WiMo / WiMo Plus

User Manual

Revision 1.4 (27.11.25)

Table of contents

TABLE OF CONTENTS **1**

1 DESCRIPTION **3**

1.1 WiMo Specifications 3
1.2 WiMo Plus Specifications 4
1.3 Pressure sensor 6
1.4 Cleaning device 7
1.4.1 Installation on a WiMo probe 7
1.4.2 Installation on a WiMo Plus probe 8

2 OPERATION **8**

2.1 Sensors install 8
2.1.1 Install/Remove caps 9
2.1.2 Install/Remove sensors 10
2.2 Install/Remove Guard 11
2.3 Probe activation 12
2.4 Connection to Probe 12
2.4.1 PC 13
2.4.2 Tablet 13
2.4.3 Smartphone 14

3 WEB INTERFACE **15**

3.1 Dashboard Menu 16
3.1.1 General settings 16
3.1.2 Storage 17
3.1.3 Network and communication 17
3.1.4 Available parameters 18
3.1.5 Connected accessories 18
3.1.6 Acquisition settings 18
3.2 Measurement Files Menu 20
3.3 Live View Menu 21
3.4 Alarm Menu 22
3.5 Operates probe in Five steps 24

4 MAINTENANCE **25**

4.1 Routine Maintenance 25
4.1.1 O-rings service 25
4.1.2 Sensor port service 25
4.2 Replace batteries 26
4.2.1 « Solar Panel » 26

5 PRODUCT IDENTIFICATION **29**

6 FILE FORMATS **30**

6.1 Topkapi TXT2 Format 30

6.2 CSV FORMAT 30
6.2.1 Datas 31
6.2.2 settings 31
7 MANAGEMENT OF ALARM FILES 33
8 ACCESSORIES AVAILABLE 35
8.1 MODEM 35
8.1.1 Modem settings 35
8.2 WIMO 20 LITERS BUOY 37
8.3 BUOY 100 L 37
8.4 WIMO COASTAL BUOY 38
9 RETURN A PRODUCT TO THE FACTORY 39

1 Description

The WiMo multiparameter range, including the WiMo probe (4 locations) and the WiMo Plus probe (7 locations), offers flexible and innovative solutions for water quality data collection. The probe have a native pressure sensor and temperature measurement and 4 to 7 additional sensors can be added depending on the model. The end-user plugs directly the sensors to the probe which are automatically recognized (Plug and Play system). The probe can also be connected to a transmission module that will also be automatically detected.

Data can either be recorded in internal memory of the probe or transmitted to a data collection platform via the transmission modems. The probe also operates in Modbus for real-time measurement of the environment.

1.1 WiMo Specifications

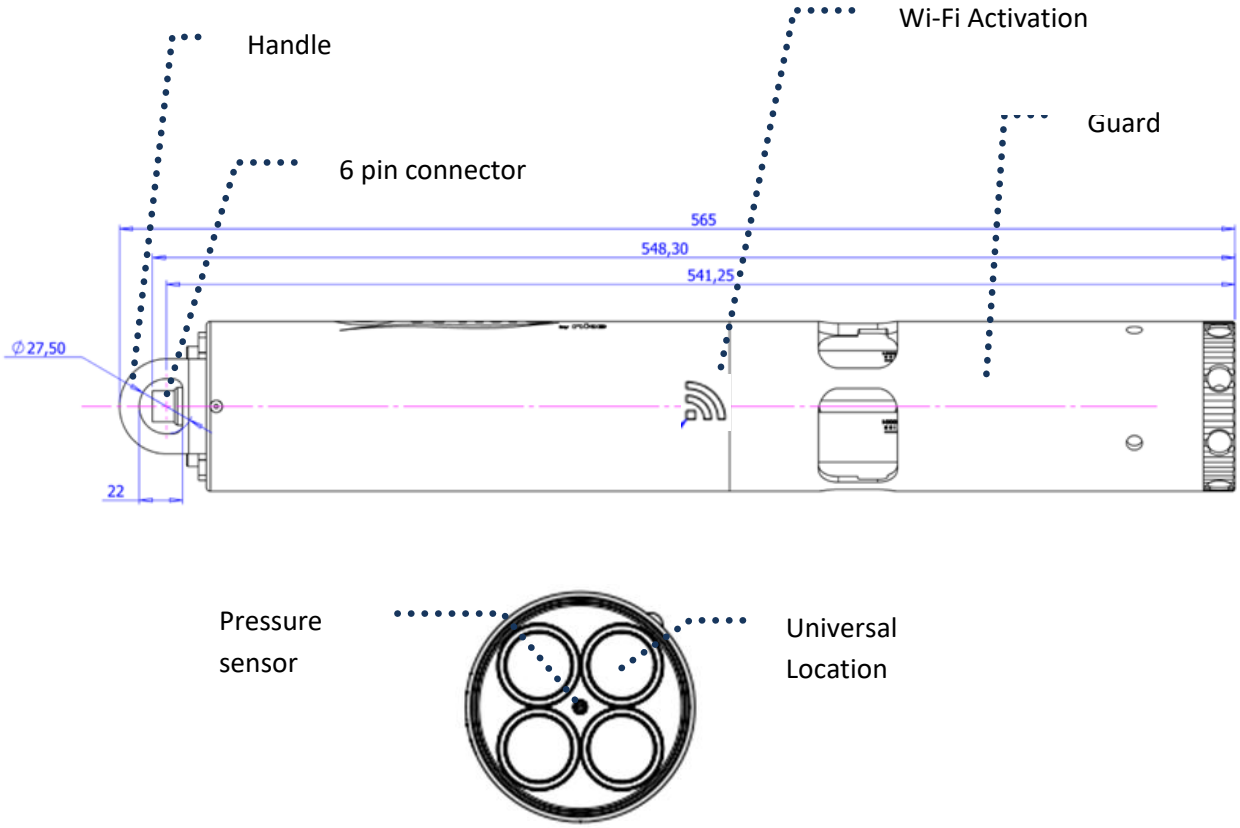
The WiMo probe has 4 universal locations where sensors or a cleaning system can be plugged. The probe is equipped with a pressure and temperature sensor.

It is powered by 6 Type D Alcaline batteries (see the recommendation §4.2) and is compliant with NiMH Type D rechargeable batteries. The probe can, if necessary, receive an external power supply

A Wi-Fi link is used to setup the probe and for file data transfer.

No dedicated software is needed to setup the WiMo. An Embedded WEB Server gives access to all the probe functionalities using an internet browser.

WiMo probe specifications			
Number of locations	4		
Operating environment	Fresh and sea water		
PMaximun depth	30m	100m	250m
Communication	WiFi / Modbus RTU		
Power supply	Internal 6 alkaline batteries Type D or 6 NiMh rechargeable batteries type D		
	External 9 – 16 VDC		
Temperature	Storage (no battery) : -20°C à 70°C		
	Operating : -2°C à 50 °C		
Size	Diameter	85 mm	
	Total length	550 mm (565 mmwith the cap)	
Weight	2,65 kg		



