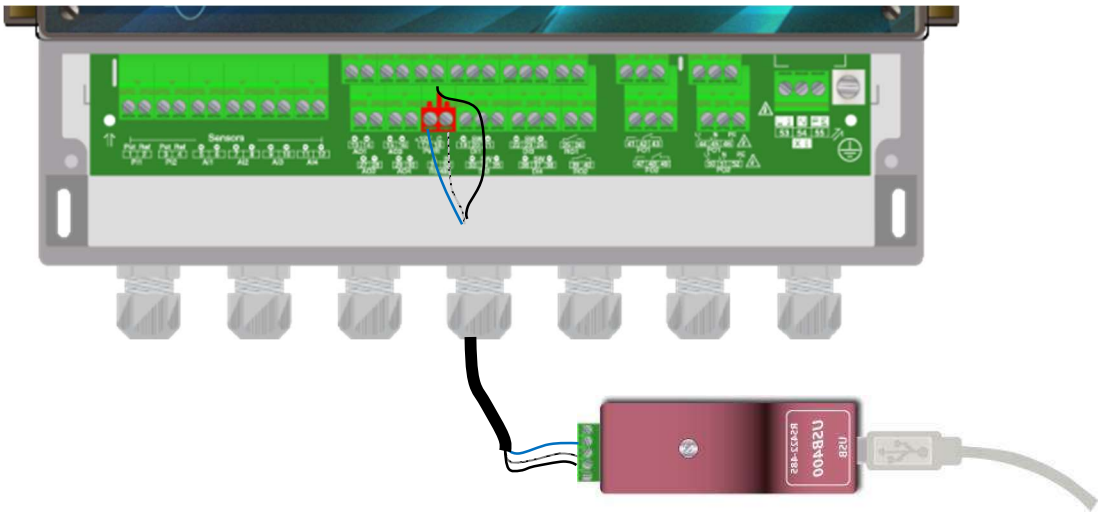
According to low-voltage directive (2014/35/UE) and the electromagnetic compatibility directive (2014/30/UE), this symbol means that the device has been designed in compliance with the previously cited directives.

III. RS485 communication bus connections

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

1) Connection to a computer USB port

- ▶ Use a 3-wire cable.
- ▶ Pass the cable through a cable gland.
- ▶ Wire AA' (n°3) of USB/485 converter to **RS485 (A) (31).**
- ▶ Wire BB' (n°4) of USB/485 converter to **RS485 (B) (32).**
- ▶ Wire C (n°5) of USB/485 converter to **PWR (C) (18)**
- ▶ 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.

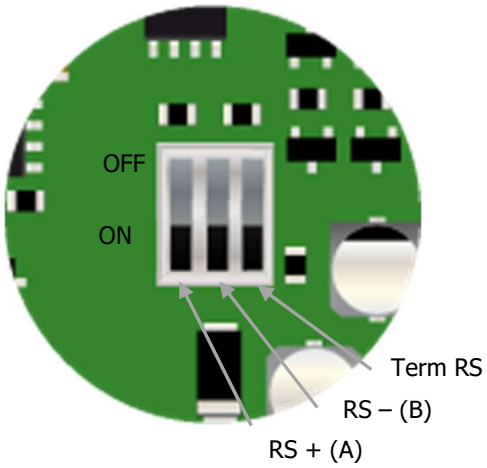
Reference	Name
INF1021	Converter USB => 485

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

2) 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.

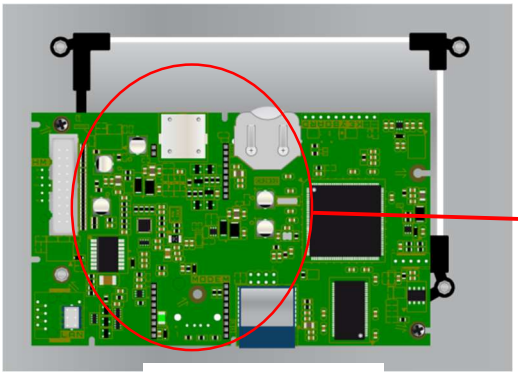
If your device is the last on the line on the RS485 bus you can switch the **Term. RS** switch on ON to activate line termination.



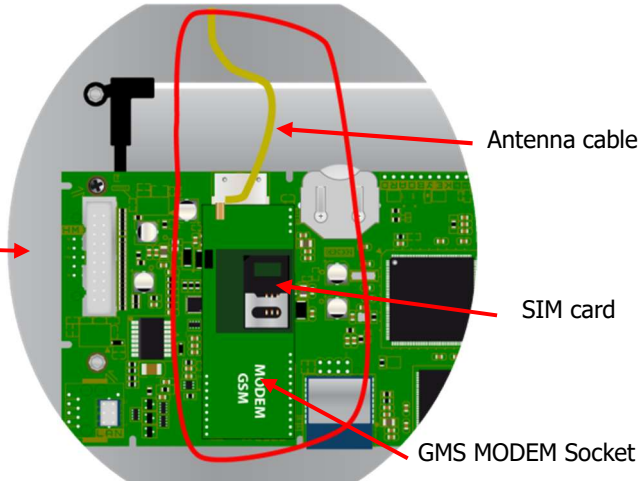
For security reasons, it's imperative to turn OFF the power of your device before opening the case to switch the micro-switches!

3) Connection of the internal GSM Modem

Install the GSM modem socket in the space provided. Position the antenna in a cable gland and connect it to the electronic card using the cable supplied. Position the SIM card in the intended location.



Empty front card

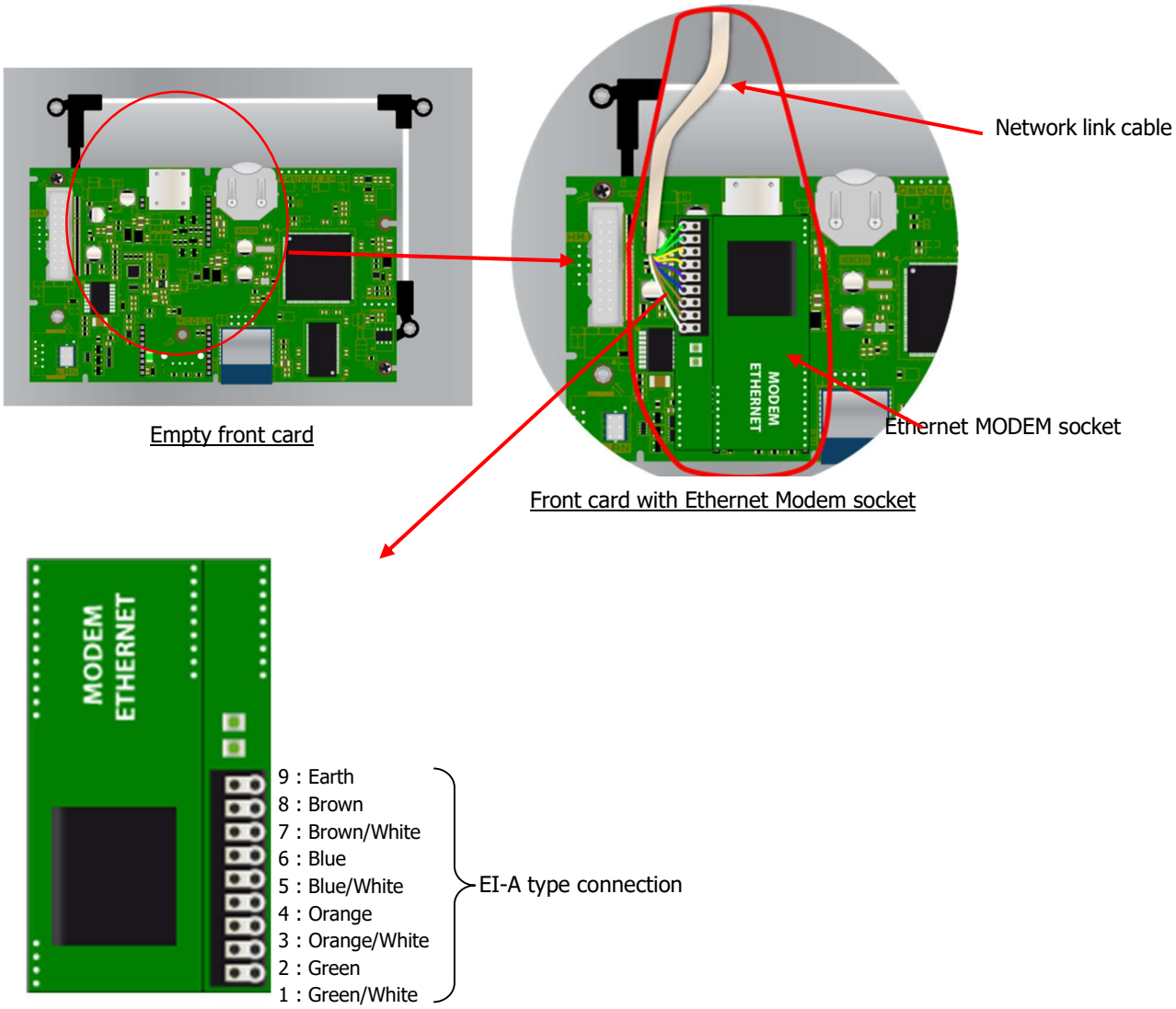


Front card with GSM Modem socket

Cell phone contract must be M2M (machine to machine) with the minimum of 5MB/month.
Sim card PIN must be disabled.

