



AquaMOD'

User manual

Version 1.5



The most recent version of this manual is available on our website:

<https://www.aqualabo.fr/>

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CONTENTS

1. WARRANTY	6
2. Information	8
3. Safety	10
3.1 Safety instructions	10
3.1.1 Safety instructions in the manual	10
3.1.2 Labels on the product	10
3.2 OPERATING SAFETY	10
3.2.1 Intended use	10
3.2.2 Unauthorised use	10
3.2.3 User qualification	11
3.3 Notes on handling	11
3.4 Packaging	11
4. AquaMOD' overview	12
4.1 Package contents	12
4.2 AquaMOD' general view	13
4.3 Characteristics	15
5. Connection and wiring	16
5.1 SENSOR	16
5.2 ANTENNA	17
6. Start-up	18
7. Web interface and configuration	20
7.1 Activation and connection	20
7.2 Home screen	22
7.3 Configuration	23
7.3.1 System settings	25
7.3.2 WiFi settings	26
7.3.3 Sensor settings	27
7.3.4 LoRaWan settings	27
7.3.5 User settings	29
7.4 Calibration	30
7.4.1 Example for temperature calibration:	31
7.4.2 Example for salinity compensation with OPTOD sensor:	32
7.4.3 Example for TSS(mg/l) calibration with turbidity sensor :	33
7.5 Downloading	36
8. Battery life and data storage	38
8.1 AquaMOD' battery life	38
8.2 Data storage	39
9. FAQ	40
1. APPENDIX	42

1. WARRANTY

The new materials and equipment sold by the AQUALABO company are guaranteed against all manufacturing defects for a period of 1 year excluding consumables (unless expressly stipulated by AQUALABO) from:

- the date on which the buyer or authorized representative declares technical acceptance of the equipment at the factory,
- or alternatively,
 - for mainland France: from the date of the delivery note,
 - for other destinations: from the date of shipment certified by LTA, way bill, or bill of lading.

AQUALABO's warranty applies exclusively to flaws resulting from a design or inherent defect. It is strictly limited to the free delivery of replacement parts (except consumables) or the repair of the device in our workshops within 10 working days, transport not included.

The following are, by express agreement, formally excluded from our warranty:

- Any economic damage, such as staff costs, loss of profit, business disruption, etc.
- Any failure due to improper use of the device (unsuitable mains power, fall, attempted conversion, etc.), lack of maintenance by the user or poor storage conditions.
- Any failure due to using parts, not supplied by AQUALABO, on its equipment.
- Any failure due to transporting equipment in non-original packaging.
- Batteries, aerials, and in general, any item listed under "accessories".

Our customers are asked to always request our agreement before sending us a device for repair. No returns will be accepted without the prior written consent from our after-sales service which will stipulate the return procedure. In this case, the items will be returned in their original packaging, carriage paid, to the following address:

AQUALABO - 115 Rue Michel Marion 56850 Caudan - France

We reserve the right to reship any device received without this agreement. Regardless of the type and conditions of transport chosen to ship the equipment for repair under guarantee, in the original packaging, the related expenses as well as insurance costs will be the customer's responsibility.

Any damage resulting from returning the equipment falls within the framework of the guarantee on the express condition that customers have sent their claims to the carrier, by registered letter with acknowledgement of receipt, within forty-eight hours, with a copy of the letter sent to AQUALABO.

For devices with a warranty form, it only applies if the form received with the device is returned to AQUALABO duly completed.

SOFTWARE WARRANTY

The software is guaranteed by the software publisher or distributor under the conditions specified in the documentation related to those software packages.

AQUALABO does not, under any circumstances, guarantee the software packages.

By express agreement, we formally exclude from our warranty all economic damage, in particular for staff costs, loss of profit, business disruption, etc.

Customers are informed that AQUALABO may not, under any circumstances, be held responsible for any failure or bugs the software contain.

PROPERTY RIGHTS AND TRADE SECRETS

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2. INFORMATION

AQUALABO equipment has been designed, manufactured, tested and inspected in accordance with ISO 9001 procedures.

If the equipment is not used immediately, it should be stored in a clean, dry place. Abide by the following storage temperatures (10-35°C).

AQUALABO equipment is carefully inspected before packaging. Upon receipt of your device, check the condition of the packaging and if you notice an anomaly, submit the usual reservations with the carrier **within 48 hours**. Then consult the packing list and check that everything is in order. Finally, if you notice that something is missing or the equipment damaged, contact AQUALABO without delay.

AquaMOD' devices are entirely designed and manufactured by AQUALABO in France.

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3. SAFETY

3.1 SAFETY INSTRUCTIONS

3.1.1 SAFETY INSTRUCTIONS IN THE MANUAL

This manual provides important information on how to operate the product safely. Read it carefully to familiarize yourself with the product before commissioning and using it. This manual should be kept near the product so that the information you need is always easy to find.

Important safety instructions are highlighted in this manual. They are indicated by the warning symbol (yellow triangle) on the left-hand side.



CAUTION

Indicates a potentially hazardous situation that may result in serious (irreversible) injury, death, product damage, or destruction if the safety instructions are not followed.

3.1.2 LABELS ON THE PRODUCT

Be aware of all information labels and safety symbols affixed to the product.

3.2 OPERATING SAFETY

3.2.1 INTENDED USE

Comply with the following points for safe operation:

- Store and use the device under the environmental conditions mentioned in this manual ([see Characteristics](#))
- Do not disassemble the device
- Power the device with its original battery
- Comply with the use restrictions given below



CAUTION

If the device is not used as specified by Aqualabo (environment, handling...). The safety may be jeopardised.

3.2.2 UNAUTHORISED USE

The product must not be operated if:

- it is visibly damaged (e.g. after being transported)
- it has been stored under adverse conditions for a long period of time

3.2.3 USER QUALIFICATION

We assume that operators know how to manage this equipment by virtue of their professional training and experience. In particular, operators must be able to understand and correctly implement the safety instructions/labels when using the product. Trained personnel should be familiar with and follow the instructions in this manual.

3.3 NOTES ON HANDLING

AquaMOD' are electronic devices. As such, they must be treated with care. Always protect the device from conditions that could adversely affect its components. In particular, adhere to the following points:

- The ambient temperature and humidity, when using and storing, must be within the limits indicated in the TECHNICAL CHARACTERISTICS section.
- Regardless of the circumstances, the device must be protected from the following influences:
 - Intensive exposure to light and heat
 - Caustic vapour or vapour with high solvent content.
- All work on the inside of the instrument, must be performed by AQUALABO or by AQUALABO-approved technicians.

3.4 PACKAGING

The AquaMOD' is shipped in packaging designed to protect it during transport. It is essential that you keep the original packaging as well as the inner packing in such a way as to ensure optimum protection of the device from impact in the event of transport. The original packaging is also required for return transport under appropriate conditions if repair is needed. Please remember that we shall decline any warranty claim for damage caused by unsuitable transportation.

4. AQUAMOD' OVERVIEW

4.1 PACKAGE CONTENTS

You have just received your AquaMOD'



The package consists of an AquaMOD' with its battery (not connected) and sensor packed in a separate box under the device. The optional external aerial, if there is one, is also packaged in a separate box, LoRa AquaGAT' gateway in its packaging and placed on the top of the package, a quick start guide. (The type of sensor and the cable length varies depending on the model ordered)

Upon receipt of your device, check the condition of the packaging and if you notice an anomaly, submit the usual reservations with the carrier **within 48 hours**. If you notice that something is missing or the equipment damaged, contact AQUALABO without delay.

4.2 AQUAMOD' GENERAL VIEW

EXTERIOR:

AquaMOD' has 2 cable glands on its rear side, they are screen-printed to clearly identify them:



A Cable routing of the external aerial if there is one (see paragraph 5.2)

B Sensor cable routing



CAUTION: EXTERNAL ANTENNA CONNEXION

If your AquaMOD' is equipped with an external antenna, never try to have the AquaMOD' communicate without this one.



SEALING: OPENING REQUIRED CHECKING

The product's seal is only guaranteed if the main O-ring is in good shape, correctly greased (silicon grease), its cover well stop-locked and all the cable glands* properly tightened.

** Within normal condition of use, no actions are required on cable glands, except for tightening check. If you need to **change or replace the sensor associated with the Aquamod**, request it to your authorized distributor or Aqualabo Customer Service.*

The AquaMOD' is equipped with a base and an attachment screw (3 mm in diameter) is available. **C**



To separate the AquaMOD' from its base, hold the AquaMOD' upside-down (cable gland facing you), so you can see the fastener. **D**

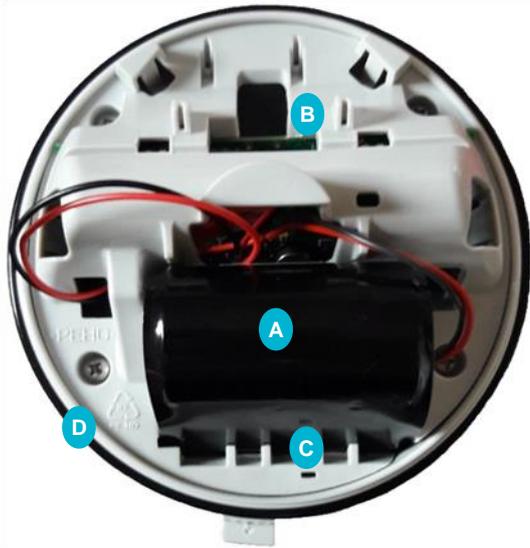
Hold the base firmly and turn the AquaMOD' clockwise until it is free from its base.

Reverse the movement to lock the AquaMOD' on its base.

AquaMOD'

INTERIOR:

To remove the top of the product and access the inside, unscrew the lid



A Battery (The battery model may vary depending on which generation of device you have. Only use batteries supplied by Aqualabo)

B Chip board (The version of the board may vary depending on which generation of device you have)

To close the AquaMOD' screw back on the lid.

CAUTION: DATE/TIME RESET WHEN BATTERY IS RECONNECTED



Whenever you disconnect the battery for a long time (>8h), the AquaMOD' loses its current time, so you will have to reset it using the local web interface.



SEALING: DESICCANT VERIFICATION

A desiccant sachet is located in the lower part of the housing **C**: it must still be in the form of granules, a pasty state would indicate abnormal moisture.



SEALING: O-RING VERIFICATION & SILICON GREASE

To ensure the product sealing, when opening of product, verify the O-Ring **D** aspect, replaced it if required (replacement o-ring available) and apply an appropriate amount of silicon grease before closing.

SEALING: DESICCANT VERIFICATION



After opening/closing, always check that the lid **E** is properly closed to the stop point **F** to ensure a proper seal.