1.2 WiMo Plus Specifications

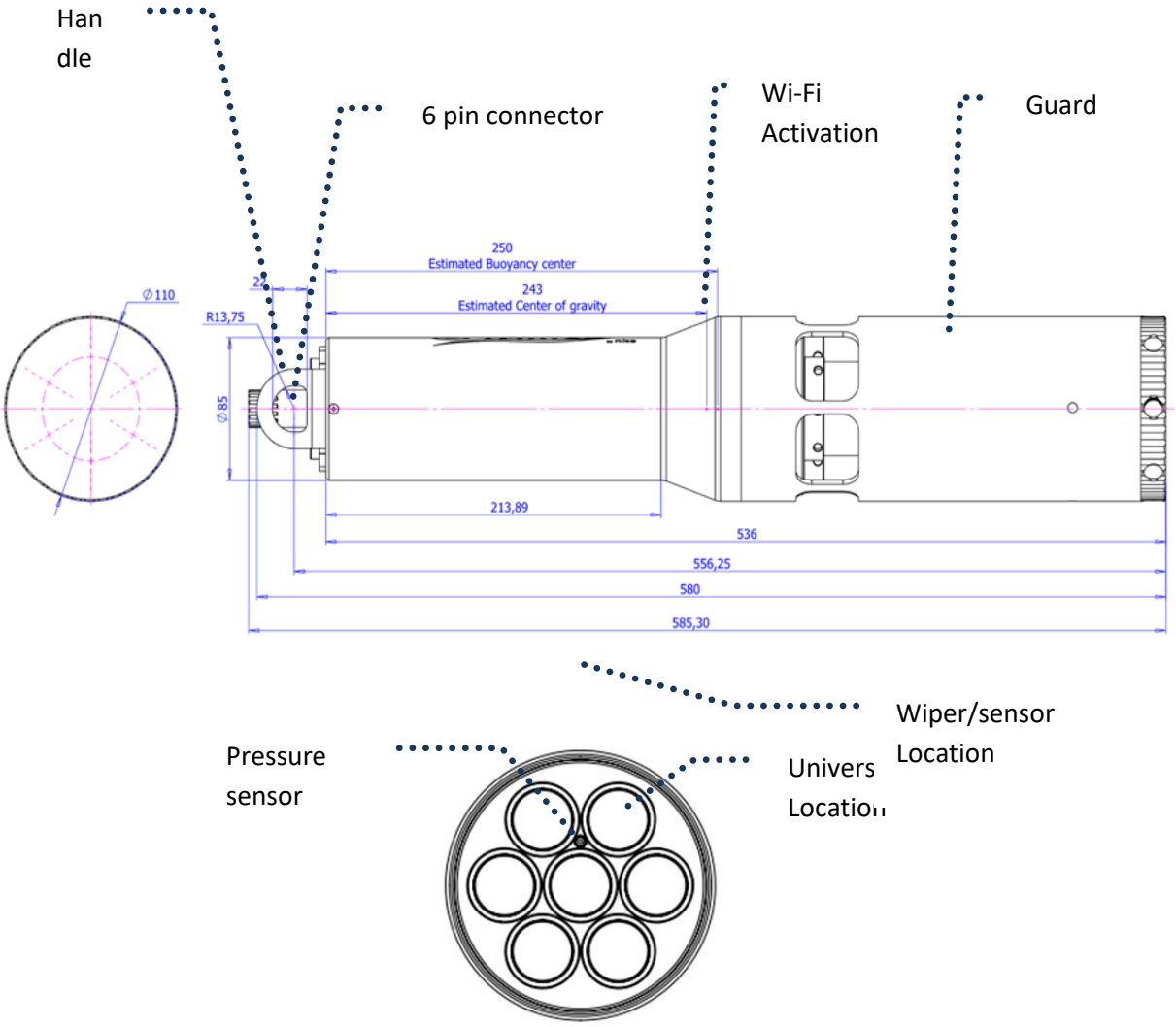
The WiMo Plus probe has 7 universal locations where sensors can be plugged. The central location can be used also for a wiper instead of sensor. The probe is equipped with a pressure and temperature sensor.

It is powered by 6 Type D Alcaline batteries and is compliant with NiMH Type D rechargeable batteries.

A Wi-Fi link is used to setup the probe and for file data transfer.

No dedicated software is needed to setup the WiMo. An Embedded WEB Server gives access to all the probe functionalities using an internet browser.

WiMoPlus probe specifications			
Number of locations	7		
Operating environment	Fresh and sea water		
PMaximun depth	30m	100m	250m
Communication	WiFi / Modbus RTU		
Power supply	Internal 6 alkaline batteries Type D or 6 NiMh rechargeable batteries type D		
	External 9 – 16 VDC		
Temperature	Storage (no battery) : -20°C à 70°C		
	Operating : -2°C à 50 °C		
Size	Diameter	110 mm	
	Total length	565 mm (580 mm with the cap)	
Weight	3,05 kg		



1.3 Pressure sensor

The pressure sensor is a piezoresitive sensor that measures absolute pressure. That's means the reference is vacuum. The unit of measurement is **bar**.

The prode allows adding an offset « pressure référence » to compensate the measured pressure with the current atmospheric pressure in order to get a zeroing of the pressure sensor. However zero will vary with changes in atmospheric pressure. On delivery, the probe is configured for a reference pressure of 1013 hpa.

The sensor contains its own temperature measurement to make its compensation. Temperature measurement is available in the WiMo and WiMo Plus probes. It can be adjusted as an option.

For depth information it is able in the probe to activate a calculated depth parameter based on the UNESCO equation.

Pression / Pressure			
Technologie / Technology	Piezorésistif°		
Gamme / Range	0-3 bars	0-10 bars	0-25 bars
Exactitude / Accuracy	Max ± 0,1% EM		
Stabilité Long trem / Long trem stability	Typ ± 0,1% EM		
Température / Temperature			
Exactitude / Accuracy	± 2°C (±0,2°C en option)		

WiMo

WiMo Plus

Pressure measurement is done at the upper tap of the probe. There is therefore a position offset between the pressure measurement and the measurements made by the sensors. They don't have all the same offset:

Conductivity	10,5 cm
Fluo Chla	12,3 cm
Dissolved oxygen	12,3 cm
Turbidity	12,3 cm

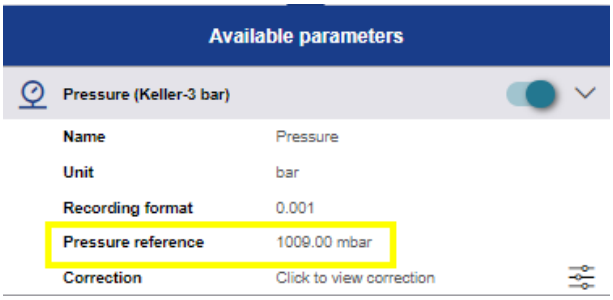
You can set a predefined reference pressure using the "pressure reference" field and/or to make the pressure zero:

Zero pressure procedure:

- Enter the value of the atmospheric pressure of the day in "Pressure reference"
- Record the pressure value read by the sensor in Live view (e.g.: 0.003 bar)
- Click on "Correction" and enter the correction point (e.g.: 0 standard for 0.003 Measured)
- Select the "Calibration type" Multipoint

Procedure for setting a reference pressure:

- Perform the zero pressure procedure
- Set the chosen reference pressure value (e.g.: 1.009 bar or 1009 mbar)



by default, the reference pressure is set at 1013 mbar (« Pressure reference » = 1013 mbar).

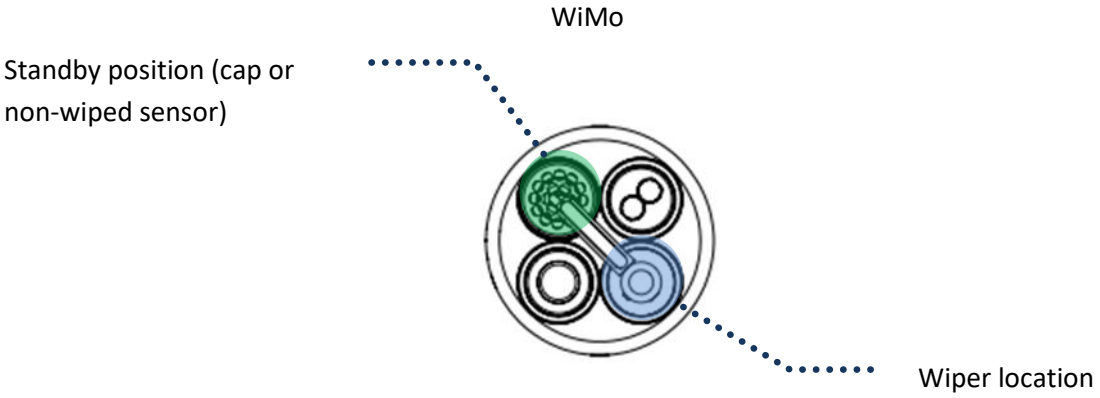
1.4 Cleaning device

The WiMo and WiMo Plus probes allow a cleaning device on their location. This device is a smart wiper. It self-configures according to the sensors that are connected to the probe. It automatically detects whether the sensors need or can be cleaned and adjusts its wipe accordingly.

You must take care to avoid having a sensor that should be wiped below the brush in the standby position.