4) Connection of the Ethernet Modem

Install the Ethernet modem socket in the space provided, pass the network cable through the cable gland and connect the wires as shown below.



Empty front card

Front card with Ethernet Modem socket

Network cable connection on the modem

IV. SYCLOPE COOLTOUCH® setting

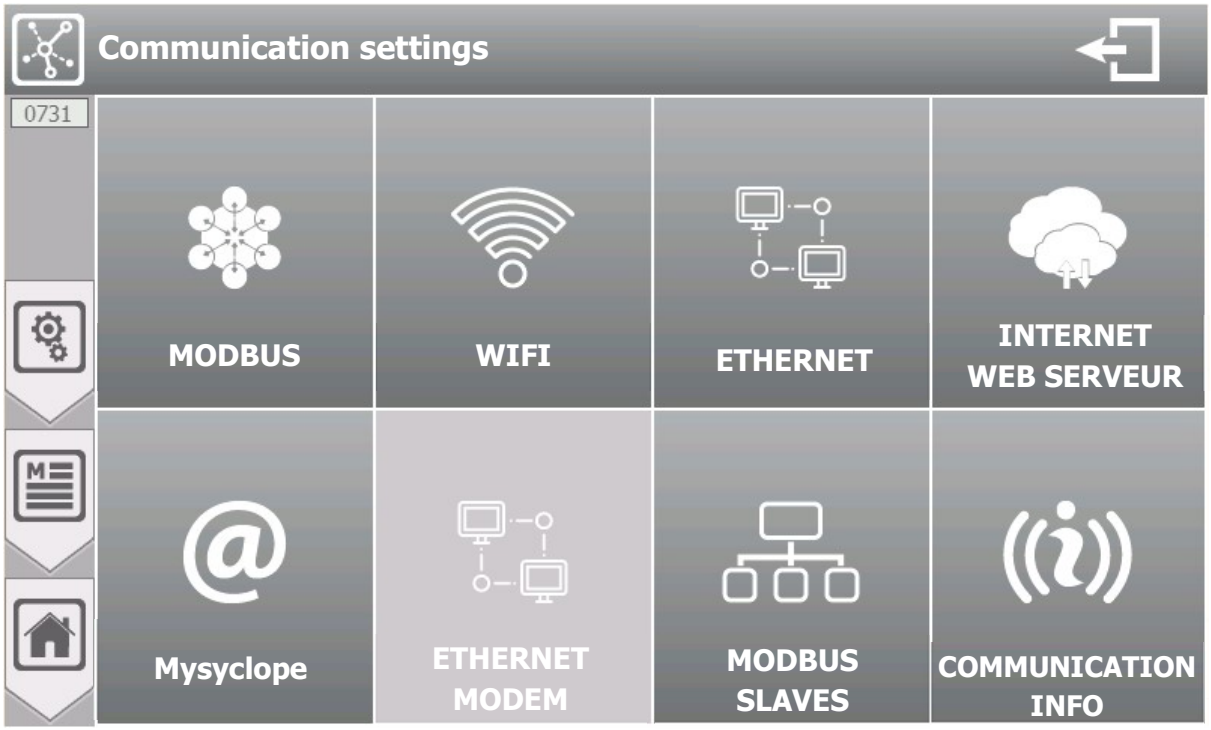
To connect the **SYCLOPE COOLTOUCH®** on the bus, the RS485 communication of **COOLTOUCH** and other systems, connected on the same bus, must be the same.

1) « Communication configuration » menu - « COMMUNICATION » [0731]

Press then

and

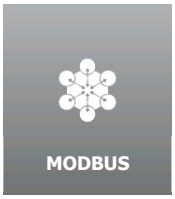
to open the following screen.



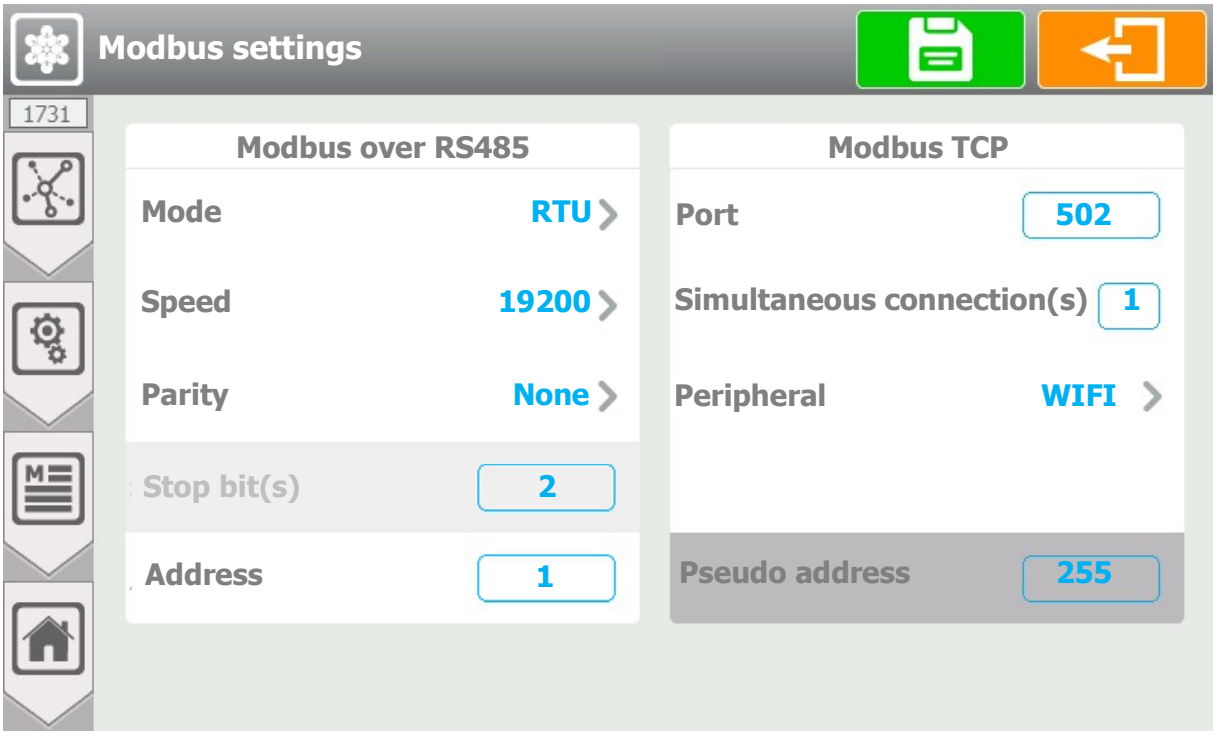
Button MODBUS SLAVES is accessible depending on the configuration of the MYSYCLOPE communication.

ETHERNET MODEM is inactive.

a) Modbus Configuration [1731]



Press to open following screen.



Modbus sur RS485

- **Mode RTU**
  - Selection of the Modbus communication mode, on this selection button we find the information of the selected mode (**RTU**) Press to change it.
- **Speed 19200**
  - Selection of the Modbus communication speed, on this selection button we find the information of the selected speed (**19200**). Press to change it.
- **Parity None**
  - Selection of the Modbus communication parity, on this selection button we find the information of the selected parity (**None**). Press to change it.
- Stop bit(s) **2**
  - Information on the configuration of the number of stop bit(s). This option is not configurable, it adapts according to the parity configuration and here is just information to help you configure your connection.
- **Address 1**
  - Modbus address input of your regulator. Here the current value is (**1**).
    Press it to open the numeric keypad and enter the desired value.
    Possible adjustment from **1 to 247**.