4.3 CHARACTERISTICS

Communications	WiFi (channel 5) Local connection on site via PC, Smartphone or tablets, for AquaMOD' diagnosis and configuration.	LoRaWan Sending data to the Cloud via the AquaGAT' gateway. Sending frequency can be configured from 2min to 8h (15min by default). The spectral spread coefficient can be configured to optimise battery life and range.	Antenna Internal or external via cable gland.
	Radio frequency exposure Maintain a distance of 20 cm (8 inches) to the device/antenna from your body to be consistent with how the device is tested for compliance with RF exposure requirement.		
Memory	Flash 8MB Up to 10,000 measurements Up to 10,000 log lines		
Power Supply From 1 to 5 years depending on acquisition period and connected sensor	2D lithium pack 3.6V 26 Ah (standard) Battery life up to 5 years (See Section 8.1 Battery life)	Caution, be careful to respect connexion polarity when connecting the battery pack (risk of device destruction). Never use another battery pack instead of the Aqualabo specified one (risk of injuries). Don't try to recharge the battery pack (risk of explosion and injuries).	 Caution !! Non-rechargeable Li-SOCl2 Battery
Environment Suitable for isolated sites (indoor and outdoor use)	Hand tightened seal IP68 certified* 1 week under 1m of water. No tools needed. <i>*Only if the closing was done properly with the O-ring being in good shape and properly greased with silicon grease (spares o-rings available).</i>	Temperature & altitude (storage and use) Temperature: -10°C to + 50°C * Altitude : up to 5000 m Moisture : up to 100% (only when properly sealed, not when opened during maintenance) <i>*Long term storage must be performed in a dry place with a temperature between 10 and 35°C</i>	Standards Compliant to CE marking
Diagnostics Local or Remote	Measurements Battery level, free memory LoRaWan reception quality System status	Log Time-stamped recording of acquisition and communication tasks	
Time stamping	Time setting From the Web interface (See Time setting. Section 7.3.1)	Saving Time stamped recording of measurements	
Class User replaceable battery	Dimensions 145 x 145 x 185 mm	Weight 540 g	Connections IP68, cable gland

5. CONNECTION AND WIRING

5.1 SENSOR

The AquaMOD' comes with a factory-wired sensor. The AquaMOD' is compatible with all sensors in the Digisens range.

You can replace a defective sensor or change the type of sensor connected to your AquaMOD', however this requires a maintenance operation. This operation must be carried out by a trained person and implies dismantling the product. For more information on replacing a sensor, contact AQUALABO Customer Service.



Code	Description
PF-CAP-C-00174	NTU DIGITAL Sensor with 7M bare wire
PF-CAP-C-00166	NTU DIGITAL Sensor with 15M bare wire
PF-CAP-C-00172	PHEHT DIGITAL Sensor with 7M bare wire WITHOUT CARTRIDGE
PF-CAP-C-00162	PHEHT DIGITAL Sensor with 15M bare wire WITHOUT CARTRIDGE
PF-CAP-C-00155	PHEHT DIGITAL Sensor Cartridge
PF-CAP-C-00170	C4E DIGITAL Sensor with 7M bare wire
PF-CAP-C-00156	C4E DIGITAL Sensor with 15M bare wire
PF-CAP-C-00168	OPTOD DIGITAL Sensor with 7M bare wire
PF-CAP-C-00164	OPTOD DIGITAL Sensor with 15M bare wire
PF-CAP-C-00168	TITANIUM OPTOD DIGITAL Sensor with 7M bare wire
PF-CAP-C-00164	TITANIUM OPTOD DIGITAL Sensor with 15M bare wire
PF-CAP-C-00261	CTZN DIGITAL Sensor with 7M bare wire (E) - PVC CONNECTION IMMERSION version
PF-CAP-C-00253	CTZN DIGITAL Sensor with 15M bare wire (E) - PVC CONNECTION IMMERSION version
PF-CAP-C-00272	ANNULUS REDOX DIGITAL Sensor with 7M bare wire WITHOUT CARTRIDGE
PF-CAP-C-00273	ANNULUS REDOX DIGITAL Sensor with 15M bare wire WITHOUT CARTRIDGE
PF-CAP-C-00263	ANNULUS REDOX DIGITAL Sensor Cartridge
PF-CAP-C-00280	MES5 DIGITAL Sensor with 7M bare wire
PF-CAP-C-00281	MES5 DIGITAL Sensor with 15M bare wire
PF-CAP-C-00287	VB5 DIGITAL Sensor with 7M bare wire
PF-CAP-C-00288	VB5 DIGITAL Sensor with 15M bare wire
PF-CAP-C-00363	StacSense : Multiparameter sensor UV254 DCO/DBO/COT Optical pathway 2 mm 15m bare wire
PF-CAP-C-00364	StacSense : Multiparameter sensor UV254 DCO/DBO/COT Optical pathway 50 mm 15 m bare wire
PF-CAP-C-00368	StacSense : Multiparameter sensor UV254 DCO/DBO/COT Optical pathway 2 mm 7 m bare wire
PF-CAP-C-00369	StacSense : Multiparameter sensor UV254 DCO/DBO/COT Optical pathway 50 mm 7 m bare wire
PF-CAP-C-00370	StacSense : Multiparameter sensor UV254 DCO/DBO/COT Optical pathway 2 mm 3 m bare wire
PF-CAP-C-00371	StacSense : Multiparameter sensor UV254 DCO/DBO/COT Optical pathway 50 mm 3 m bare wire

Each sensor's user manual is available on the website <https://www.aqualabo.fr/>. It contains all the necessary information regarding the use and maintenance of the sensor, including details of the steps to be performed to calibrate it.

For more information on the Digsens range digital sensors and their use, please visit our website: <https://www.aqualabo.fr/>

5.2 ANTENNA

Depending on the environment in which the equipment is installed, the quality of the LoRa communication between the AquaMOD' and the gateway depends on the choice of antenna.

We can thus distinguish, at the AquaMOD' level, between the internal antenna in the housing (in the sphere) and the external antenna. A completely identical antenna can also replace the standard antenna of the gateway in order to move it outside a building, or in an elevated position

Antenna Coaxial socket
(male thread)



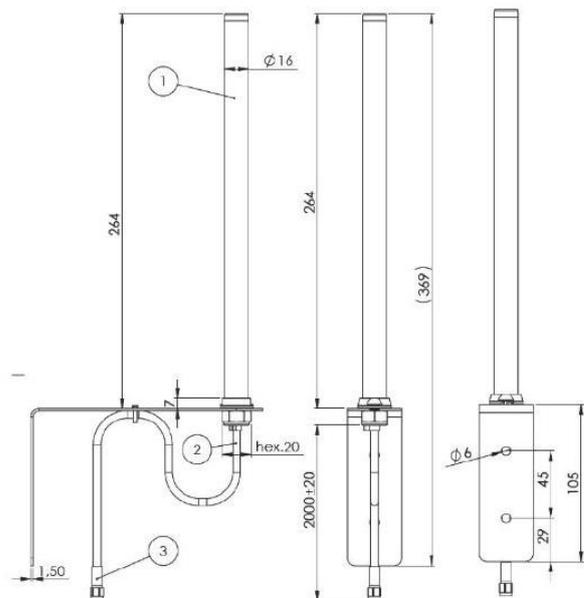
LoRa gateway



Gateway with standard antenna,
Indoor use.



Antenna, outdoor use



Outdoor use antenna (sizes)

- 1- Antenna body
- 2- Integrated cable (3 meters, standard version)
- 3- Coaxial plug to gateway

6. START-UP

Equipment installation:

- Fit the AquaGAT' aerial on its connector to the rear (see figure, paragraph 5.2).
- Connect the AquaGAT' gateway to the power supply and to Internet via the network cable and wait for all the lights to turn on.
- Connect the AquaMOD' battery and close it, ensuring the cover is thoroughly tightened.
- The installation is operational, the first data are sent after 15s then the AquaMOD' module activates the WiFi for 10min (no data sent and you can access the local Web interface). After this lead time, the module sends data every 15 minutes.

Cloud registration:

From the mobile application:

- Select "Add a gateway" then scan your AquaGAT' QR code
- Select "Add a device" then scan your AquaMOD' QR code

From a computer:

- Select "Add a gateway" then enter the AquaGAT' serial number shown under the QR code
- Select "Add a device" then enter the AquaMOD' serial number shown under the QR code

After start-up:

- Connecting to the web interface is recommended to check that the entire system is working properly (OK on all lines of the main screen).
- It is advisable to synchronize the AquaMOD' clock with the one of the computer to allow data to be saved on the actual date. To do this, go to the "Settings" tab and then in the "System" section which appears by default, click on "Sync Time" then "Apply" in the confirmation window.

Your AquaConnect can now be used!

7. WEB INTERFACE AND CONFIGURATION

The AquaMOD' has an on-board Web interface to allow its diagnosis and configuration. This interface is in English by default. To display another language use the browser's automatic translation tool. The interface will then be translated to the same language as that of the device used.

7.1 ACTIVATION AND CONNECTION

To access the AquaMOD' Web interface, the WiFi access point has to be activated.

To activate the WiFi access point when not powered-up, place the magnet provided against the body on one side of the housing:



- Check that the lid of the AquaMOD' is screwed on as far as it can go.
- Place the magnet against the body as shown in the picture and slide it slowly between the two notches. **A** There are sensors on either notch pairs.
- The access point will be created after 10 to 20 seconds and appears in the list of available WiFi networks with the following name: AQUAMOD_XXXXXXXXXX (where XXXXXXXXXXXX is the serial number shown under the QR code).
- If the AquaMOD' takes a measurement when the magnet is running by, the WiFi access point may not appear. If the WiFi access point is not available after 30s, repeat the activation using the magnet.
- The access point default password is: **Aqualabo**

Once connected to the WiFi access point, in a Web browser (Chrome or Chromium) go to the address <http://192.168.4.1>



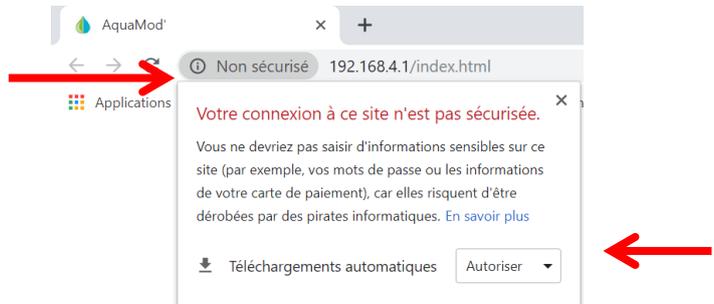
CAUTION: USE A RECENT WEB BROWSER

Use a recent Web browser (e.g. Chrome 75.0.3770.85 or higher, Chromium)

Wait for the page to fully load before attempting to connect.