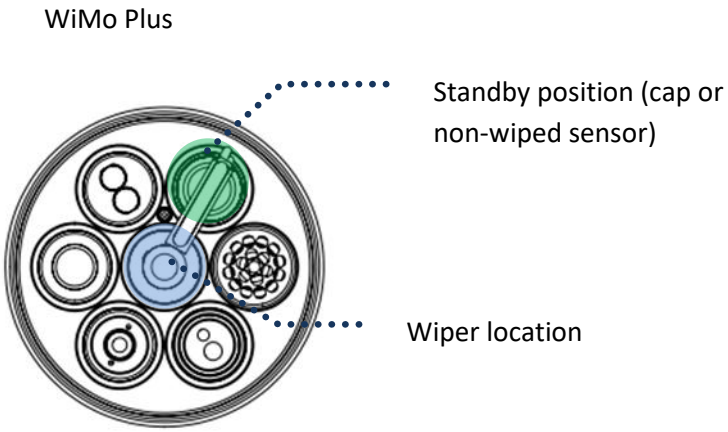
1.4.1 Installation on a WiMo probe

On version 4 slots (WiMo) the wiper can be placed on any location.



1.4.2 Installation on a WiMo Plus probe

On version 7 locations (WiMo Plus) the position of the wiper is unique and central.



2 Operation

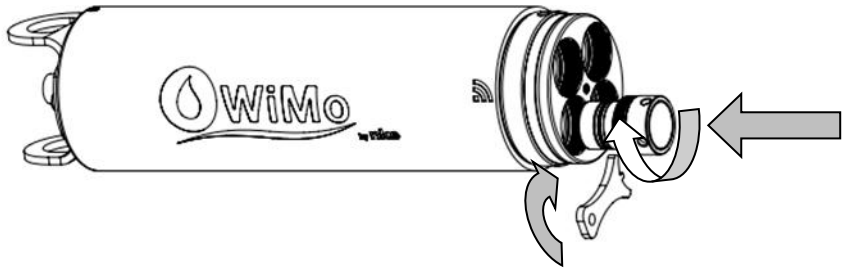
2.1 Sensors install

The WiMo and WiMo Plus probes come with a cap on each sensor location. These caps ensure the probe is waterproof. When you remove a cap the probe is no longer waterproof until you place a sensor or a cap.

If the WiMo has been immersed in water you must dry the probe properly before any dismantling. **The plug/unplugged operations of sensors or caps must be done head-down.**

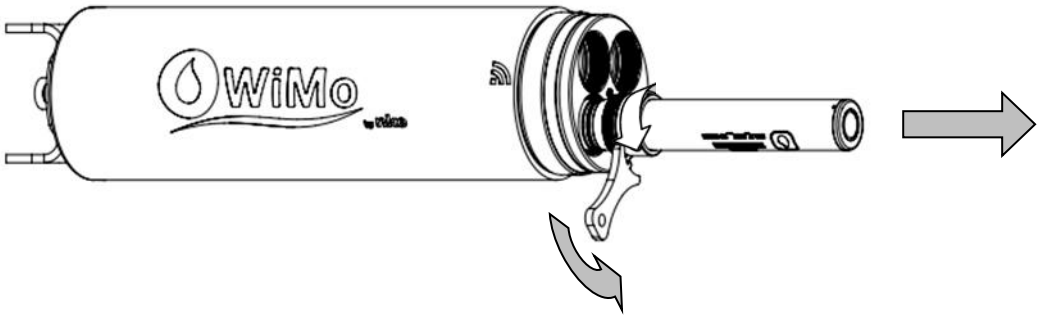
2.1.1 Install/Remove caps

Unscrew the locking sleeve in the anti-clockwise direction by hand or with the key tool provided. Pull the cap to extract it. Place it on a clean surface and store it taking care not to damage the O-rings.



Before repositioning the cap check that the location in the probe has no damage and no scratches. Grease both O-rings of the cap with the grease provided and engage the cap in the location. Screw the cap clockwise until the locking sleeve is in contact with the probe head. Help with the key tool provided if necessary.

2.1.2 Install/Remove sensors



Unscrew the sensor locking sleeve in the anti-clockwise direction by hand or with the key tool provided. Pull the sensor to extract it. Place it on a clean surface and store it taking care not to damage the O-rings.

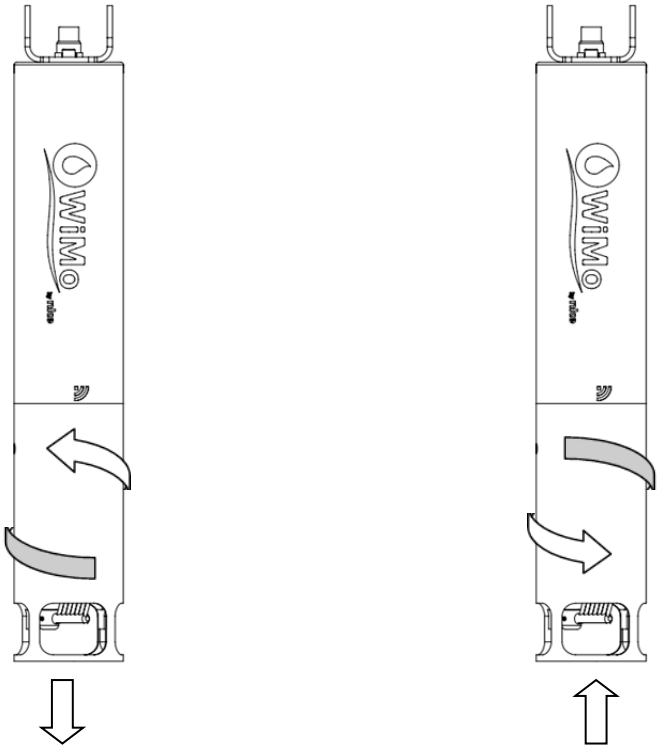
Before repositioning the sensor check that the location in the probe has no damage and no scratches. Grease the two sensor O-rings with the supplied grease and engage it in the location by making the coded pin coincide with the host hole in the probe. Take care to the sensor's centering in its location. Move the sensor slightly from right to left to check that the pin is in front of its receptacle before starting to screw. Be careful not to damage the threads of the probe. Any deterioration of the threads is not covered by the warranty.

⚠ Always use the key provided to check the locking of the stop and the ring.

2.2 Install/Remove Guard

The guard protects the sensors and limits the extension of biofouling. It is strongly advised to install it before any in-situ deployment. The guard is covered with antifouling paint. It is important to handle it carefully to avoid damaging the coating.

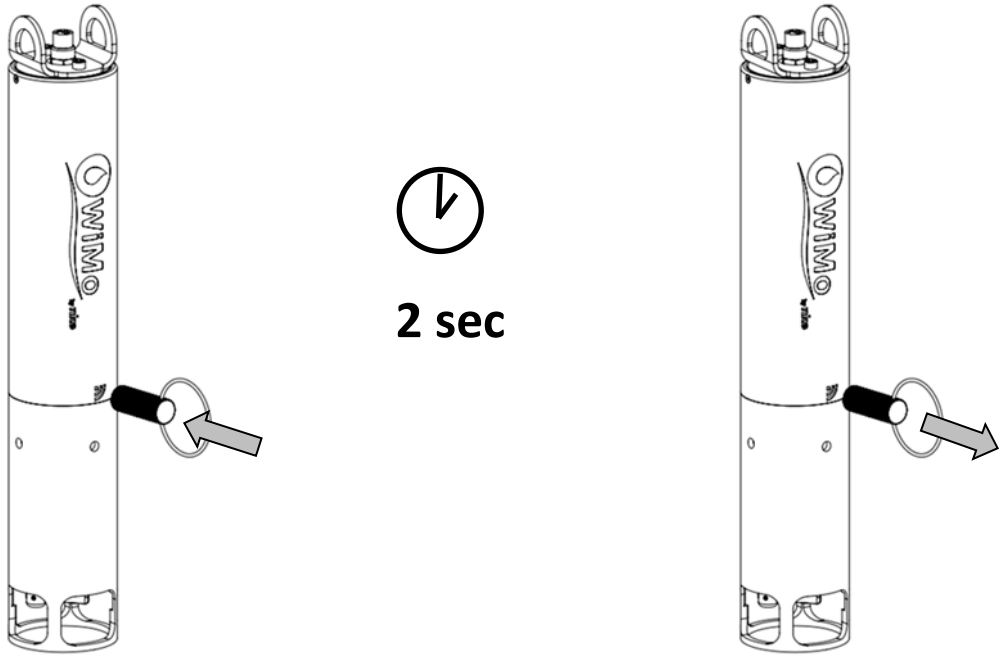
To install the guard screws in clockwise direction. To remove it you must unscrewed by turning in the anti-clockwise direction.