Modbus TCP

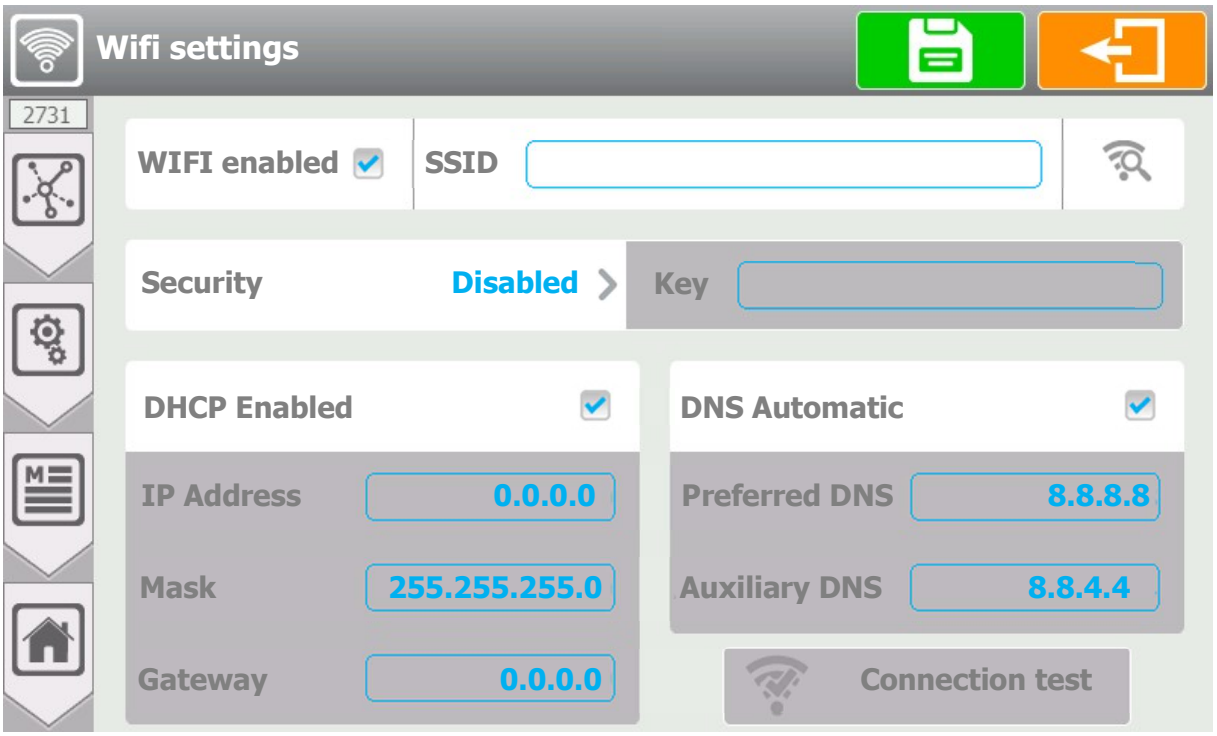
- **Port 520**
  - TCP port selection, on this selection button we find the information of the selected port (**520**). Press to change it.
- **Simultaneous connection(s) 1**
  - Selection of the number of simultaneous Modbus connection(s), on this selection button we find the number of simultaneous connection (**1**). Press to change it.
- **Peripheral WIFI**
  - Selection of the Modbus communication device, on this selection button we find the information of the selected device (**WIFI**). Press to change it.
- **Pseudo address 255**
  - Selection of the pseudo Modbus communication address, on this selection button we find the information of the selected pseudo address (**255**). Press to change it.

Don't forget to configure the WIFI parameters if the device associated with your Modbus is WIFI type.

Save:
When a modification is made, the « Save » button appears (floppy disk icon), you have to press it to save your configuration.

b) WIFI configuration [2731]

Press to open following screen.



➢ **WIFI Enabled**

- Activation of the WIFI integrated in your regulator. When the box is checked the WIFI module is activated. Press it to change its state.

➢ **SSID ----**

- Enter the name of the WIFI network on which you want to connect.
  Press to open the alphanumeric keyboard and enter the desired value.

➢ **Scan of available networks**

- By pressing this key, the search for networks is launched and a list with the networks found nearby is displayed.
- Press to open the list of networks.

Password-secure network with excellent signal level

Open network with low signal level

➢ **Security Disabled**

- Selection of type of security key by your WIFI network, on this selection button we find the information of the selected type (**Disabled**).
  Press to change it.
  When selecting a network using the search window for available networks, the network security mode is automatically selected.

➢ **Key - - - -**

- If you have selected a security mode this option is activated and you must enter the security key of the WIFI network on which you want to connect.
  Press it to open the alphanumeric keyboard and enter the desired value.

➢ **DHCP Enabled**

- Choice of the DHCP configuration of your network.
  Press it to **Enable / Disabled** DHCP

➢ **IP address - - - -**

- If you disable DHCP you must enter the fixed IP address of your regulator.
  Press it to open the numeric keyboard and enter the desired value.

➢ **Mask - - - -**

- If you disable DHCP you must enter the subnet mask of your network.
  Press it to open the numeric keyboard and enter the desired value.

➢ **Gateway - - - -**

- If you disable DHCP you must enter the gateway of your network.
  Press it to open the numeric keyboard and enter the desired value.

➢ **DNS Automatic**

- Choice of DNS configuration.
  Press it to **ACTIVATE / DEACTIVATE** DNS

➢ **Preferred DNS 8.8.8.8**

- If the DNS management isn't automatic, you must enter the IP address of the Primary DNS.
  Press it to open the numeric keyboard and enter the desired value.

➢ **Auxiliary DNS 8.8.4.4**

- If the DNS management isn't automatic, you must enter the IP address of the Auxiliary DNS.
  Press it to open the numeric keyboard and enter the desired value.

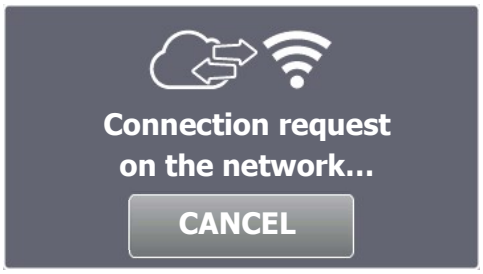
Save:

- When a modification is made, the « Save » button appears (floppy disk icon), you have to press it to save your configuration.

➢ **WIFI configuration test**

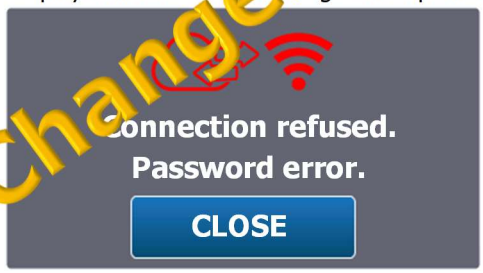
Press the button to open the test window

Connection phases, module initialization and connection request on the selected network.



When the connection is successfully completed, the icon is displayed in green and the IP address assigned to the WIFI is displayed.

In the event of an error, the icon is displayed in red and a message corresponding to the type of error is displayed.