Depending on the configuration of your browser, there may be a warning message indicating that part of the page has not been loaded for security reasons. If this is the case, allow the blocked content to be loaded and then refresh the page.

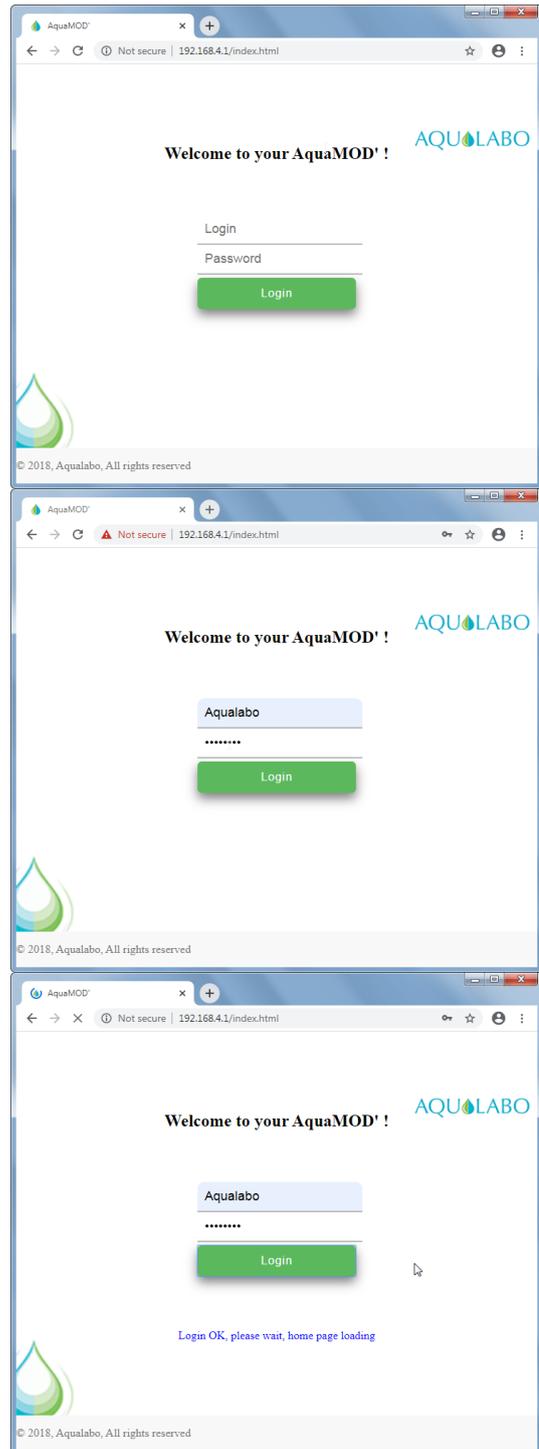
Google Chrome example:



After complete loading of welcome page (text and logo), to log into the interface, enter the user name and password and click "Login"

- Default user name: **Aqualabo**
- Default password: **password**

When data entered are valid, the message "Login OK please wait, home page loading" is displayed.



CAUTION: WIFI AUTOMATIC CUT OFF

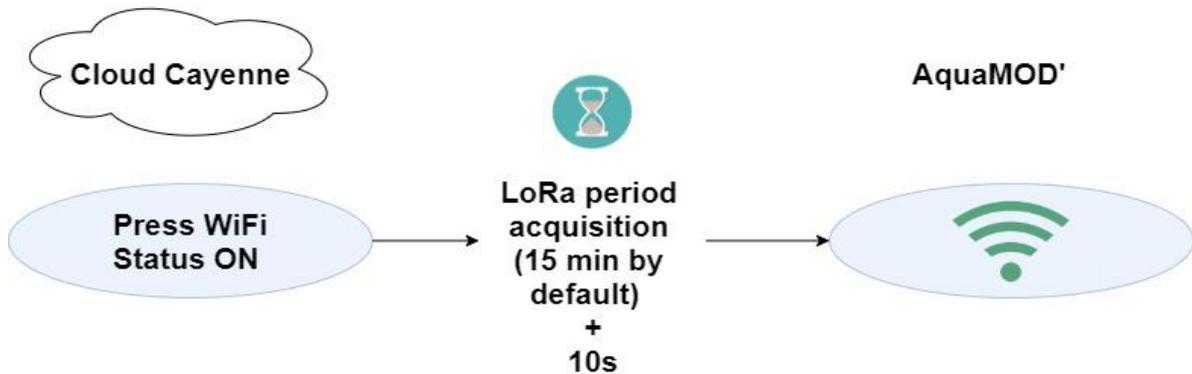


To avoid over-consumption, the WiFi is automatically cut off after pre-defined time of inactivity, which could be setted in the settings tab (10 minutes per default). AquaMOD' then resumes normal operation and the WiFi access point will have to be activated again to access the Web interface.

Similarly, for security reasons, the AquaMOD' automatically disables the WiFi after three unsuccessful connection attempts.

AquaMOD'

WiFi communication can be locally activated or by using downlink from your cloud interface. Currently, the IoT in a box doesn't have this feature.



7.2 HOME SCREEN

Once connected to the Web interface, the home screen is displayed by default. It gives an overview of AquaMOD' and its status. Click "Home", from the other interface tabs, to return to this screen.

Functions	Status	Details
1 Sensor	Ok	Slave code : 10
2 LoRaWan	Ok	Connected to LoRaWan
3 Battery	Ok	Battery level : 100 %
4 System	Ok	System Ok
5 Memory	Ok	Free space memory : 76 %
6 Wifi	Not applicable	Automatic turn off time : 9 minutes

A Menu bar to navigate between different tabs

B Wifi time remaining: Indicates the time remaining before the Wifi is automatically turned off if there is no activity on the page. In case this value do not go back to its initial value after activity on the web interface, this means that your device is no longer connected to the AquaMod.

C Disconnection button (return to the authentication page)

D Table summarizing the AquaMOD' status

E Status of the function: - OK: normal operation
- Warning: anomaly detected (example: low battery)
- Error: error detected (example: sensor not connected)

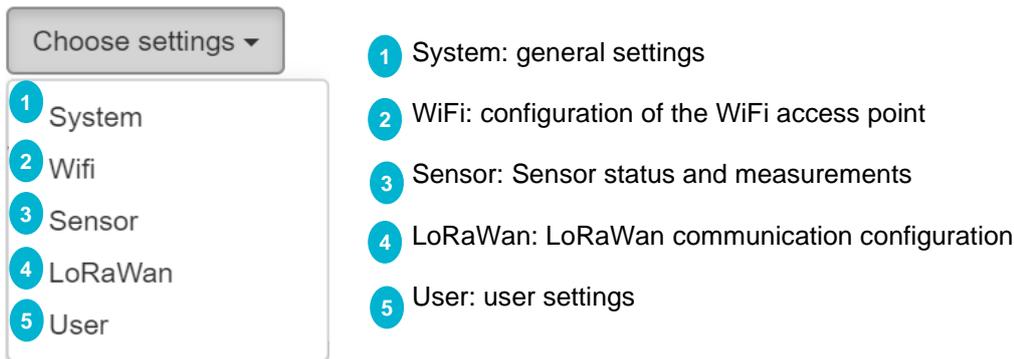
F Detail on the matching function

- 1 Sensor: indicates if the sensor is detected correctly as well as its slave code
- 2 LoRaWan: indicates the LoRaWan communication status
- 3 Battery: indicates the battery level and status
- 4 System: indicates the general state of the system
- 5 Memory: indicates the status of the memory and available space
- 6 Wifi : Indicates the time set before the Wifi is automatically switched off.

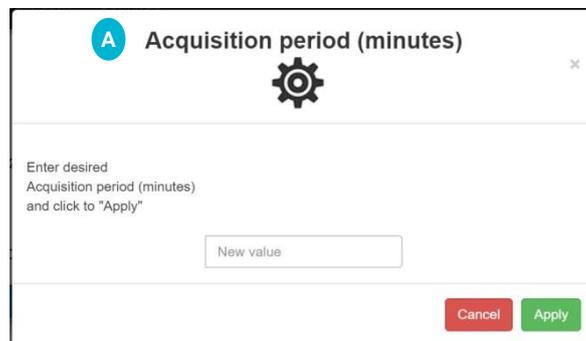
7.3 CONFIGURATION

The "Settings" tab enables the AquaMOD' to be configured. Click "Settings", from the other interface tabs, to access this screen.

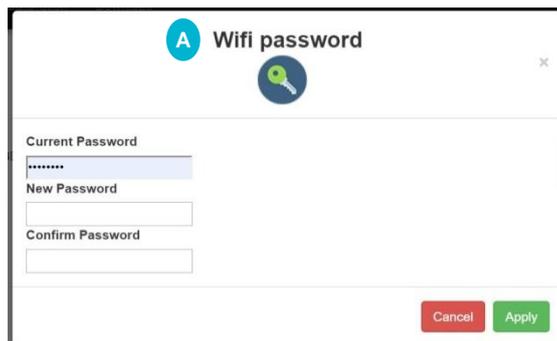
AquaMOD' general settings are displayed by default (settings: System). To navigate between the various settings, click the "Choose settings" drop-down list and select the desired settings.



When changing a setting, a window opens to enter the new value. You are reminded of the name of the modified setting, after having entered the desired value. **A** Click "Apply" to save the change or "Cancel" to cancel the operation.



To change passwords, you will have to enter the current password and to confirm the new password by entering it in both input fields.



CAUTION



**There is no way to recover passwords if you forget them!
Only change the default passwords if the desired level of security requires it.
Make sure the password is kept safe in the event of a change.**

The default passwords can only be restored, if they are changed or forgotten, by someone from Aqualabo or an AquaMOD' trained and authorized trouble-shooter.

Default settings can be restored for each category of settings. To do this, click "Restore to default". A warning window is then displayed requesting confirmation. Click "Apply" to confirm or "Cancel" to cancel the operation.