In the event of light interference affecting the sensors (particularly the chlorophyll-a sensor), we recommend reversing the orientation of the protective cup and installing the closure cap to reduce the effects of reverberation.

2.3 Probe activation

To activate the Wi-Fi you must use the supplied magnet. Affix the end of the magnet to the Wi-Fi symbol of the probe as shown in the picture below. Wait at least two seconds before removing it. If the sound indication is enable, when activated the probe will beep twice.



The Wi-Fi session can stop on session timeout. However you can stop manually Wi-Fi. As for activation, affix the magnet to the Wi-Fi symbol. Wait at least two seconds before removing it. If the sound indication is enable, when activated the probe will beep continuously for one second.

2.4 Connection to Probe

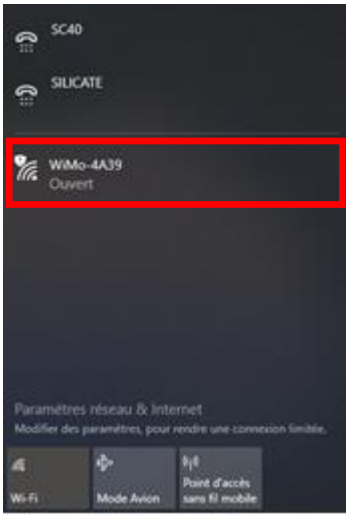
The WiMo uses a Wi-Fi radio link to communicate point-to-point with equipment as smartphone, tablet or PC. It is compatible all operating systems (Windows, Mac OS, Android, IOS, Linux). The radio specifications are:

Standard network support	IEEE 802.11 a/b/g/n
Frequency Bandwith	2.4 - 2.5 GHz

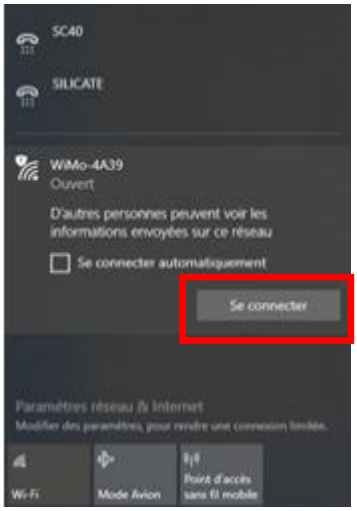
The probe can only be connected to one device at a time. Be careful to disconnect from the WiMo before reconnecting with another device. . If possible, do not check the automatic reconnection option to prevent a device from taking control of the probe automatically as soon as the probe's Wi-Fi is activated.

2.4.1 PC

Once the probe is activated (see §2.3) search its SSID in the list of available networks. The probe's SSID is in the FORM of WIMO - XXXX. Select the probe and click "Connect"



Step N°1 :
Probe Identification

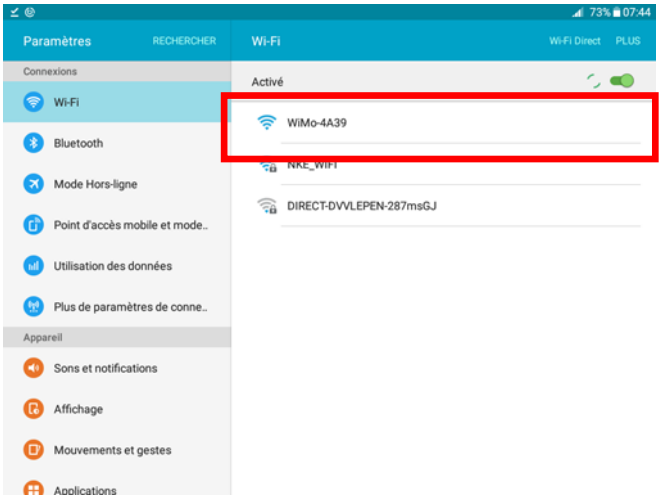


Step N°2:
Connect

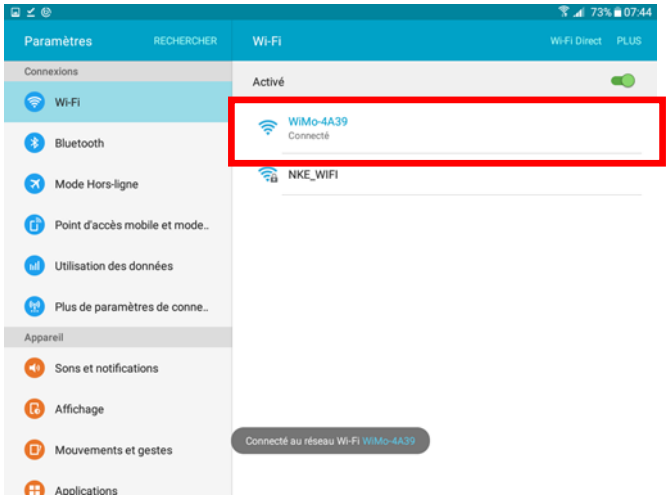
Step N°3:
Probe is connected

2.4.2 Tablet

Once the probe is activated (see §2.3) search its SSID in the list of available networks by going into Wi-Fi settings. The probe's SSID is in the FORM of WIMO - XXXX. Select the probe and click "Connect"



Step N°1 :
Selects WiMo and click on to connect



Step N°2:
The probe is connected to tablet

2.4.3 Smartphone

Once the probe is activated go to Wi-Fi settings menu and search its SSID in the list of available networks. The probe's SSID is in the FORM of WIMO - XXXX. Select the probe and click "Connect"

Step N°1 :
Probe Identification

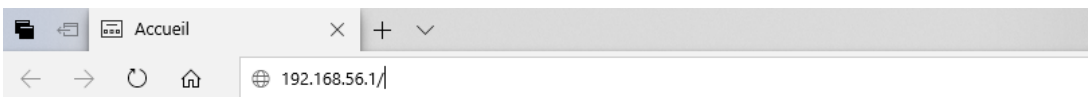
Step N°2:
Connect

Step N°3:
The probe is connected

3 WEB Interface

There is no dedicated software to the probe. It integrates its own WEB server. To view the interface connect to the probe (see §2.4) and use an internet browser (Chrome, Edge, Safari).

Enter the default address 192.168.56.1 in the address bar. It will be possible in the probe interface to modify this address if you want to protect access to your WiMo. **Be careful if this address is changed, take care to write it down or you will no longer be able to connect to the probe**.



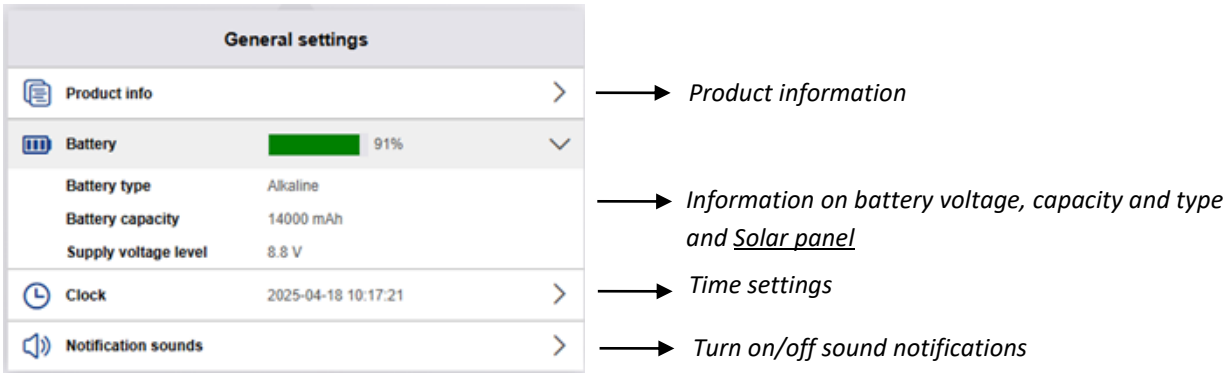
3.1 Dashboard Menu

This menu is the home page of the probe. It allows you to set it up and to start recording.