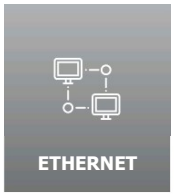


Changer image

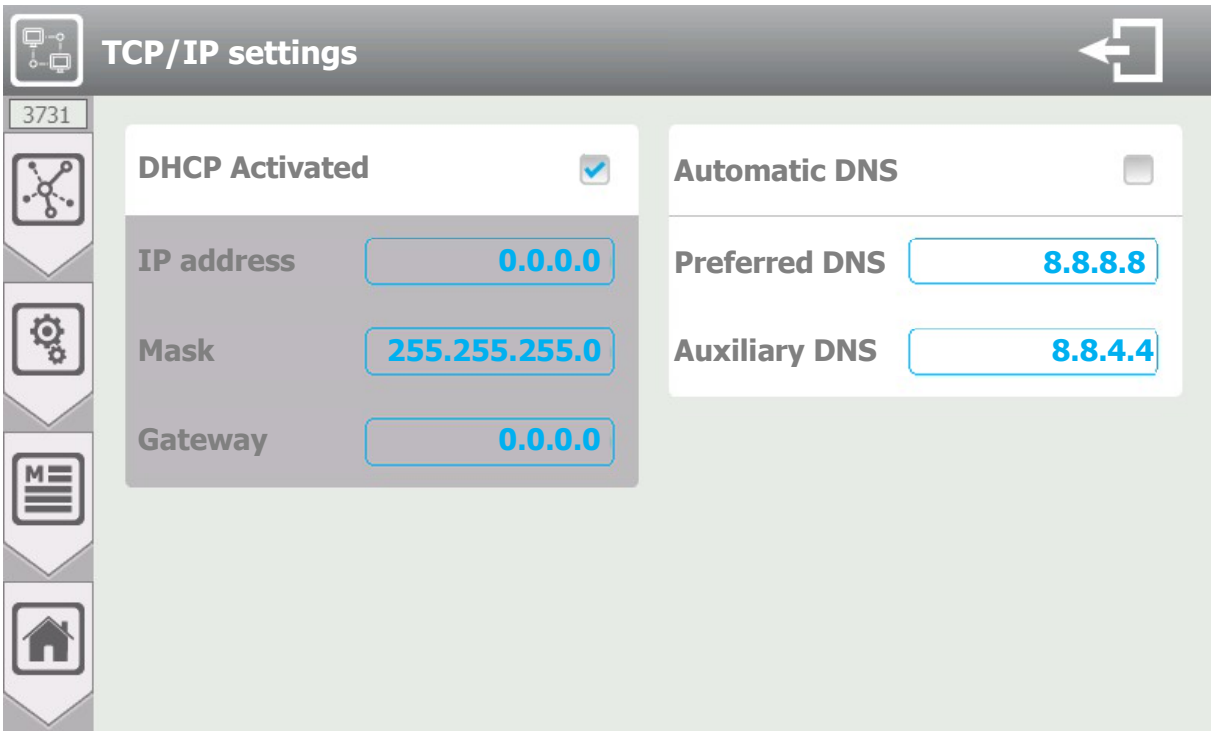
➢ **List of errors**

- « Password error » => Password isn't correct
- « Timeout » => Connection failed within the limit time
- « Network not found » => SSID network wasn't found
- « Unknown error » => An unknown error has occurred

c) Ethernet configuration [3731]



Press to open the following screen.



- **DHCP Activated**
  - Choice of the DHCP configuration of your network.
    Press it to **ACTIVATE / DEACTIVATE** DNS.
- **IP address 0.0.0.0**
  - If your disable DHCP you must enter the fixed IP address of your regulator.
    Press to open the numeric keyboard and enter the desired value.
- **Mask 255.255.255.0**
  - If you disable DHCP you must enter the subnet mask of your network.
    Press to open the numeric keyboard and enter the desired value.
- **Gateway 0.0.0.0**
  - If you disable DHCP you must enter the gateway of your network.
    Press to open the numeric keyboard and enter the desired value.
- **Automatic DNS**
  - Choice the DNS configuration
    Press it to **ACTIVATE / DEACTIVATE** DNS.

- **Preferred DNS 8.8.8.8**

  - If the DNS management isn't automatic, you must enter the IP address of the primary DNS. Press to open the numeric keyboard and enter the desired value.

- **Auxiliary DNS 8.8.4.4**

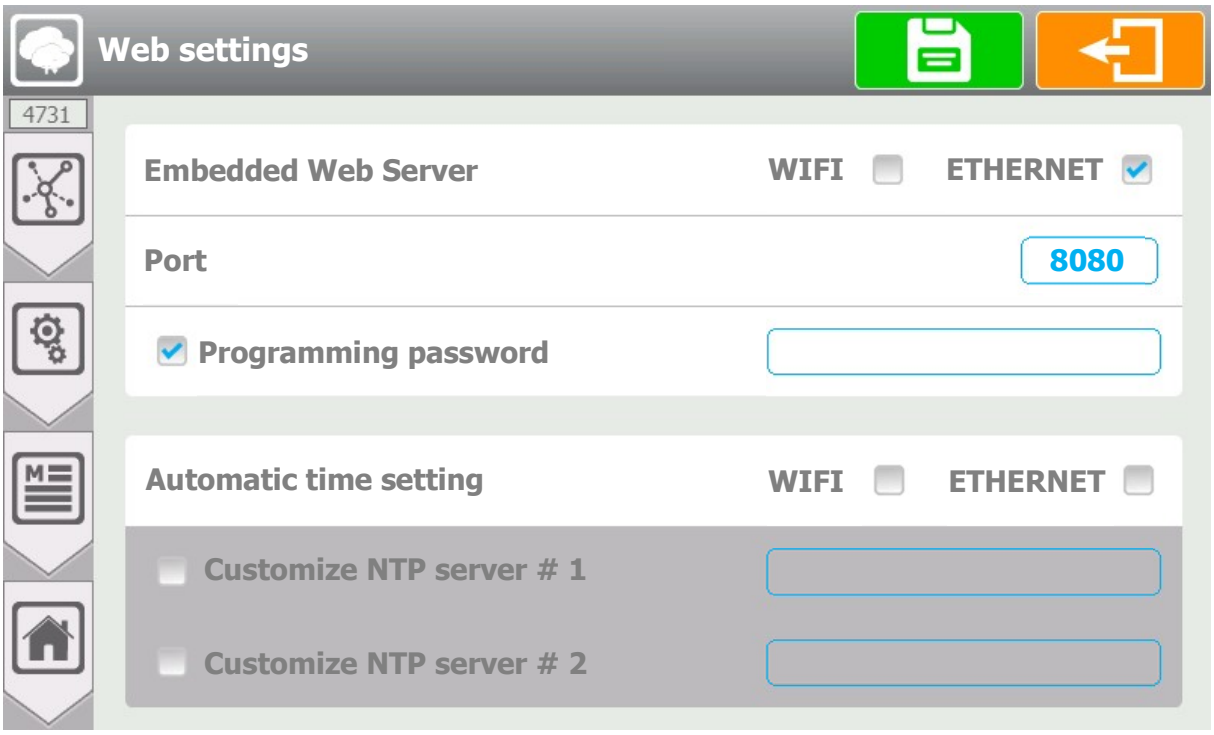
  - If the DNS management isn't automatic, you must enter the IP address of the Auxiliary DNS. Press to open the numeric keyboard and enter the desired value.

Save:
When a modification is made, the « Save » button appears (floppy disk icon), you have to press it to save your configuration

d) Internet & Web Server configuration [4731]

i. Configuration

Press to open the following screen.



➢ **Embedded Web Server WIFI ETHERNET**

- Check the « WIFI » or « ETHERNET » box to activate the Embedded Web Server.

➢ **Port 8080**

- If you activate the Embedded Web Server you must enter the port number of your regulator. Press in the rectangle to open the numeric keyboard and enter the desired value.

➢ **Display locked by password**

- You can enable this option to lock the web server display with a password. Press in the rectangle to open the numeric keyboard and enter the desired value

The values that can be changed on the web page are the high and low alarms and the instructions if they are not "OFF".

➢ **Automatic time setting**

- If this option is activated, your regulator will regularly check the time on the internet using the SNTP protocol. So, your regulator must be connected and have internet access.

➢ **Customize NTP server #1**

- Your regulator already has an SNTP server address. You can however customize the servers used for the setting and enter the first address here.

➢ **Customize NTP server #2**

- When setting if server #1 cannot be reached, your regulator will make an attempt to this second server if the box is checked and the address is entered.

ii. Web page

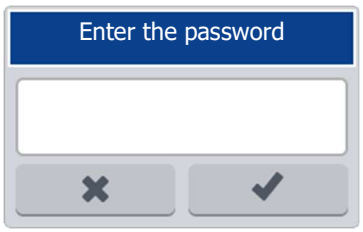
Enter, in the search bar of your browser, the IP address of your regulator, which you will find in the communication information, followed by the port number you entered above (ex: 10.10.1.2:8080) to display the web page below.

The web page above will include the main information of your regulator (Date, time, operating status, windows of the different parameters filled in, etc.)

Active locking no changes possible.

Inactive locking change possible.

Click on it to display the window below where you must enter the password you entered in the "Web Settings".



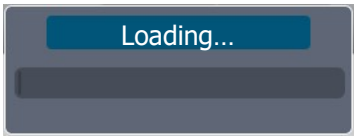
Use your computer's numeric keyboard to enter the password entered in the "Web Settings".

Once you have entered and validated the password new information will appear on the web page.