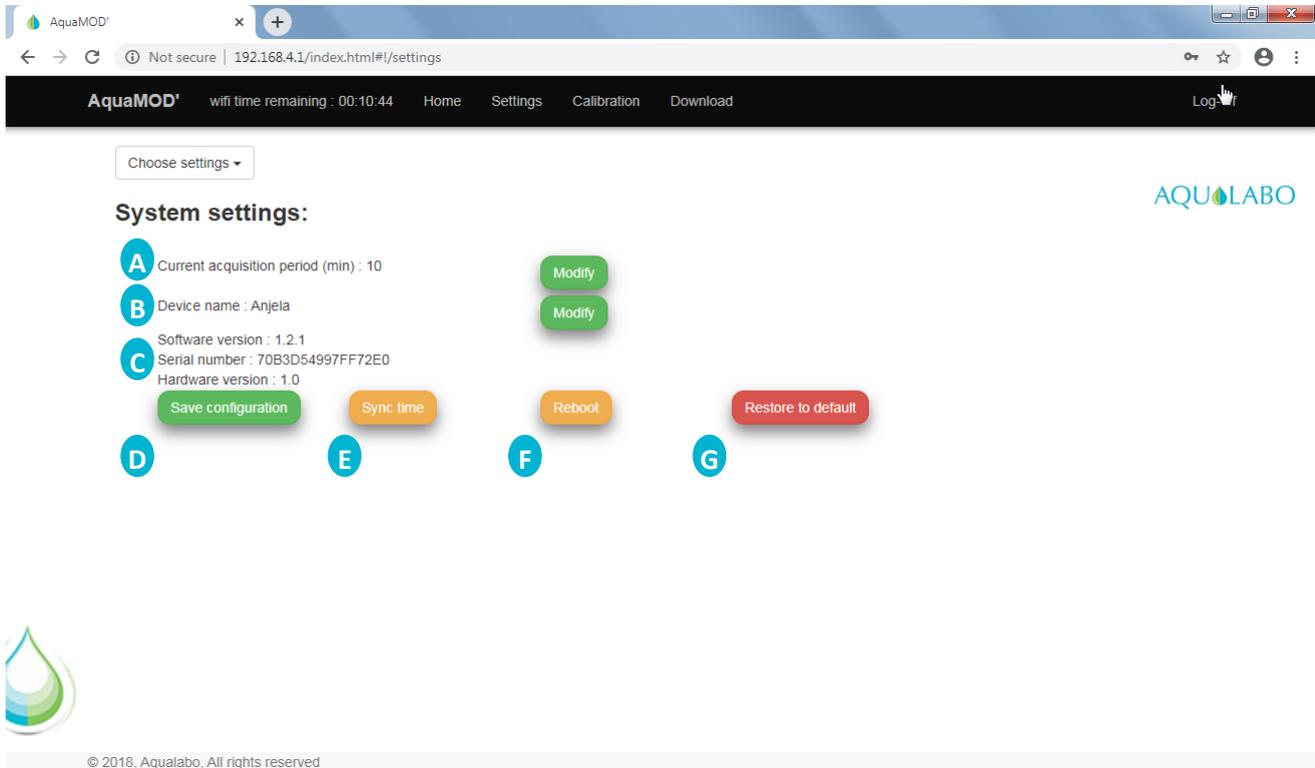
CAUTION



When restoring settings, all the settings of the category are reseted (including passwords, logins, acquisition period, etc.).

7.3.1 SYSTEM SETTINGS

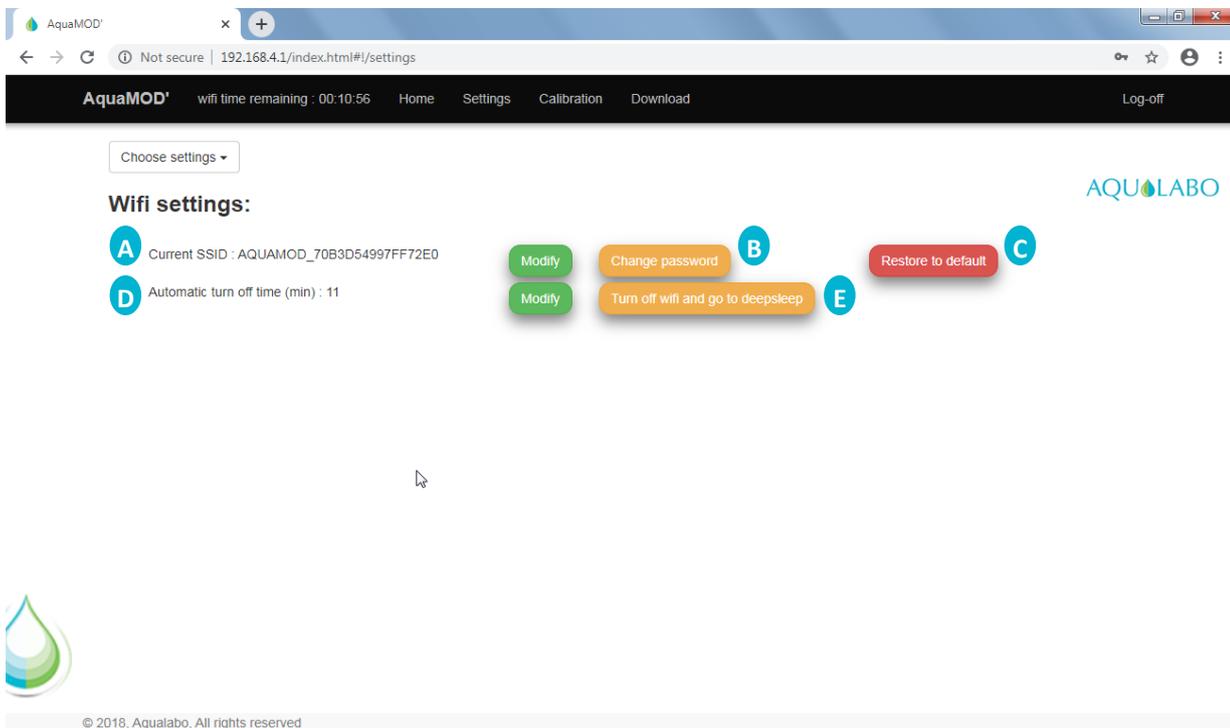
This screen allows you to configure the AquaMOD' general settings.



- A** Acquisition period: allows you to configure the measurement period, enter a value in minutes between 2 and 480 minutes
- B** Device name: allows you to configure a specific name for your AquaMOD' (from 2 to 20 characters)
- C** Device information (not configurable)
- D** Save configuration: allows you save the AquaMOD' settings
- E** Sync time: allows you to set AquaMOD' time using the time on a PC, Smartphone or tablet
- F** Reboot: restarts AquaMOD'
- G** Restores to default : previous settings to the factory values

7.3.2 WiFi SETTINGS

This screen is used to configure the WiFi access point settings.



- A** SSID: allows you to configure the WiFi access point name (8 to 20 characters)
- B** Password: allows you to configure the WiFi access point password
- C** Restores WiFi access point settings to default values
- D** Automatic "Turn Off": Period of inactivity before WiFi automatically shuts down. Enter a value between 5 and 60 minutes
- E** Turn off wifi and go to deepsleep : let you stop the wifi, and set the AquaMOD' in its LoRaWan stats.

CAUTION



**There is no way to recover passwords if you forget them!
Only change the default passwords if the desired level of security requires it.
Make sure the password is kept safe in the event of a change.**

In case of modification and forgetfulness of the password, the default one can only be restored by someone from Aqualabo or an AquaMOD' trained and authorized troubleshooter.

CAUTION



The WiFi automatic shut-down time has an impact on AquaMOD' battery life if the WiFi is used regularly. The default time is 10 minutes. Keep this time as short as possible to maximize battery life.

7.3.3 SENSOR SETTINGS

This screen allows you to retrieve all the information from the sensor connected to AquaMOD'. It enables you to find out the values measured by the sensor and all the information specific to the sensor (model, slave code, serial number, software and hardware versions).

A measurement is automatically performed when the page is loaded. To take a new measurement and refresh the values, click "Refresh". **A**

Parameters	Values	Units
Temperature	22.71368	°C
Oxygen	105.1346	%
Oxygen	9.070534	mg/l
Oxygen	9.070534	ppm

Adress	Type
10	PODO

Informations	Details
Serial number	SN-PODOG-00711
Hardware version	V5.1
Software version	V5.14

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7.3.4 LoRaWAN SETTINGS

This screen is used to configure the Data transfer rate via LoRaWan **A** or to restore the default configuration. **B**

Actual coding data-rate : 4 **A** Modify

Force LoRaWan connexion : **C** Force connexion

B Restore to default

Please refer to the manual before modification.

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AquaMOD'

The Force connexion **C** button, can be used to force the AquaMOD' to request a new connection demand on the LoRaWAN network. After forcing the reconnection, it's necessary to restart the AquaMOD'. This function must only be done when it comes to replacing the gateway or if the radio setting has been modified (AquaMOD' or gateway movement) or during a system reboot after a long power failure to either of the gateway or internet access.

A Range/autonomy = f(spreading factor)

The data transfer rate via the LoRaWAN is the only configurable setting in the LoRaWAN connection. It means you can adapt the radio link in order to optimize range and battery life.

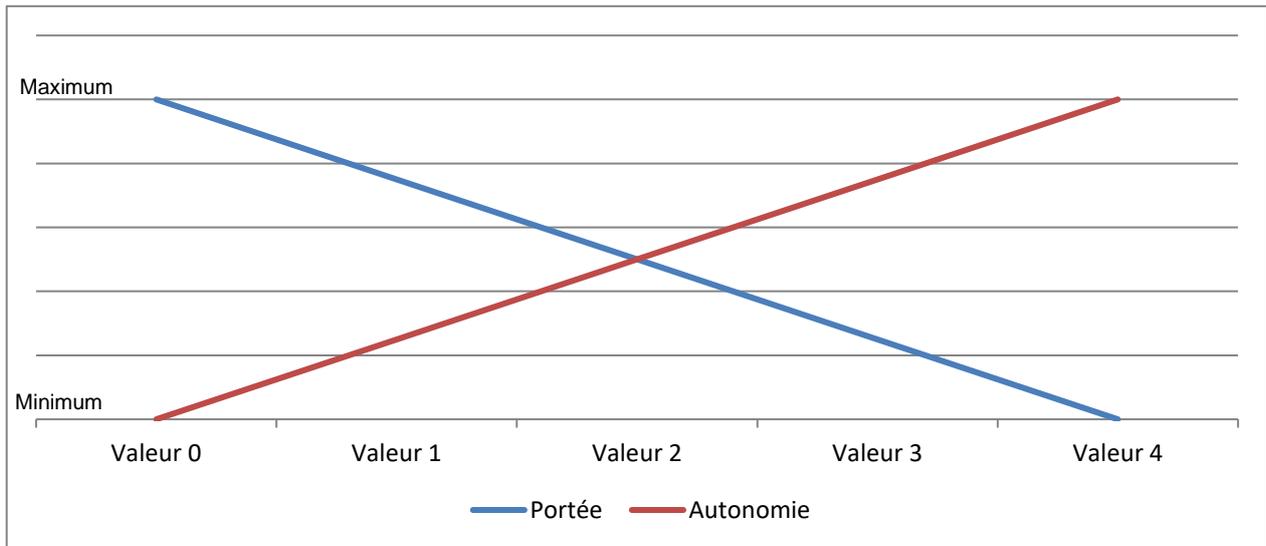
The value is set to 4 by default. It is configurable between 0 and 4.