The image of the WiMo at the top (see above) shows an overview of its configuration. On the left are the available communications and whether they are activated or not (grey icon = disabled) ❶ and on the right the sensors connected to the probe ❷.

The probe is in run mode by clicking the "OFF" button ❸. The "timer icon" button ❹ allows you to have an estimate of battery life based on probe settings.

3.1.1 General settings

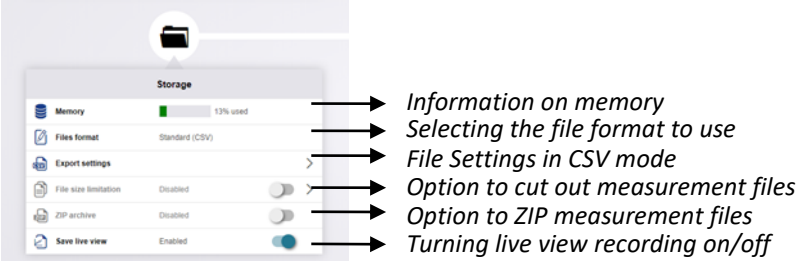


When first using or changing the battery it is essential to set the probe at the actual time in order to be able to switch to run mode.

3.1.1.1 « Solar pane » model

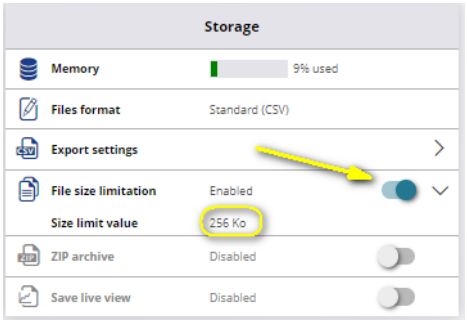
Refer to paragraph **4.2.1 en page 26**

3.1.2 Storage



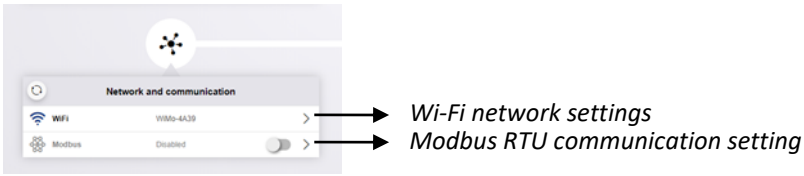
There are two file formats: CSV or Topkapi's format TXT2.

It is possible to cut the measurement files to a size adjustable by the end-user. The goal is to avoid losing data for long time deployments on a low battery shutdown for example. In operation with the WiMo Modem, this option is automatically activated and the measurement files cut to a size of 256K.



Data files can be compressed to ZIP to save memory space.

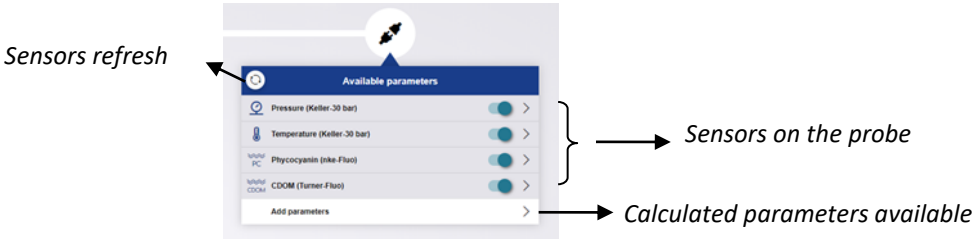
3.1.3 Network and communication



Wi-Fi network settings can be changed, including the narrow bands used if they are cluttered.

To be able to communicate in Modbus with the probe you must enable the Modbus function in the interface. It will only work if an external power supply is detected. It is possible to select the RS232 or RS485 support, as well as the address of the probe (128 by default).

3.1.4 Available parameters



When sensors are added or removed from the probe, the sensors are detected and displayed by clicking on the refresh button.

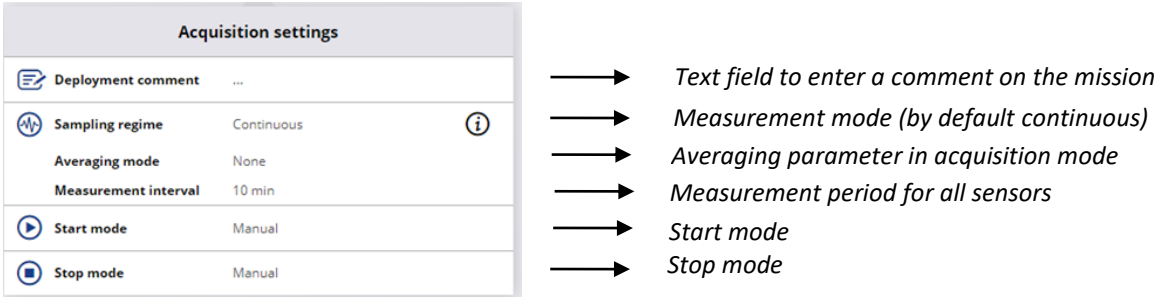
The sensors are listed and can be turned on/off. If sensors are enabled and set up other than "not recorded" in the sensor's "recorded format" description, these sensors will be stored in files.

Depending on the sensors plugged you are able to have access to additional calculated parameters.

3.1.5 Connected accessories

When a wiper is detected, it appears in this topic. The "refresh accessories" button also refreshes the sensors.

3.1.6 Acquisition settings

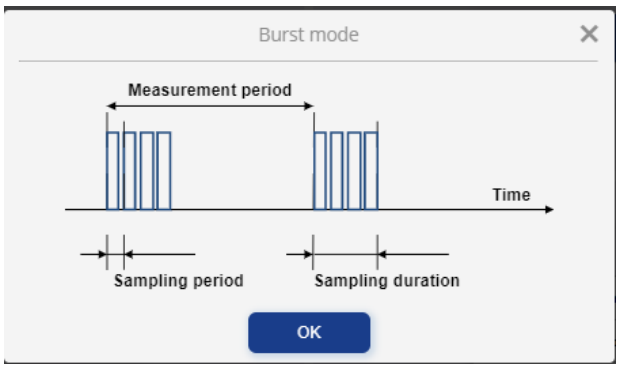


There are several sampling modes. In continuous mode a sample of each parameter is recorded at the rate of "measurement period." Burst mode allows you to record a number of samples for a shorter time period than "measurement period" at the rate of "measurement period."

“Averaging mode” is activated by default on delivery. It is an adaptive filter that allows you to reject outliers and obtain more regular measurements. It is possible to choose between two sensitivities. To use the probe in profile mode, it is recommended to deactivate this option.

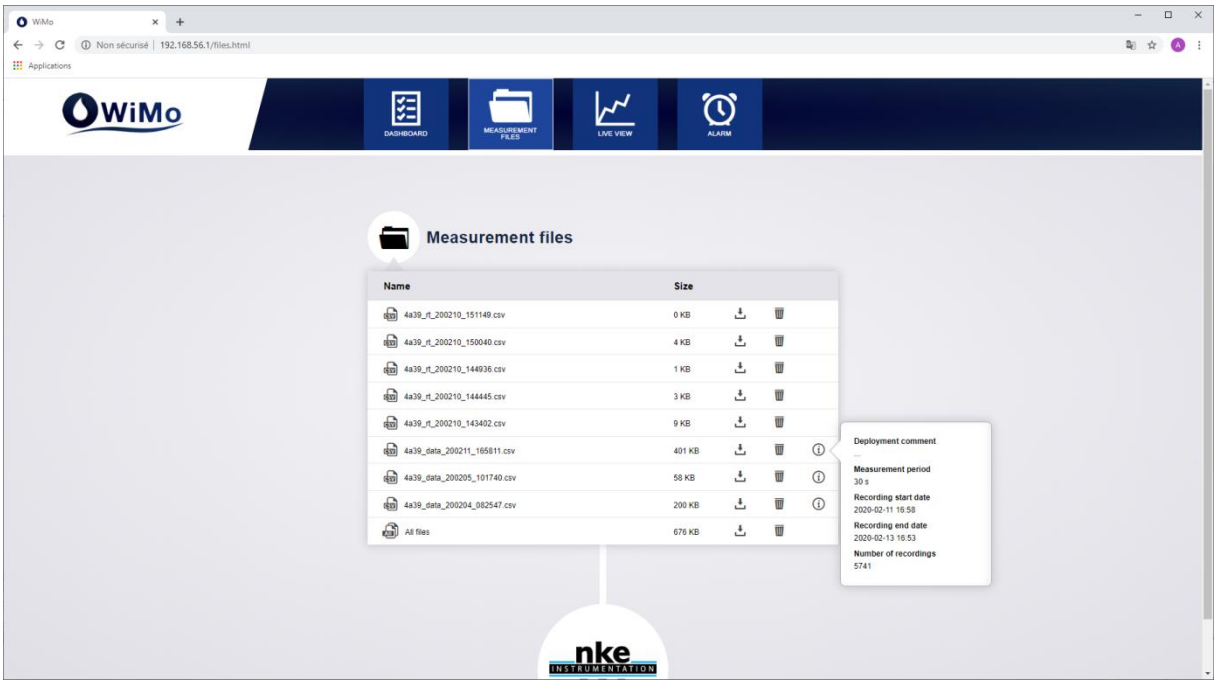
Whether in start or stop mode it is possible to start/stop recording manually, on a parameter condition or on a specific date.