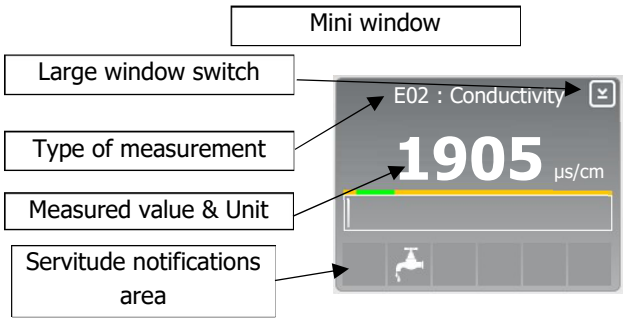
If the button is active then downloading the history is possible

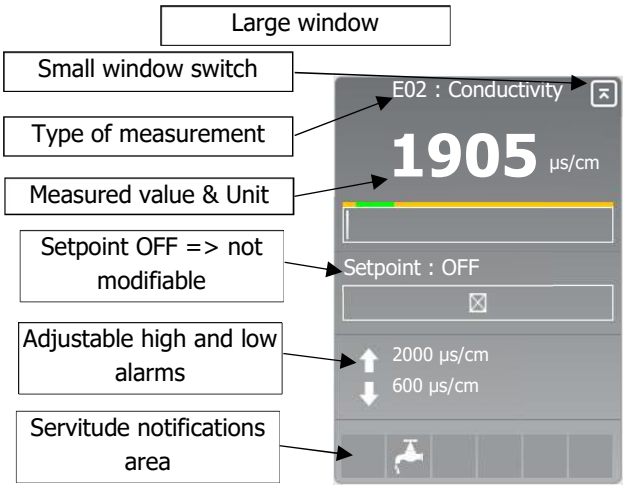
If the button is inactive then downloading the history is not possible

Click on the history button you want to download. The download will start automatically and the next window will open.



Example :





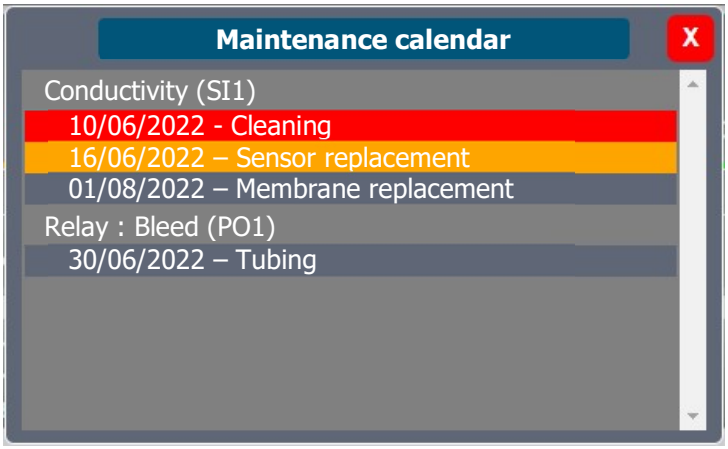
If Setpoint is entered on your regulator so it's modifiable on web page.

When an orange bubble with a question mark appears on the calendar icon, it means that a maintenance operation is scheduled in the coming week.

When a red bubble with a question mark appears on the calendar icon, it means that the date of a scheduled maintenance operation is exceeded.

If there is no bubble, this means that no maintenance task is scheduled for this month.

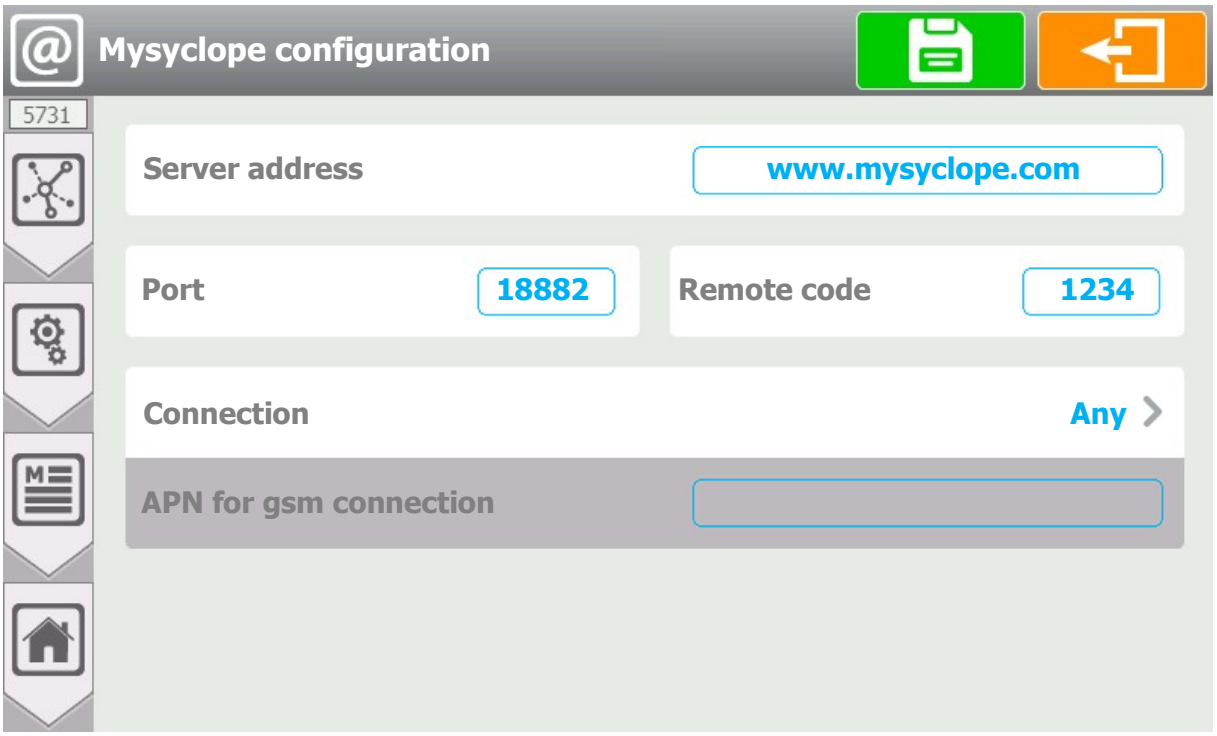
Click on the calendar to open the next window.



10/06/2022 - Cleaning	When the date is highlighted in red it means that a maintenance operation was planned on that date but that it was either not carried out or indicated as carried out.
16/06/2022 – Sensor replacement	When the date is highlighted in orange it means that a maintenance operation is planned in the next week.
01/08/2022 – Membrane replacement	When the date is highlighted in orange it means that a maintenance operation is planned in more than 1 week.

e) MYSYCLOPE configuration [5731]

Press to open the following screen.



- **Server address www.mysyclope.com**
  - Entering the address of mysyclope web server. Here the address is (**www.mysyclope.com**).
    Press to open the alphanumeric keyboard and enter the desired value.
- **Port 18882**
  - Entering the TCP connection port to mysyclope site. Here the connection port is (**18882**).
    Press to open the alphanumeric keyboard and enter the desired value.
- **Remote code 1234**
  - Entering the remote connection code from mysyclope to your controller. Here the remote code is (**1234**).
    Press to open the numeric keyboard and enter the desired value.
- **Connection Any**
  - Selection of the connection mode to mysyclope (type of modem), on this selection button we find the information of the selected mode (**Any**).
    Press to change it.

➢ **APN for gsm connection ---**

- If you select a connection with a GSM modem you will have to enter the APN code of your data card here.
  Press to open the alphanumeric keyboard and enter the desired value.

Save:

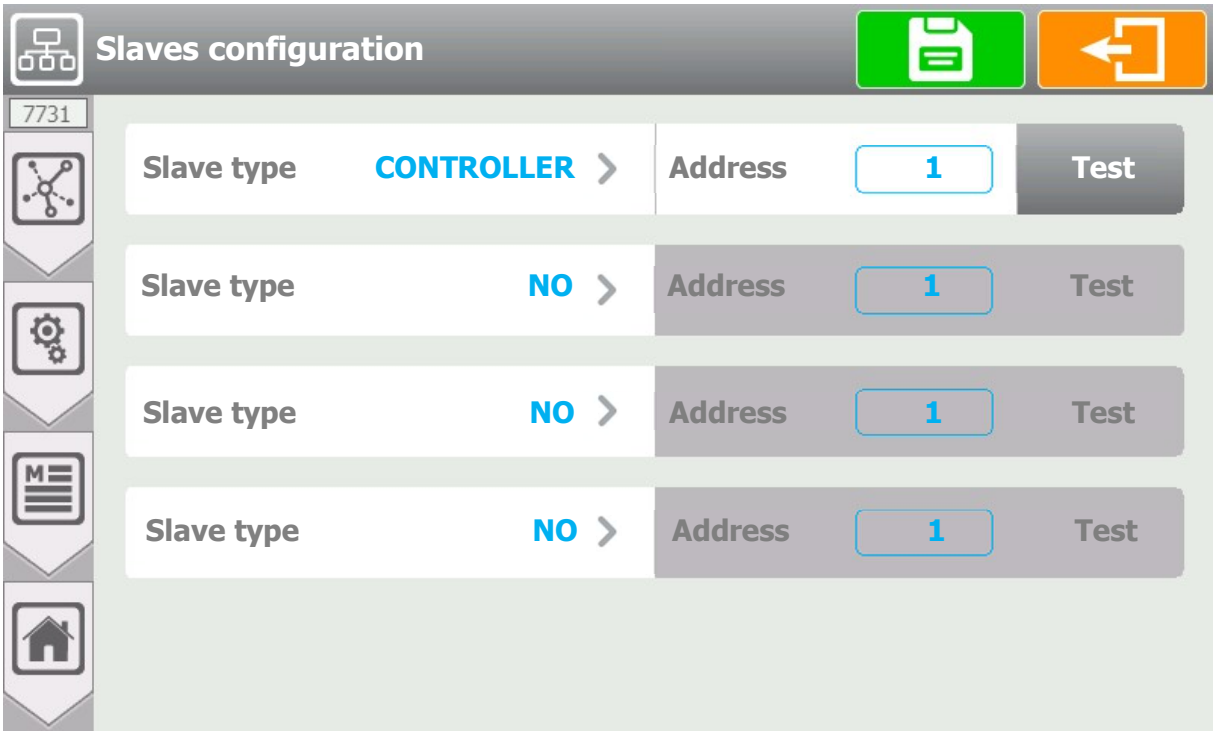
When a modification is made, the « Save » button appears (floppy disk icon), you have to press it to save your configuration.