The table below shows the settings of the radio link according to the configured value:

Configured value	Connection settings	Data rate
4	Spectral spreading coefficient = 8, band = 125kHz	3125 bits/s
3	Spectral spreading coefficient = 9, band = 125kHz	1760 bits/s
2	Spectral spreading coefficient = 10, band = 125kHz	980 bits/s
1	Spectral spreading coefficient = 11, band = 125kHz	440 bits/s
0	Spectral spreading coefficient = 12, band = 125kHz	250 bits/s

The radio link settings affect the range and power consumption of the transfer.

The relationship between battery life and range, depending on the configured value, can be represented as below:



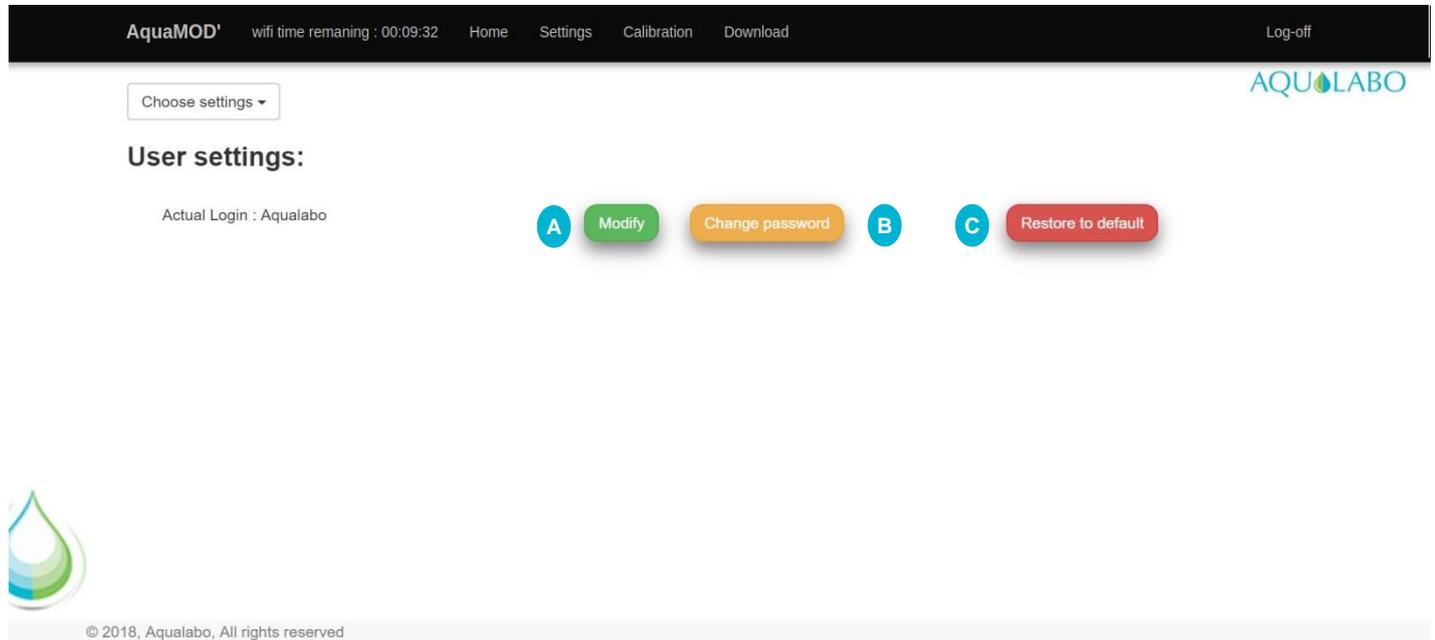
CAUTION

The data rate has a significant impact on range and battery life. The default value provides an ideal range for maximum battery life. Only change this setting if transfer conditions so require.

7.3.5 USER SETTINGS

This screen is used to configure the user settings for connection to the AquaMOD' Web interface. Click "Modify" **A** to change the ID or "Change password" **B** to change the password.

Click "Restore to default" **C** to restore the default identifiers (identifier: Aqualabo, password: password)



The screenshot shows the AquaMOD' web interface. At the top, there is a navigation bar with the following items: AquaMOD', wifi time remaining : 00:09:32, Home, Settings, Calibration, Download, and Log-off. Below the navigation bar, there is a "Choose settings" dropdown menu. The main content area is titled "User settings:" and displays "Actual Login : Aqualabo". There are three buttons: "Modify" (green, labeled A), "Change password" (orange, labeled B), and "Restore to default" (red, labeled C). The AquaLABO logo is visible in the top right corner. At the bottom left, there is a water drop icon and the copyright notice "© 2018, Aqualabo, All rights reserved".



ATTENTION

**There is no way to recover passwords if you forget them!
Only change the default passwords if the desired level of security requires it.
Make sure the password is kept safe in the event of a change.**

In case of modification and forgetfulness of the password, the default one can only be restored by someone from Aqualabo or an AquaMOD' trained and authorized troubleshooter.

7.4 CALIBRATION

The "Calibration" tab allows you to calibrate the settings of the sensor connected to the AquaMOD'. Click "Calibration", from the other interface tabs, to access this screen.

Depending on the sensor connected, the appropriate calibration menu is displayed, which allows you to find out the date of the last calibration **A** or start a new calibration for the desired setting. **B**

AquaMOD' wifi time remaining : 00:09:32 Home Settings Calibration Download Log-off

AQUALABO

AquaMod' Optod Sensor Calibration:

If you have a different sensor connected to your AquaMod' please install calibration for your sensor first.

Temperature	B Calibrate	C Restore factory value	Last calibration date : 2018-12-10T10:39:00 UTC A
Oxygen	Calibrate	Restore factory value	Last calibration date : 2018-12-12T13:12:00 UTC

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ATTENTION

In the event of an error during a calibration, you will be able to restore the calibration made during the sensor's manufacture, click "Restore factory coef" **C** to return to the factory coefficients.

When a new calibration is applied or when the factory coefficients are restored, the current calibration applied in the sensor is lost.

To perform a new calibration, click the setting to be calibrated and follow the instructions on the various screens that are displayed. To go to the next step click "Next". **D**



ATTENTION

When moving to the next step, the software automatically saves the measured values and the values entered by the user.

In the event of an error will be able to return to a previous step. The calibration must be cancelled and then restarted in the first step.

7.4.1 EXAMPLE FOR TEMPERATURE CALIBRATION:

- Step 1:

AquaMod' Optod Sensor Calibration:

Temperature calibration
First calibration point, recommended value : 0°C

Etalon value : °C

Current value : °C

E **D**



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- Step 2:

AquaMod' Optod Sensor Calibration:

Temperature calibration
Second calibration point, recommended value : 25°C

Etalon value : °C

Current value : °C

E **D**



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- Step 3:

AquaMod' Optod Sensor Calibration:

Temperature calibration
Operator name :

D **E**



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AquaMOD'

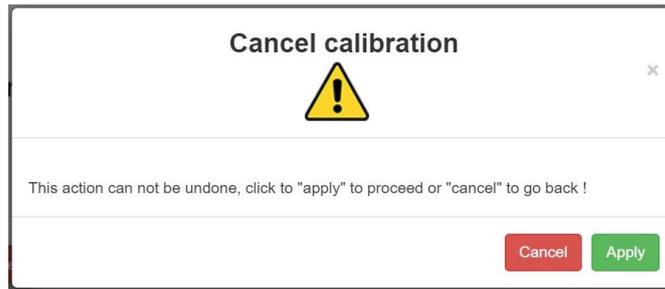
The number and content of the various steps depend on the setting being calibrated. To learn the various calibration steps for each setting, refer to the relevant sensor documentation.

To validate the calibration and apply it, during the last step, operators have to enter their name and then click "Validate".

The calibration is then applied after the required application time. The "Calibration" tab menu is displayed again as well as the navigation menu.

You can cancel the calibration and return to the calibration menu, regardless of the calibration in progress, by clicking "Cancel".

A warning message will appear, click "Apply" to confirm, or "Cancel" to resume calibration.

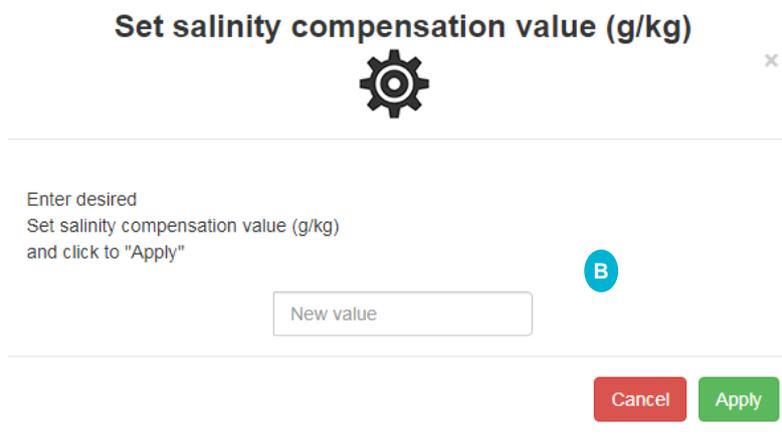


7.4.2 EXAMPLE FOR SALINITY COMPENSATION WITH OPTOD SENSOR:

On the OPTOD sensor, it's possible to apply a compensation of salinity and barometric pressure.



Click on "set coef" **A** and enter the value **B**



It's possible to clear coef and restaure the default value by clicking on "clear coef" **C**.



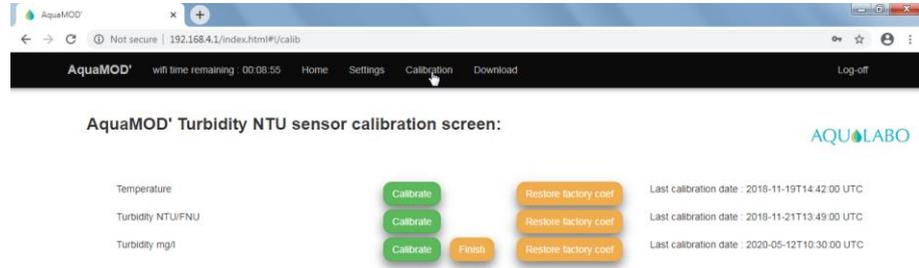
CAUTION

When cancelling a calibration in progress, all data related to it is permanently lost.