By clicking on this symbol present in “Sampling regime”, you will see a schematic help window like the one below on the different operating modes.



When operating ModBus, Burst, Tide and Wave sampling modes are not allowed

3.2 Measurement Files Menu

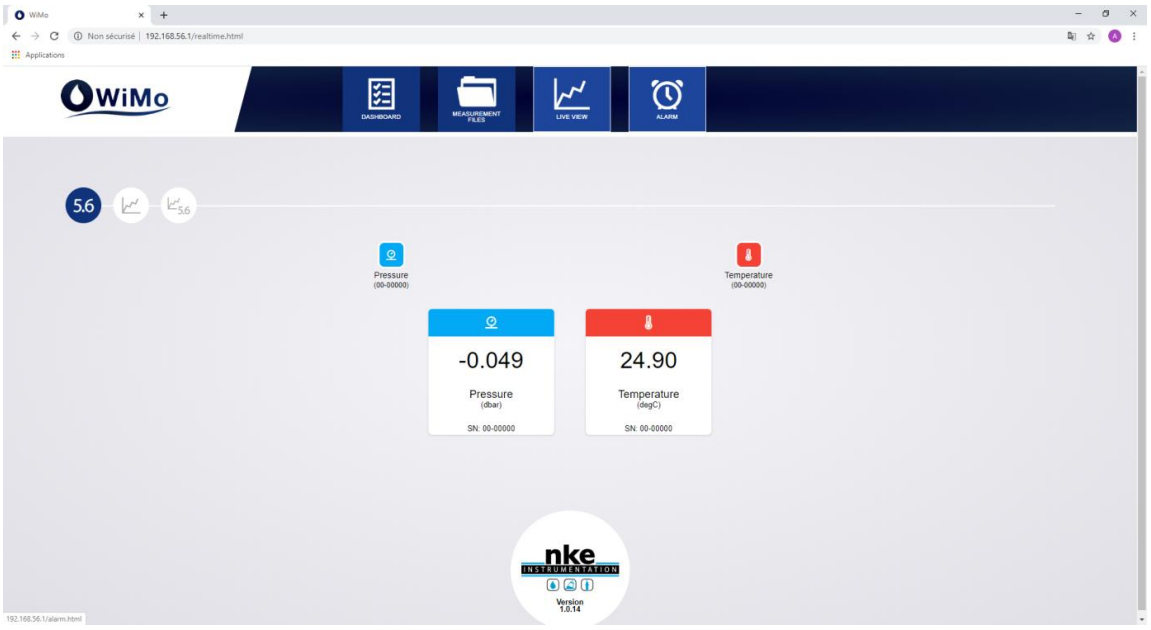


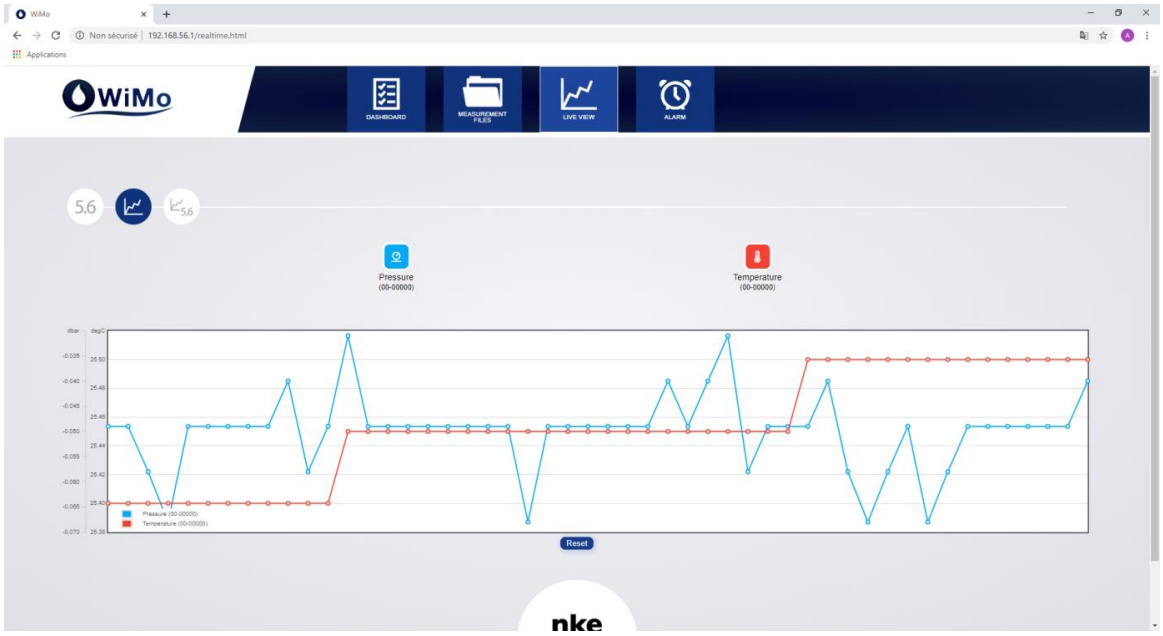
Two different files exist (*_rt_* or *_data_*). Real time "rt" files correspond to measurements done when the "save live view" option in the DASHBOARD page is enabled.

The "data" files are the measurement files acquired in datalogger mode. It is possible to download or delete the files one by one, or to delete or download them all at once..

For "data" files, information about the file is available by clicking on the information icon. Comment information, start date, end-of-record and number of samples acquired are provided. If the probe is still running the end date of registration is not filled.