f) Ethernet Modem configuration [6731]

Inactive.

g) Modbus Slave configuration |7731]

Press to open the following screen.



➢ **Slave type CONTROLLER**

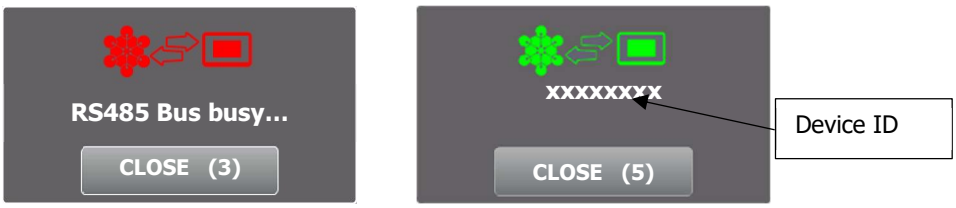
- Selection of the type of slave connected on the RS485 bus, on this selection button we find the information of the selected type (**CONTROLLER**). Press to change it.

➢ **Address**

- Entering the slave's Modbus address. Caution it must be different from the Modbus address of your regulator.
  Press to open the numeric keyboard and enter the desired value.
  Possible adjustment from **1 to 247**.

➢ **Test**

- Pressing the Test button verifies that the slave is correctly connected. You must first make the RS485 wired connection between the 2 devices and check that the Modbus configuration is identical on the 2 devices.



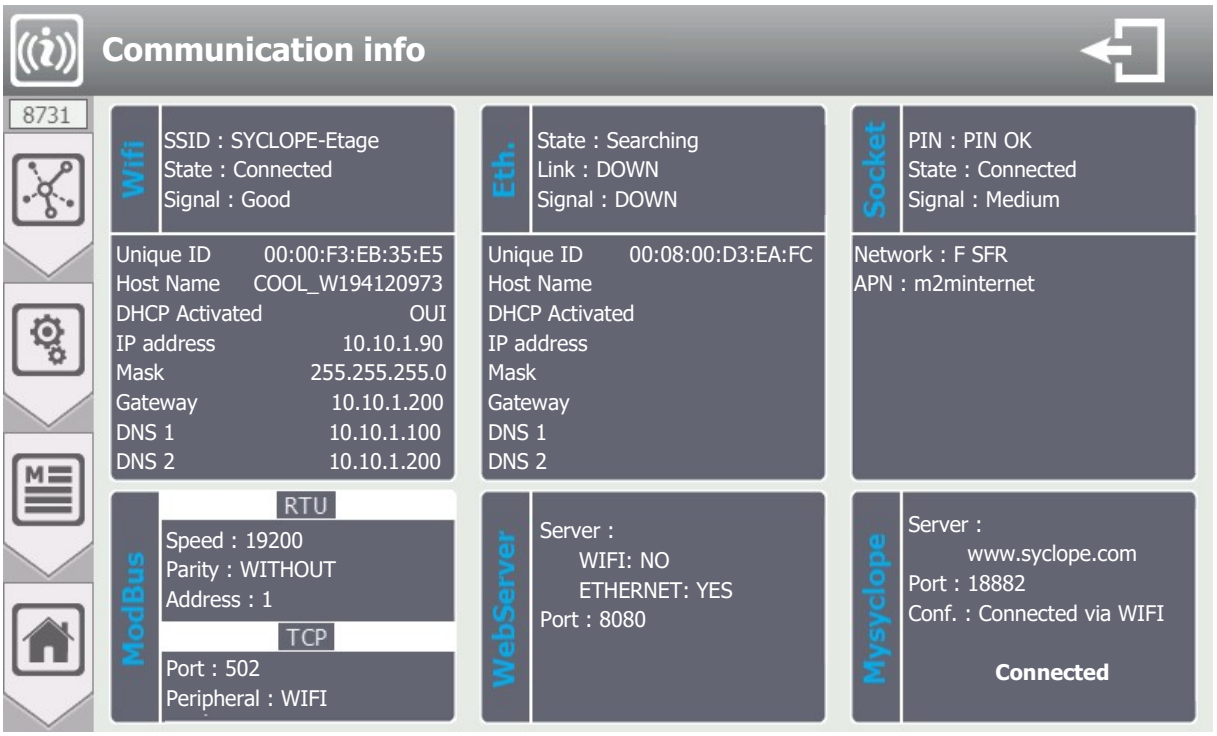
Both windows above appear after the configuration.

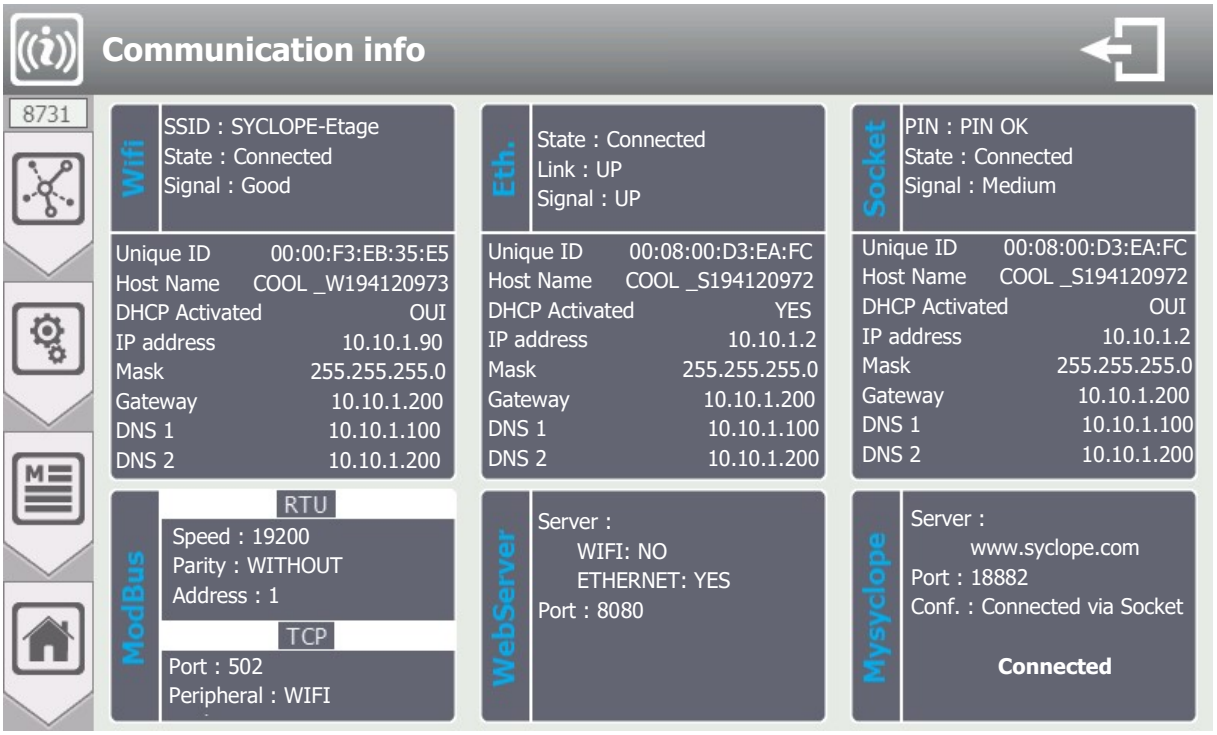
Save:

- When a modification is made, the « Save » button appears (floppy disk icon), you have to press it to save your configuration

h) Communication info [8731]

Press to open the following screen.