7.4.3 EXAMPLE FOR TSS(MG/L) CALIBRATION WITH TURBIDITY SENSOR :

CALIBRATE button to initiate calibration sequence of TSS parameter (steps 1 to 3)

FINISH button to add dry weight value and validate full calibration sequence. (steps 4 & 5)

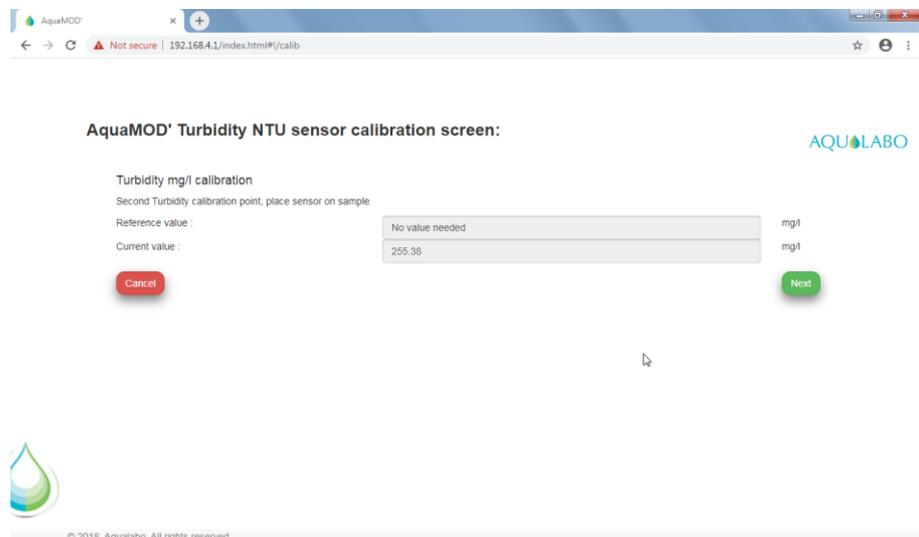
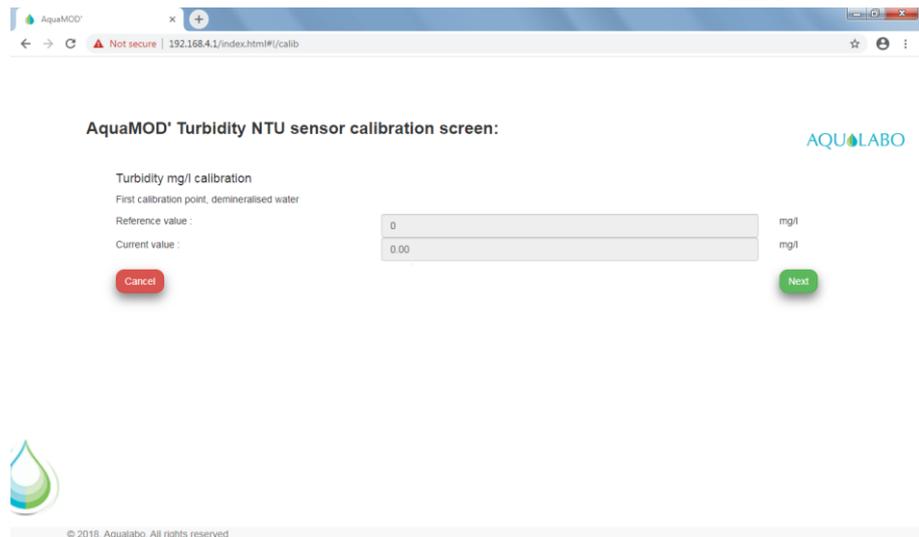


Calibration steps

1 – measurement in clear water

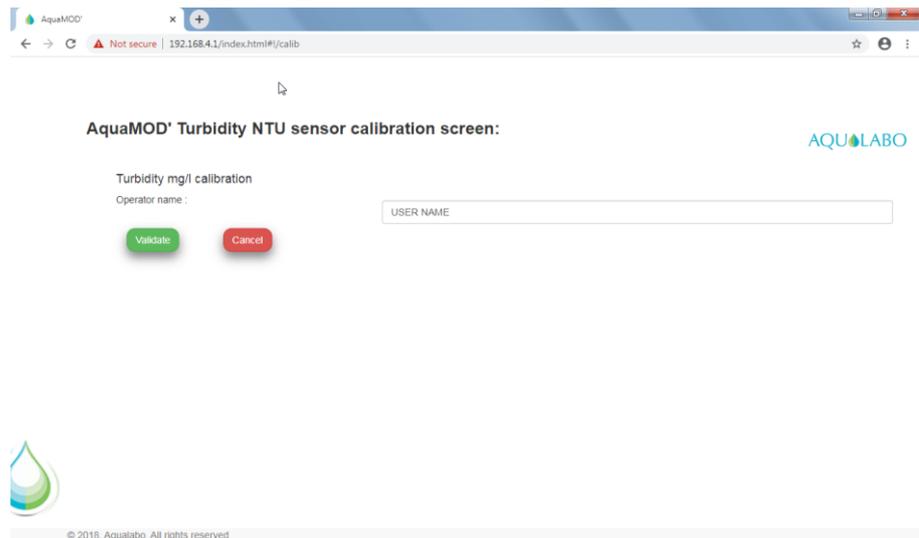


2 – Measurement in sample, signal recording after stabilisation.

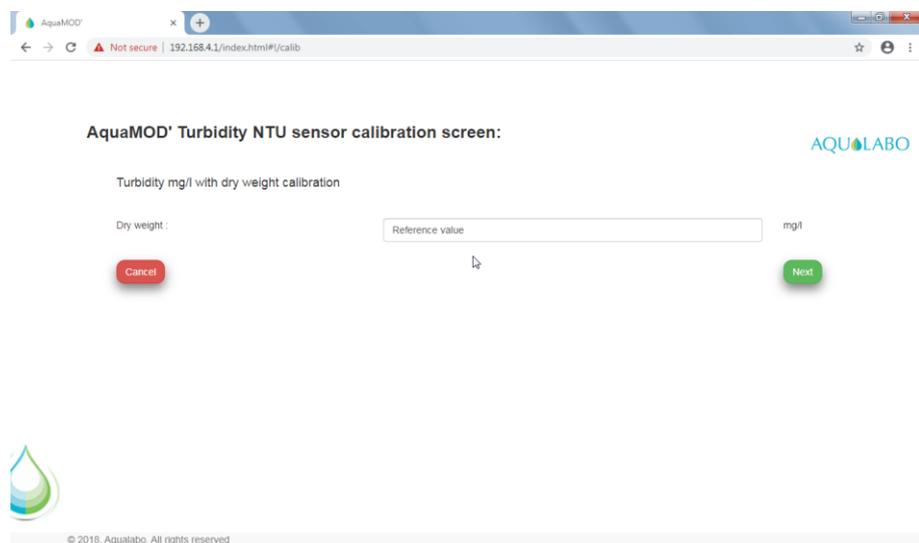


AquaMOD'

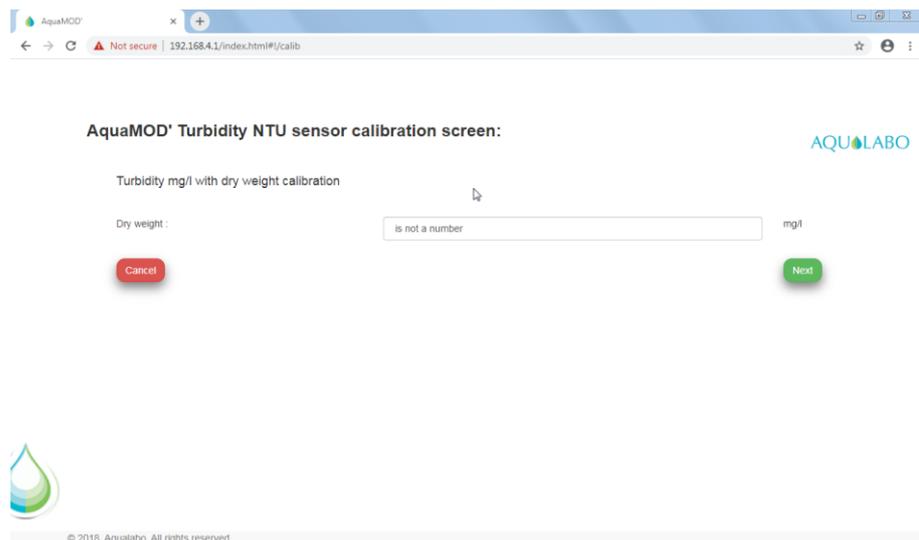
3 – Operator name ;
sequence validation.



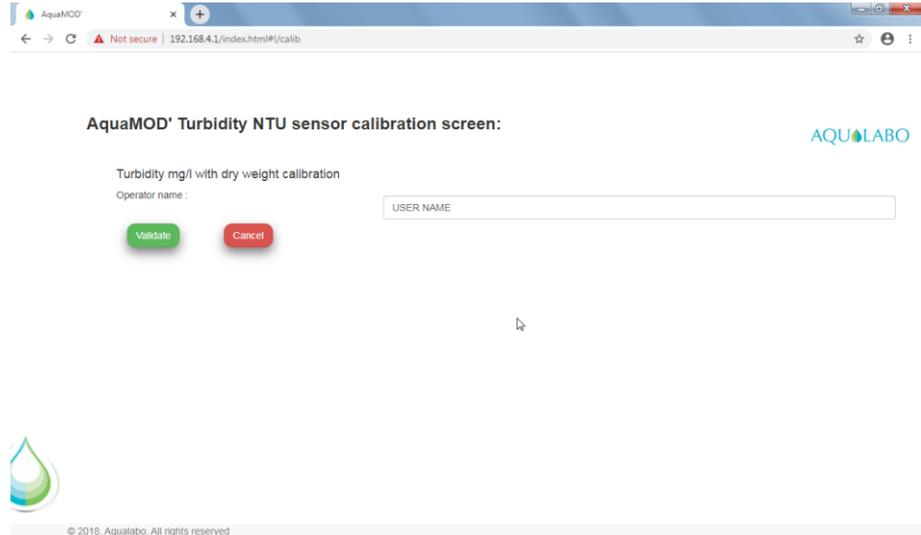
4 – After standard
analysis in
laboratory, dry
weight value in mg/L.



Remark :
If non-numerical
value is validated, an
alert message is
displayed.