3.3 Live View Menu



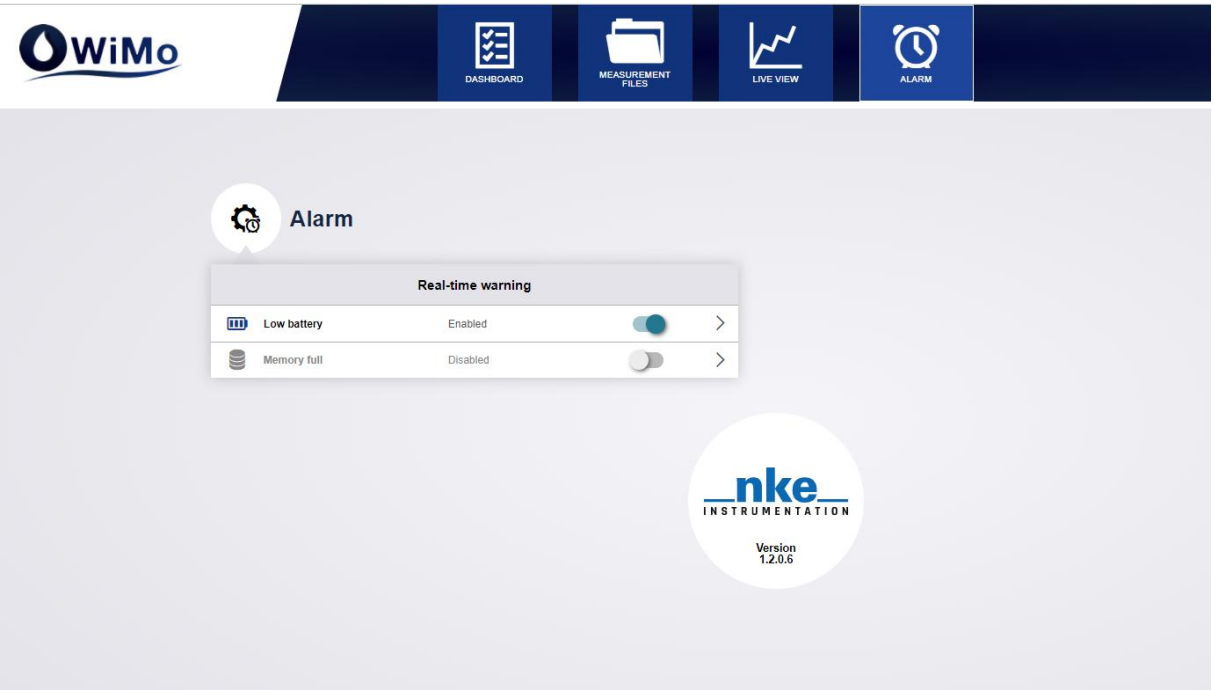


The "live view" menu allows you to display in real time the measurements. Only enabled sensors on the DASHBOARD page appear in live view. Measurements can be viewed analytically, graphically or both. The parameter is displayed or not simply by clicking once on the associated parameter icon.

You change the display arrangement by clicking on the lozenges at the top left. The active arrangement is dark blue. The graphic view can be reset with the "reset" button below the graph. However, in "save live view" mode data are not deleted from file.

It is possible to save the measurements taken in a file by activating the “**Save live view**” button (page 17)

3.4 Alarm Menu



The WiMO probe has 2 levels of internal battery voltage monitoring. It can generate and then transfer by Email an alarm file on detection of weak batteries. All you have to do is activate the “Low battery” function.

The second level of detection secures the probe and the data if the battery voltage reaches a critical level. In this case, the probe stops the recordings and switches to "Stop" mode.

Exemple :

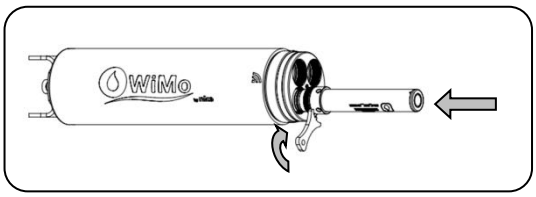
```
2018-12-10;00:00:02;D990;Battery voltage=8.7 V
```

*The code “**D990**” gives the type of alarm received*

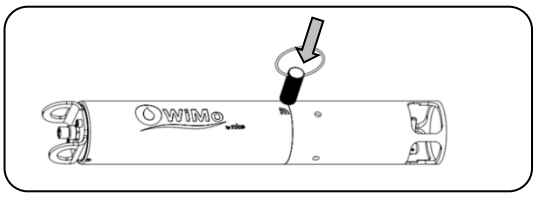
Management of alarm files*/*

.

3.5 Operates probe in Five steps

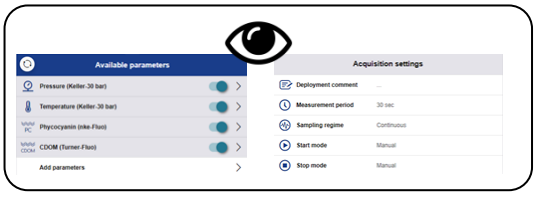


Step N°1 : Connect all sensors and accessories to the probe

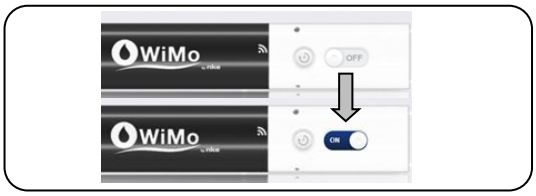


Step N°2 : Activate Wi-Fi (cf. §2.3) and connect to the probe (cf. §2.4)

Step N°3 : Open the communication interface (cf. §3)



Step N°4 : Check that all sensors have been detected and set up the acquisition. Set the time to the probe



Step N°5 : turn on the probe

Once the Wi-Fi shuts down the probe can be deployed

Within 5 minutes of starting recording, the probe transmits an information message **“I994_on”** indicating that the modem is operational.

4 Maintenance

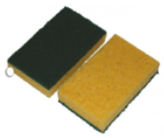
4.1 Routine Maintenance

⚠ To avoid any risk of damage to the grab handle, metal attachment systems (chain, carabiner, etc.) are strictly prohibited..

Regular maintenance of the equipment ensures maximum longevity. A thorough visual inspection must be carried out regularly and any damaged part must be replaced.

Deposits such as biofilm (or silt), silt and mud must be carefully removed.

Use a sponge with warm soapy water (such as dishwashing liquid) to clean the body of the probe and in particular at the level of the locking rings of the caps and sensors. Never use abrasive agents (eg a scouring pad).



In case of heavy contamination with barnacles (or calcifying organisms), rinsing with water may not be sufficient. Depending on the degree of contamination, we recommend removing the heaviest contamination with a plastic scraper. Then use a soft sponge with a 5% acetic acid solution (white vinegar), preferably with warm water, and rinse the sensor with fresh water.

Wipe and dry the sensor with a soft cloth or optical wipes.

4.1.1 O-rings service

The O-rings seal the probe. Any O-rings damaged can affect the reliability of the probe. A visual inspection must be done each time a sensor is plugged or unplugged and also when battery compartment is opened. Check that no hair-type, particle-like elements are found on the O-rings. If the surface has impurities, gently clean them with a non-fluffy wipe and lightly grease the O-rings with molykote grease. Any damaged O-rings must be changed.

4.1.2 Sensor port service

⚠ A sensor should **ALWAYS** be unplugged WiMo's head downwards in order to avoid any water entering the probe.

During each plug/unplug sensor operation, do a careful inspection of the surfaces of the sensor location. Check that there are no scratches, no particles or impurities lodged on these surfaces. Prefer compressed air for cleaning location to avoid scratching by using a wipe or other.

Check that the location is dry before repositioning a sensor on the location.

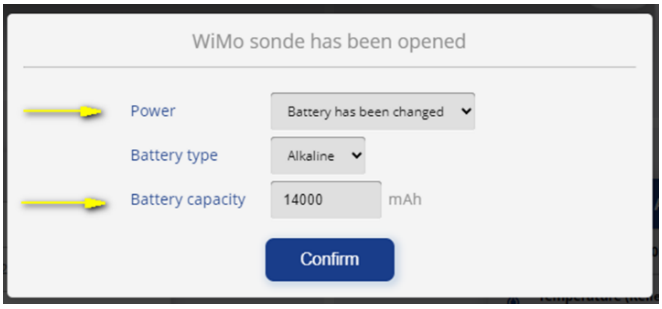
4.2 Replace batteries

To ensure the probe's longevity, replace the batteries at least once a year. If the probe is not used for an extended period, remove the batteries before storing it to prevent any risk of leakage or oxidation.

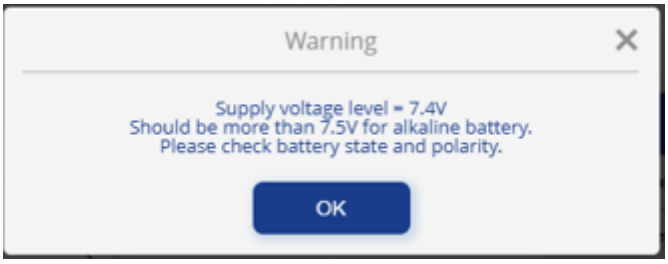
The WiMo and WiMo Plus probes use 6 D-type Alkaline batteries. It is important to use reliable alkaline batteries, especially batteries whose capacity is notified, as this capacity will have to be carried over in the probe for battery life calculation (voir § 3.1.1).The probe is also able to use 6 Nickel Metal Hydrure (NiMH) D-type rechargeable batteries.

When connecting the probe after changing the batteries, the window below appears. It is essential to correctly complete all fields.

- Batteru capacity : This setting allows the probe to provide an estimate of the autonomy.