Wifi	
SSID : SYCLOPE-Electronique	Name of the programmed SSID
State : Connected	Connection status
Signal : Good	Signal level

Unique ID	00:00:F3:EB:35:E5	Unique ID or MAC address of the WIFI chip
Host Name	COOL _W194120972	Identification name on the Ethernet network
DHCP Activated	OUI	DHCP configuration
IP address	10.10.1.2	WIFI module IP address *
Mask	255.255.255.0	Subnet mask *
Gateway	10.10.1.200	Gateway *
DNS 1	10.10.1.100	DNS 1 *
DNS 2	10.10.1.200	DNS 2 *

* The values displayed correspond either to the values set in the case of DHCP mode disabled, or to the values received by DHCP from the network to which the module is connected.

- **Eth.**

Eth.	
State : Connectd	Connection status on the Ethernet network
Link : UP	Physical connection status (wiring)
Interface : UP	Configuration status

Unique ID	00:08:00:D3:EA:FC	Unique ID or MAC address of the module
Host Name	COOL _S194120972	Identification name on the Ethernet network
DHCP Activated	YES	DHCP configuration
IP address	10.10.1.2	Module IP address *
Mask	255.255.255.0	Subnet mask *
Gateway	10.10.1.200	Gateway *
DNS 1	10.10.1.100	DNS 1 *
DNS 2	10.10.1.200	DNS 2 *

* The values displayed correspond either to the values set in the case of DHCP mode disabled, or to the values received by DHCP from the network to which the module is connected

- **Socket**

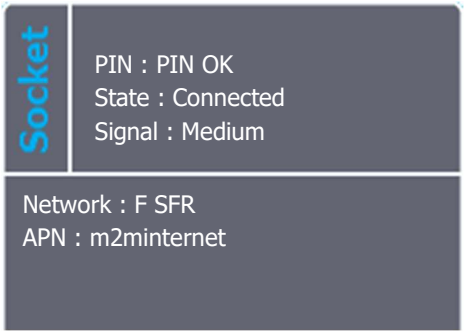
Ethernet socket version

Socket	
State : Connected	Connection status on the Ethernet network
Link : UP	Physical connection status (wiring)
Interface : UP	Configuration status

Unique ID	00:00:F3:EB:35:E5	Unique ID or MAC address of the module
Host Name	COOL _W194120972	Identification name on the Ethernet network
DHCP Activated	OUI	DHCP configuration
IP address	10.10.1.2	Module IP address *
Mask	255.255.255.0	Subnet mask *
Gateway	10.10.1.200	Gateway *
DNS 1	10.10.1.100	DNS 1 *
DNS 2	10.10.1.200	DNS 2 *

* The values displayed correspond either to the values set in the case of DHCP mode disabled, or to the values received by DHCP from the network to which the module is connected.

GSM Socket version



Pin code status
DATA network connection status
Signal level

Name of the operator to which the chip is connected
Programmed APN

- **Modbus**

- Reminder of the Modbus configuration.

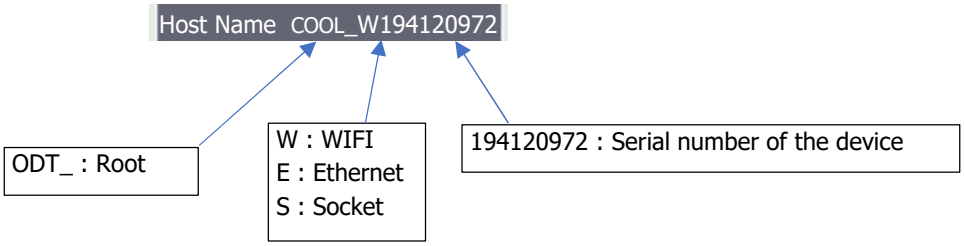
- **WebServer**

- Not available for the moment.

- **Mysyclope**

- Reminder of the configuration and state of the connection.

Identification of the machine on the Ethernet network:



V. Modbus communication register

1) Address of Modbus registers

The registers are numbered in accordance with the Modbus standard. These are "HOLDINGS REGISTER" on the range of registers from 40001 to 49999.

Some software and Modbus controllers use an address from 0 to 65535.

Modbus register 40001 therefore corresponds to Modbus address 0, register 40002 corresponds to address 1 and so on and so forth.

Modbus register	Number of registers	Name	Access	Format	Description
Interfaces					
41001	2	signal_RI1	r	REAL	Signal on RI RI1 input [Ohm]
41003	2	signal_RI2	r	REAL	Signal on RI RI2 input [Ohm]
41005	2	signal_AI1	r	REAL	Current on input AI1 [mA]
41007	2	signal_AI2	r	REAL	Current on input AI2 [mA]
41009	2	signal_SI1	r	REAL	Conductivity on input SI [µS]
41011	2	signal_SI2	r	REAL	Temperature on input SI [°C]
41013	2	signal_K1	r	REAL	Signal on DIx input [Depends switch config]
41015	2	signal_K2	r	REAL	Signal on DIx input [Depends switch config]
41017	2	signal_MI1	r	REAL	Signal on MI1 input [Depends on module]
41019	2	signal_MI2	r	REAL	Signal on MI2 input [Depends on module]
41031	1	signal_DI1	r	BOOL	0=OPEN / 1=CLOSE
41032	1	signal_DI2	r	BOOL	0=OPEN / 1=CLOSE
41033	1	signal_DI3	r	BOOL	0=OPEN / 1=CLOSE
41034	1	signal_DI4	r	BOOL	0=OPEN / 1=CLOSE
41035	1	signal_DI5	r	BOOL	0=OPEN / 1=CLOSE
41036	1	signal_DIS	r	BOOL	0=OPEN / 1=CLOSE (on input SI)
41041	1	state_PO1	r	BOOL	0=OPEN / 1=CLOSE
41042	1	state_FO1	r	BOOL	0=OPEN / 1=CLOSE
41043	1	state_FO2	r	BOOL	0=OPEN / 1=CLOSE
41044	1	state_FO3	r	BOOL	0=OPEN / 1=CLOSE
41045	1	state_FO4	r	BOOL	0=OPEN / 1=CLOSE
41046	1	state_RO1	r	BOOL	0=OPEN / 1=CLOSE
41056	2	signal_AO1	r	REAL	Signal on AO1 output [mA]
41058	2	signal_AO2	r	REAL	Signal on AO2 output [mA]
41076	1	state_HI1	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41077	1	state_HI2	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41078	1	state_HI3	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41079	1	state_HI4	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41080	1	state_HI5	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41081	1	state_HI6	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41082	1	state_HI7	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41083	1	state_HI8	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A summer)
41084	1	state_HI9	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41085	1	state_HI10	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41086	1	state_HI11	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41087	1	state_HI12	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)

41088	1	state_HI13	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41089	1	state_HI14	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41090	1	state_HI15	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41091	1	state_HI16	r	BOOL	0=Out of range / 1=In range (Schedule Biocid A winter)
41092	1	state_HI17	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41093	1	state_HI18	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41094	1	state_HI19	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41095	1	state_HI20	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41096	1	state_HI21	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41097	1	state_HI22	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41098	1	state_HI23	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41099	1	state_HI24	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B summer)
41100	1	state_HI25	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41101	1	state_HI26	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41102	1	state_HI27	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41103	1	state_HI28	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41104	1	state_HI29	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41105	1	state_HI30	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41106	1	state_HI31	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41107	1	state_HI32	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41108	1	state_HI33	r	BOOL	0=Out of range / 1=In range (Schedule Biocid B winter)
41109	1	state_HI34	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41110	1	state_HI35	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41111	1	state_HI36	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41112	1	state_HI37	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41113	1	state_HI38	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41114	1	state_HI39	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41115	1	state_HI40	r	BOOL	0=Out of range / 1=In range (Schedule Tower manage)
41150	2	Timestamp Local	r	DWORD	Time since January 1 , 1970 00h00 [s]
Values and states					
41160	1	device_state	rw	WORD	Bit 0: device running Bit 1: timer running Bit 2: device strating up Bit 3: device stopped due to timer
41201	2	param_E1_state	rw	DWORD	Cf. ParamState
41203	2	param_E1_measure_value	r	REAL	Measured value [unit of measure]
41205	2	param_E1_control_w	rw	REAL	Regulation setpoint [unit of measure]
41207	2	param_E1_dosage_u	r	REAL	Dosing control [1/1]
41209	2	param_E1_alarm_high	rw	REAL	High alarm value [unit of measure] (1) (2)
41211	2	param_E1_alarm_low	rw	REAL	Low alarm value [unit of measure] (1) (2)
41251	2	param_E2_state	rw	DWORD	Cf. ParamState
41253	2	param_E2_measure_value	r	REAL	Measured value [unit of measure]
41255	2	param_E2_control_w	rw	REAL	Regulation setpoint [unit of measure]
41257	2	param_E2_dosage_u	r	REAL	Dosing control [1/1]
41259	2	param_E2_alarm_high	rw	REAL	High alarm value [unit of measure] (1) (2)
41261	2	param_E2_alarm_low	rw	REAL	Low alarm value [unit of measure] (1) (2)
41301	2	param_E3_state	rw	DWORD	Cf. ParamState
41303	2	param_E3_measure_value	r	REAL	Measured value [unit of measure]
41305	2	param_E3_control_w	rw	REAL	Regulation setpoint [unit of measure]
41307	2	param_E3_dosage_u	r	REAL	Dosing control [1/1]
41309	2	param_E3_alarm_high	rw	REAL	High alarm value [unit of measure] (1) (2)