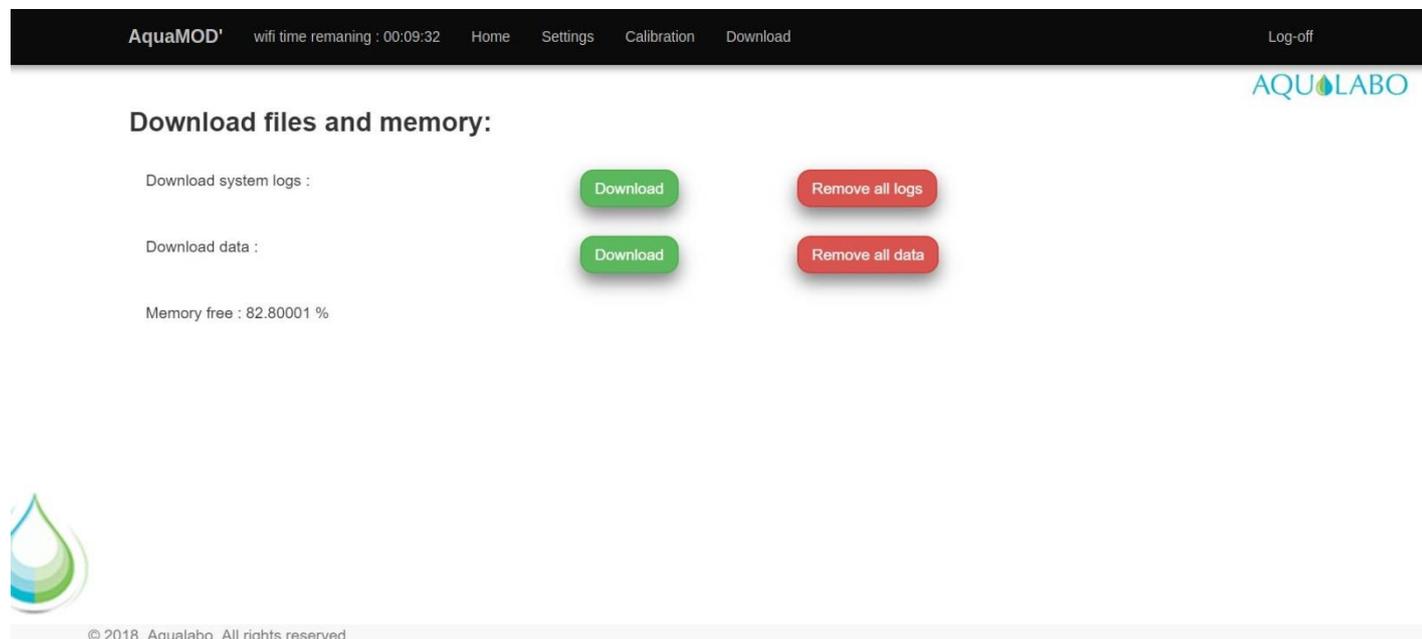


5 – Operator name ;
validation of full TSS
calibration sequence.



7.5 DOWNLOADING

The "Download" tab allows you to download or delete the measurements and the diagnostic log stored in AquaMOD'. Click "Download", from the other interface tabs, to access this screen.



The screenshot displays the AquaMOD' interface. At the top, a black navigation bar contains the text 'AquaMOD' on the left, 'wifi time remaining : 00:09:32' in the center, and 'Home', 'Settings', 'Calibration', and 'Download' as menu items. On the far right of the bar is a 'Log-off' link. The AquaLABO logo is positioned in the top right corner of the main content area. Below the navigation bar, the heading 'Download files and memory:' is followed by three rows of controls. The first row, labeled 'Download system logs :', features a green 'Download' button and a red 'Remove all logs' button. The second row, labeled 'Download data :', features a green 'Download' button and a red 'Remove all data' button. The third row shows 'Memory free : 82.80001 %'. In the bottom left corner, there is a stylized water drop logo. The footer contains the text '© 2018, Aqualabo, All rights reserved'.

For more information on the management of stored data refer to the paragraph 8.2 Data storage.

8. BATTERY LIFE AND DATA STORAGE

8.1 AQUAMOD' BATTERY LIFE

AquaMOD' is equipped with a non-rechargeable thionyl chloride lithium battery (Li-SOCl₂)¹.

Characteristics:

- Weight: 250g
- Dimensions: 6.4 x 6.5 x 3.5cm
- Composition: 7.6g of metal lithium
- Capacity: 26Ah/3.6V or 96/+6Wh

CAUTION: BATTERY WARNINGS



Only use batteries supplied by Aqualabo and AquaMOD' compatible.

Batteries containing lithium such as those used in AquaMOD' are subject to transportation restrictions. Always transport them in compliance with the regulations in force.



Always handle lithium batteries with care, never bump or drop them.

Do not attempt to recharge the battery. Never drill, disassemble or modify the battery. Never expose it to sources of intense heat. Never short the battery terminals. Never try to supply power to another product from the AquaMOD' battery. Inform the person or persons responsible for site safety by providing them with the lithium battery safety sheet.

If the battery shows signs of deterioration (deformation, swelling), immediately remove it from the product and stop using it. When the battery no longer works you must dispose of it in a manner consistent with its composition (hazardous waste disposal).

The AquaMOD' has been designed to provide several years of battery life under normal use conditions. This battery life is directly related to the configuration used and type of sensor.

The main factors influencing the battery life of the product are:

- Number of daily communications (acquisition frequency)
- Consumption of connected sensors

Factors that also affect battery life are:

1. Data rate
2. WiFi automatic switch-off time

The table below shows the estimated battery life for various standard configurations.

Sensors	Measurements every 2 minutes*	Measurements every 15 minutes*	Measurements every hour*
All sensors except CTZN and StacSens	6 months	2.5 years	> 5 years
CTZN and StacSens	4 months**	2 years	> 5 years

* Lab estimation based on real-world measurements and default settings:

→30min of wifi/month; 20°C; coding data rate = 4; full battery (less than 6 months old)

** Configurations not recommended because the battery life is limited

¹ Battery referency : « Lithium battery pack 3.6V 26Ah » ref : PILE 3.6V LGBTK

8.2 DATA STORAGE

The AquaMOD' is equipped with an internal 8MB Flash memory allowing it to store data.

The events log, used for diagnostics, can contain up to 10,000 informational messages, allowing accurate diagnosis over several days of operation.

The space dedicated to storing measurements can hold up to 10,000 measurements.

The maximum duration of data storage before the older ones are replaced by the new ones is shown in the table below, depending on the acquisition period. Whenever the memory devoted to measurements is full, the AquaMOD' deletes the 1,000 oldest measurements (i.e. about 10 days of measurements for an acquisition period of 15 minutes) and can therefore record 1,000 new measurements.

Acquisition period	Maximum duration of data storage
5 minutes	34 days
15 minutes	104 days
30 minutes	208 days
1 hour	416 days

The AquaMOD' memory usage is available on the download screen of the Web interface. This screen also allows you to download and delete the data or log. To access this screen from the other tabs, click the "Download" tab.

The screenshot shows the 'Download' tab in the AquaMOD' web interface. At the top, there is a navigation bar with 'Home', 'Settings', 'Calibration', and 'Download' tabs. Below the navigation bar, the 'Download files and memory:' section contains several interactive elements:

- 'Download system logs' with a green 'Download' button (1) and a red 'Remove all logs' button (2).
- 'Download data' with a green 'Download' button (3) and a red 'Remove all data' button (4).
- 'Memory free: 82.80001%' with a green callout (5).
- A large grey area labeled 'No data to display!' with a green callout (6).

 The AquaLABO logo is visible in the top right corner, and a copyright notice '© 2018, Aqualabo, All rights reserved' is at the bottom left.

- 1 Data download
- 2 Data deletion
- 3 Log download
- 4 Log deletion
- 5 Available memory space
- 6 Data display window

When downloading the log or measurements from the Web interface, only the last 500 measurements or log rows are retrieved. A CSV format file is downloaded automatically after one minute.



Caution

When the data or log is deleted they are permanently lost. To avoid any risk of deleting by mistake, confirmation is requested during the deletion.

The dialog box is titled 'Remove all data' and contains a yellow warning triangle icon. Below the icon, the text reads: 'This action can not be undone, click to "apply" to proceed or "cancel" to go back !'. At the bottom right, there are two buttons: a red 'Cancel' button and a green 'Apply' button.

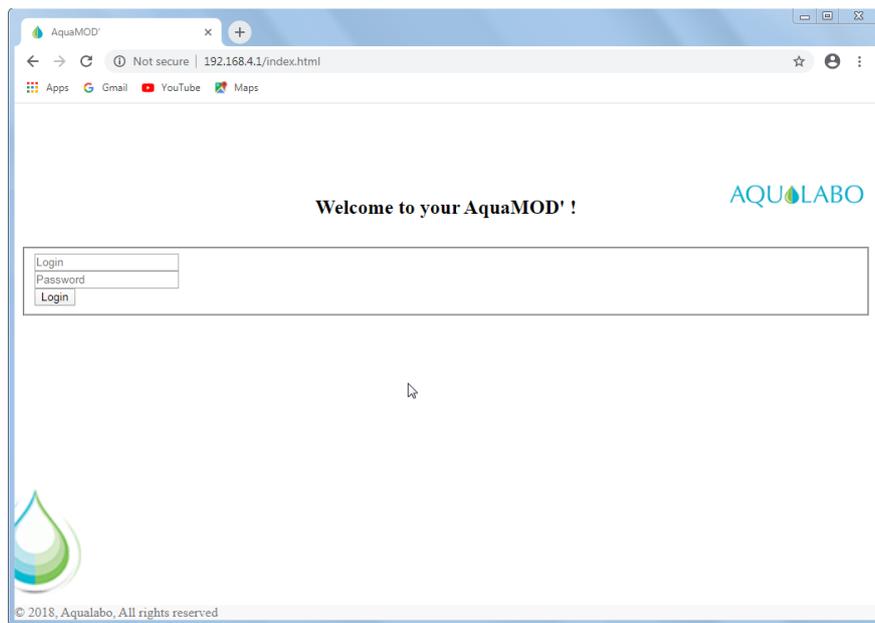
9. FAQ

- When navigating between the tabs of the web interface, a message "THE SENSOR IS NOT DETECTED by the AQUAMOD' device...." appears :

In this situation, do not use the "previous page" function. Use the interface menu to switch to another tab and then return to the targeted tab

- I have several gateways could it be bad for the Aquaconnect' solution?
No, the gateway which is rated as the best one by the LoRaWan network will be the one used.

- The login page appears dimmed :

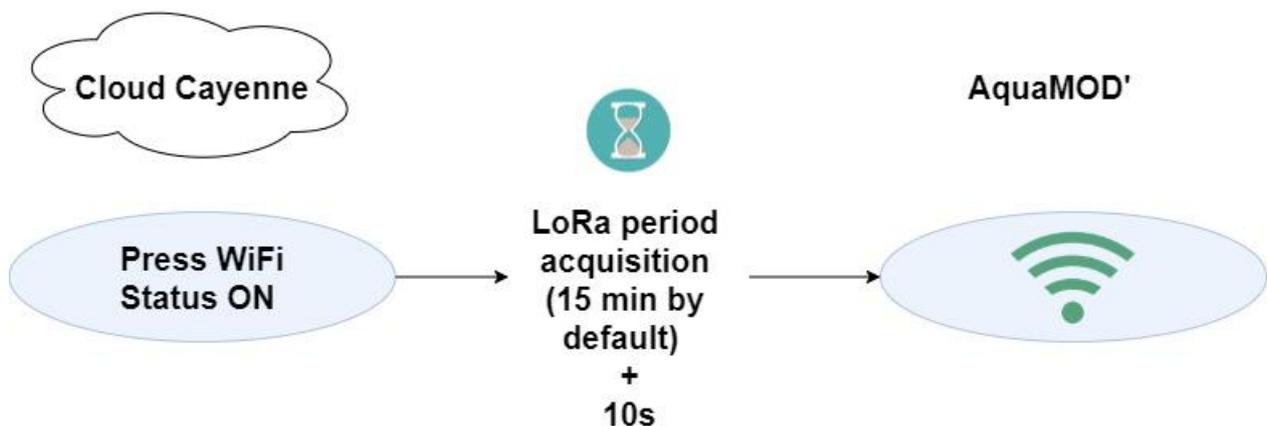


It is advisable to refresh the page by pressing the Shift+F5 keys if using Google Chrome, Ctrl+F5 if using Mozilla Firefox.

- You cannot reconnect via Wifi :

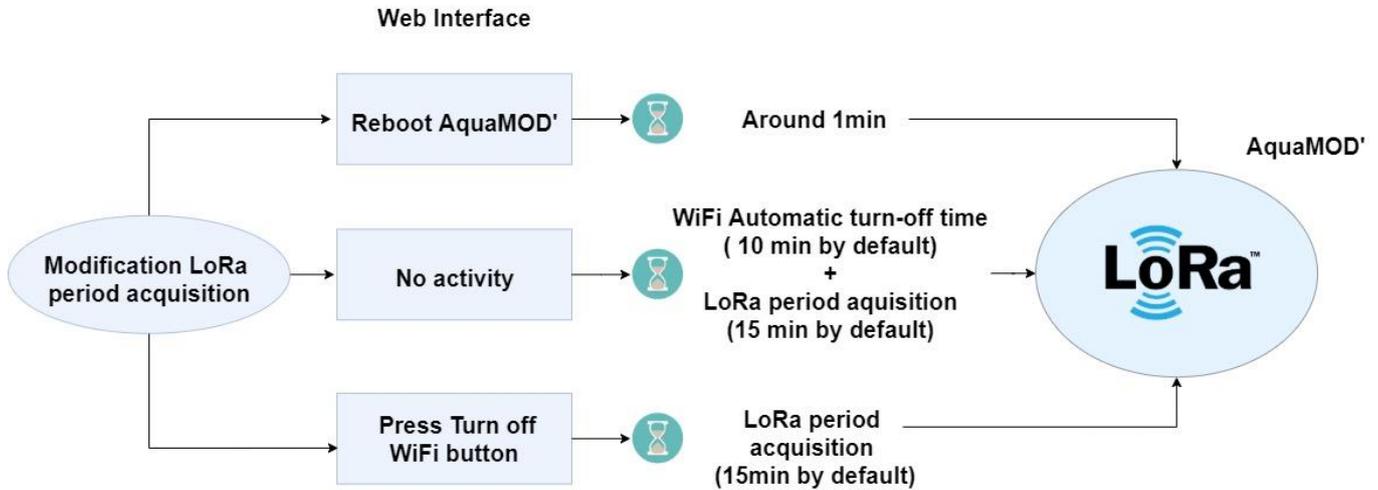
If the AquaMOD' takes a measurement when the magnet passes through, it is possible that the WiFi access point does not appear. After 30 seconds, if the WiFi access point is not available, repeat the activation using the magnet.

From the Cloud Cayenne, it is possible to interrupt the LoRa communication and reactivate the WiFi in order to access the web interface. To do so, click on the "Wifi status ON" widget and respect the following timing:

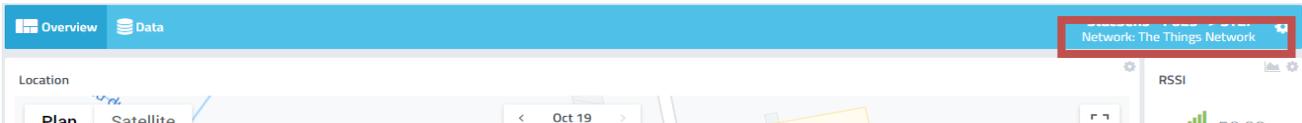


- You can't pick up a Com LoRa:

To switch back to LoRa communication, it is imperative to switch off the Wifi. Several solutions are then possible from the Web interface by respecting the following timings:



- I use the Cayenne interface but not a single value is displayed on it. One of the possible cause is a bad configuration at the set up time:
 - Well check the network used: « the Things Network » (see the screen shot below)
 - If the network isn't « The Things Network », remove the device and then re-add it by taking special care of the LoRa Network menu.



- Is it possible to add the same AquaMod' device on several account? No, you will have to use the share option available on the dashboard.

- The AquaMod' does not work with my own gateways :
 - IF during the purchase process you did not notify Aqualabo, of the use of your own gateways, please take contact with the company, in order to unlock your device.
 - Check the three numbers used when you added the device: dev eui, App eui, AppKey.
 - There is a guide to help the integration of AquaMod' on the free network TTN (document available on demand). This way you can check the good behaviour of our product on a different network than the one we propose.
 - Check the configuration of your gateways, especially the network toward which it send the data (i.e. TTN for the document mentioned above).
 - At this stage there are two options :
 - The network you are using is Cayenne compatible² and you want to use it. In that case the AquaMod' are already integrated (-> Cayenne tiles while display the information)
 - The network is -running by yourself/not Cayenne compatible/you don't want to use Cayenne interface-, In that case, you will need to complete the payload integration of our device into your interface (a document is available on demand).

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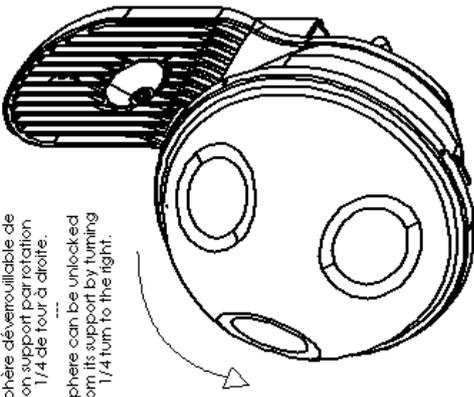
90 Rue du Professeur Paul Milliez • 94506 Champigny sur Marne • France
 Tel : +33 (0)1 55 09 10 10
 Hotline : +33(0)4 11 71 97 41
 E-mail : info@aqualabo.fr
 Web: <https://www.aqualabo.fr/>

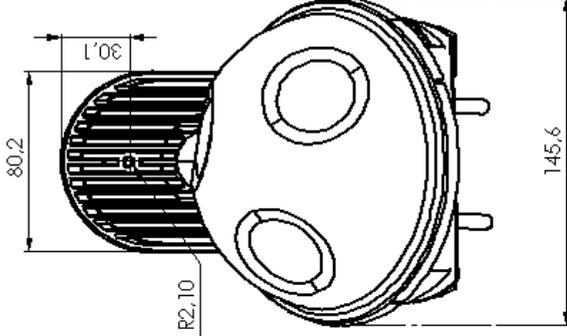
² Acklio, Actility, ChirpStack, CityKinnect, Everynet, Helium, Kerlink, Lorient, Objenous, OrbiWise, Pixel Networks, Sagemcom, Semtech, Senet, SenRa, Spark, Stream, Swisscom, TTN, X-Telia.

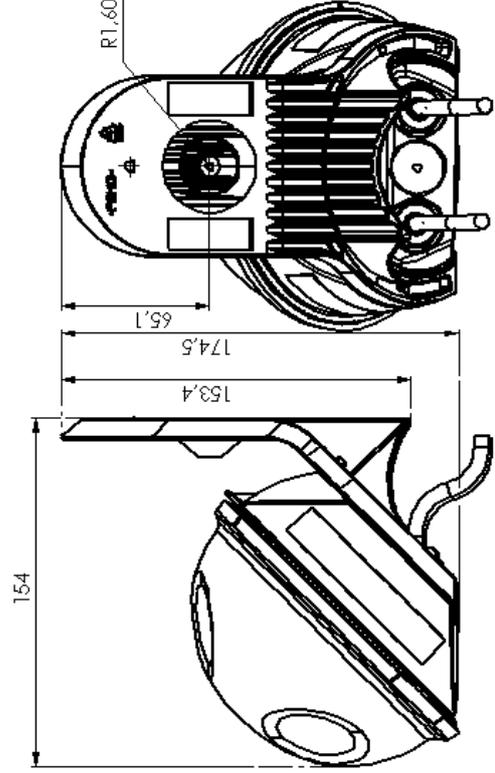
1. APPENDIX

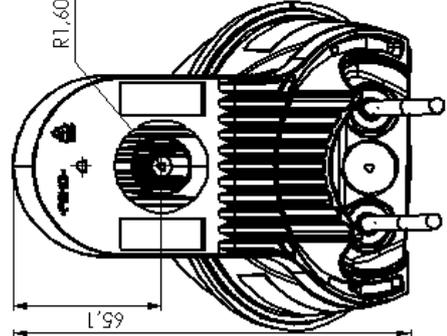
REVIZIJSKI / REVISION MANAGEMENT			
ZONE	REV.	DESCRIPTION	APPROUVE / APPROVED
	A	CREATION	FB
		DATE	20/06/2021
		AUTEUR / AUTHOR	FB
			SD

Sphère déverrouillable de son support par rotation 1/4 de tour à droite.
Sphere can be unlocked from its support by turning 1/4 turn to the right.









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AQUAMOD' - PEHD
ASSEMBLY MANUFACTURING

AQUAMOD' sizes / encombrement

ASSEMBLY / ASSEMBLY BALL & STAND / ASSEMBLAGE SPHERE & SUPPORT

PROJECT MGR. / PROJ. MGR. : PH-PC-0000

PART NO. / DRAWING NUMBER : P000877_A

SCALE : 1:2

REV. : 1/1

REV. : A3