41311	2	param_E3_alarm_low	rw	REAL	Low alarm value [unit of measure] (1) (2)
41351	2	param_E4_state	rw	DWORD	Cf. ParamState
41353	2	param_E4_measure_value	r	REAL	Measured value [unit of measure]
41355	2	param_E4_control_w	rw	REAL	Regulation setpoint [unit of measure]
41357	2	param_E4_dosage_u	r	REAL	Dosing control [1/1]
41359	2	param_E4_alarm_high	rw	REAL	High alarm value [unit of measure] (1) (2)
41361	2	param_E4_alarm_low	rw	REAL	Low alarm value [unit of measure] (1) (2)
41401	2	param_E5_state	rw	DWORD	Cf. ParamState
41403	2	param_E5_measure_value	r	REAL	Measured value [unit of measure]
41405	2	param_E5_control_w	rw	REAL	Regulation setpoint [unit of measure]
41407	2	param_E5_dosage_u	r	REAL	Dosing control [1/1]
41409	2	param_E5_alarm_high	rw	REAL	High alarm value [unit of measure] (1) (2)
41411	2	param_E5_alarm_low	rw	REAL	Low alarm value [unit of measure] (1) (2)
42001	2	sensor_RI1_value	r	REAL	RI1 sensor measurement value [sensor unit]
42003	2	sensor_RI2_value	r	REAL	RI2 sensor measurement value [sensor unit]
42005	2	sensor_AI1_value	r	REAL	AI1 sensor measurement value [sensor unit]
42007	2	sensor_AI2_value	r	REAL	AI2 sensor measurement value [sensor unit]
42009	2	sensor_SI1_value	r	REAL	SI1 sensor measurement value [sensor unit]
42011	2	sensor_SI2_value	r	REAL	SI2 sensor measurement value [sensor unit]
42013	2	sensor_KI1_value	r	REAL	DIx sensor measurement value [sensor unit]
42015	2	sensor_KI2_value	r	REAL	DIx sensor measurement value [sensor unit]
42017	2	sensor_MI1_value	r	REAL	MI1 sensor measurement value [sensor unit]
42019	2	sensor_MI2_value	r	REAL	MI2 sensor measurement value [sensor unit]
Device					
42051	14	device	r	STRUCT	Device states and value
Channels					
42101	130	param_E1	r	STRUCT	E1 channel states and value
42301	130	param_E2	r	STRUCT	E2 channel states and value
42501	130	param_E3	r	STRUCT	E3 channel states and value
42701	130	param_E4	r	STRUCT	E4 channel states and value
42901	130	param_E5	r	STRUCT	E5 channel states and value
Sensors					
45301	36	sensor_RI1	r	STRUCT	RI1 sensor states and value
45351	36	sensor_RI2	r	STRUCT	RI2 sensor states and value
45401	36	sensor_AI1	r	STRUCT	AI1 sensor states and value
45451	36	sensor_AI2	r	STRUCT	AI2 sensor states and value
45501	36	sensor_SI1	r	STRUCT	SI1 sensor states and value
45551	36	sensor_SI2	r	STRUCT	SI2 sensor states and value
45601	36	sensor_KI1	r	STRUCT	DIx sensor states and value
45651	36	sensor_KI2	r	STRUCT	DIx sensor states and value
45701	36	sensor_MI1	r	STRUCT	MI1 sensor states and value
45751	36	sensor_MI2	r	STRUCT	MI2 sensor states and value
Contacts					
46051	12	switch_DI1	r	STRUCT	Contact status DI1
46076	12	switch_DI2	r	STRUCT	Contact status DI2
46101	12	switch_DI3	r	STRUCT	Contact status DI3
46126	12	switch_DI4	r	STRUCT	Contact status DI4
46151	12	switch_DI5	r	STRUCT	Contact status DI5
46176	12	switch_DIS	r	STRUCT	Contact status SI
Relays					

Relays					
46301	58	relay_PO1	r	STRUCT	PO1 relay states and value
46401	58	relay_FO1	r	STRUCT	FO1 relay states and value
46501	58	relay_FO2	r	STRUCT	FO2 relay states and value
46601	58	relay_FO3	r	STRUCT	FO3 relay states and value
46701	58	relay_FO4	r	STRUCT	FO4 relay states and value
46801	58	relay_RO1	r	STRUCT	RO1 relay states and value
4…20mA Outputs					
47801	18	iout_AO1	r	STRUCT	States and value of the output 4…20mA AO1
47826	18	iout_AO2	r	STRUCT	States and value of the output 4…20mA AO2

(1) : It isn't possible to set a High alarm lower than a Low alarm and vice versa.
(2) : To disable a low or high alarm you must send a NaN.

2) Data formatting

BOOL

"bool" uses 1 register and can have two values 0 or 1.

Example:

Register 41041 is the state of the PO1relay.
REG(41041) = 0: open relay
REG(41041) = 1: close relay

REAL

"real" uses 2 registers and allows coding of floating-point values on 32bits.

Example:

Register 41303 is the measurement value of channel E03, the unit of this value is the unit selected in the measurement menu of the device.
For a measurement value of 1.94ppm, the hexadecimal encoding is 0x3FF851EC.
REG(41303) = 0x51EC
REG(41303) = 0x3FF8

WORD

"word" uses 1 register to encode a 16bit integer or a bit field.

Example (bits):

Register 41101 contains the device status indicators.
REG(41101) = b0000000000000101

REG(41101)(bit00) = 1: the device is running
REG(41101)(bit01) = 0: the timer is not running
REG(41101)(bit02) = 1: regulation and alarms of a least one measurement channel is being started
REG(41101)(bit03) = 0: there is no active timer
REG(41101)(bit04) - (bit15) = 0: not used

DWORD

"dword" uses 2 registers and allow to code a 32-bit integer or bit field.

Example:

Register 41092 contains the local time of the device, this time corresponds to the number of seconds since January 1, 1970.
April 27, 2015 at 3h35min19sec corresponds to 1430141719 seconds since the reference date, the hexadecimal value is 0x553E3B17.

REG(41092) = 0x3B17
REG(41092) = 0x553E

ParamState

"dword" uses 2 registers and allow to code a 32-bit integer or bit field.

Bit 00 = 1 : Parameter ON (Regulation and alarms)
Bit 01 = 1 : Associated sensor(s) in start-up phase (Active delay)
Bit 02 = 1 : Parameter paused
Bit 03 = 0 : Circulation contact or active flow meter (Ex : No water circulation in the room)
Bit 04 = 1 : Associated sensor(s) requiring maintenance ('Key' logo displayed)
Bit 05 = 1 : Parameter during dosing
Bit 06 = 1 : Parameter stop dosing on alarm
Bit 07 = 1 : Parameter in pause due to a timer
Bit 08 = 1 : Associated sensor(s) out of scale or disconnected
Bit 09 = 1 : Associated sensor(s) measuring low out of scale
Bit 10 = 1 : Associated sensor(s) measuring high out of scale
Bit 11 = 1 : Associated sensor(s) unstable measurement
Bit 12 = 1 : Low alarm active parameter (alarm threshold crossed)
Bit 13 = 1 : High alarm active parameter (alarm threshold crossed)
Bit 14 = 1 : Overdose parameter (maximum dosing time exceeded)
Bit 15 = 1 : Empty amount dosing tank
Bit 16 = 1 : Dosing tank empty
Bit 17 à 31 = X : Internal operating information, 'random' values

NOTES

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