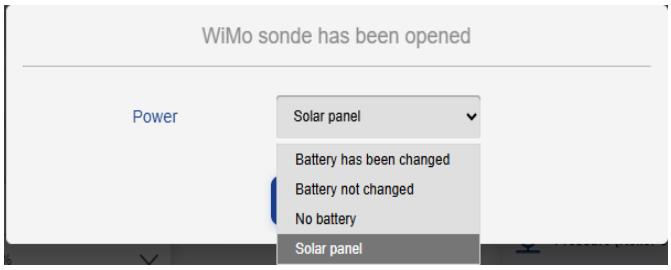


A battery voltage check is performed. If it is too low (NiMH threshold at 6V, Alkaline threshold at 7.5V) the probe will display a warning.



4.2.1 « Solar Panel »

Since version v2.0.6 or later, the WiMo probe includes the “Solar panel” operating mode. This mode is intended for use with our 100 L buoy equipped with solar panels. Selecting this mode is done from the list of options displayed when the probe starts up, provided it is connected to an external power supply and the batteries have been removed.



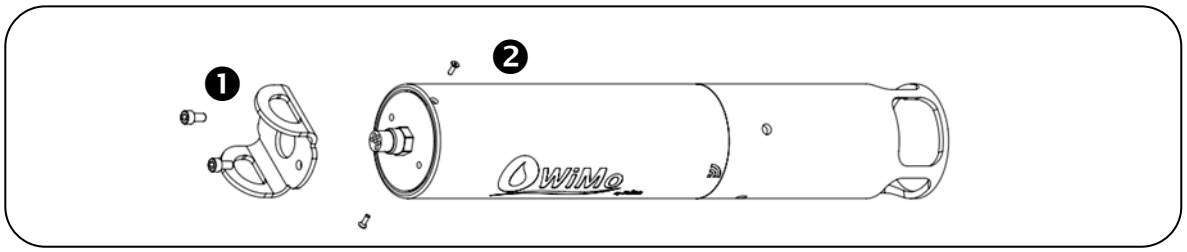
This mode is linked to the charging of the battery pack via the **solar panels** and therefore depends on **weather conditions**.

The probe continuously monitors the **voltage of the battery pack** installed on the pole.
When this voltage becomes insufficient, the probe automatically switches to **sleep mode** in order to preserve the system's autonomy. Before entering sleep mode, **an information file (alarme I995 Off)** is transmitted via the modem.

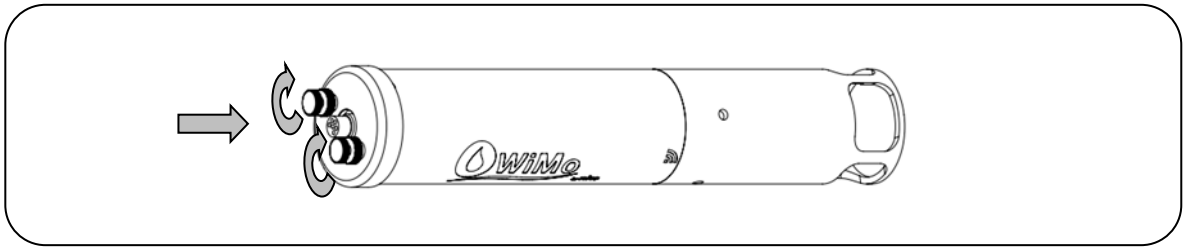
The probe remains in sleep mode until the solar panels have sufficiently recharged the battery pack.

As soon as normal voltage is restored, the probe **automatically reactivates** and sends a **new information message (alarme I995 On)** indicating that operation has resumed.

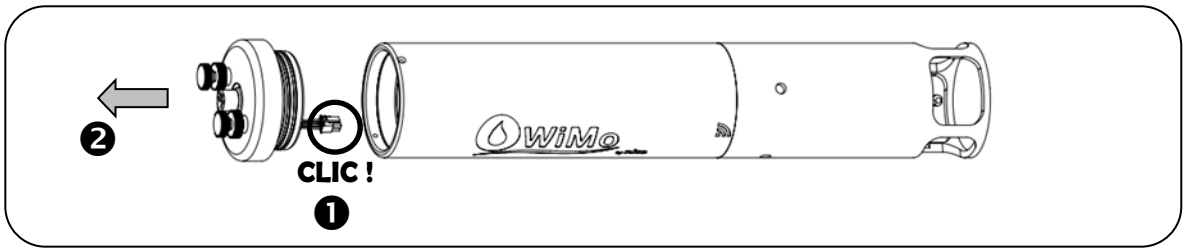
Step 1 : Using allen keys provided, unscrew the screws from the handle ❶ and then remove the handle. Unscrew the two screws holding the cap ❷



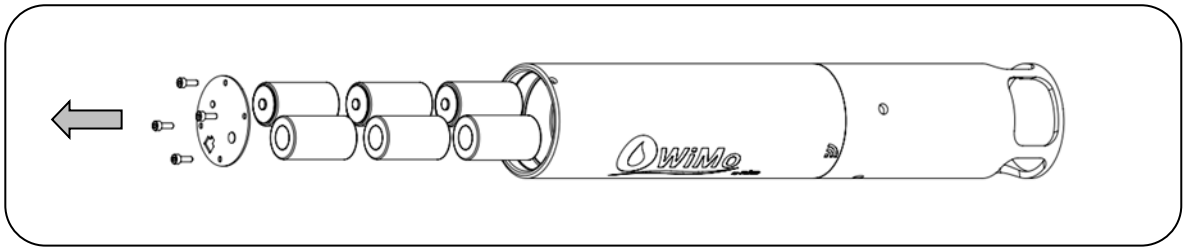
Step 2 : Position the tape removal kit over the handle mounting holes and screw the two screws (Molleton against the screw head) to the stops and without forcing. Then, screw the plastic knurled nuts until you feel the tape lift off the probe.



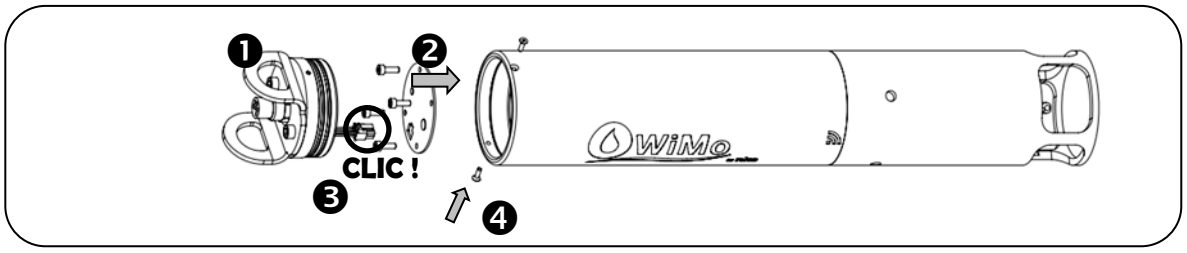
Step 3 : Gently remove the cap to have access to the connector. Unclip the connector to completely remove the cap.



Step 4 : Remove the 4 screws sustaining the stack plate and remove the 6 old batteries. Replace with 6 new batteries **paying attention to polarity!**



Step 5 : Remove the dismount cap toolkit attached to the cap and fix the handle ❶. Insert the stack plate (small spring on the + polarity and large spring on the - polarity) and use the Allen key to insert the 4 screws ❷. Clips the connector and push the cap into the body. Take care to check the state of o-rings ❸. Use the Allen key to insert the two screws to lock the cap ❹.



5 Product Identification

The WiMo is identified with a label summarizing its identifiers and the information needed to log in.

❶ Product name
❷ Product family code
❸ N° Product serial number
❹ N° SSID for Wi-Fi connection

The SSID number identifies the product in the list of available WIFI networks using discover mode on the platform (PC, tablet or Smartphone).

6 File formats

Measurement files created by WiMo and WiMo Plus probes can be in CSV or TXT2TopKapi's format

6.1 Topkapi TXT2 Format

The Topkapi TXT2 format is a compliant format with the monitoring software, SCADA Topkapi.

The name of the file is formatted as PREFIXE_AAAAMMJJHHMMSS.TXT

The prefix discriminates the WiMo. It corresponds to its serial number. Each file is a 3-column ASCII file defined as follows:

- Field1 : The date of the data as AAMMJJHHMMSS
- Field 2 : Variable ID (a chain that necessarily starts with a letter and can only contain letters, underscores and dots)
- Field 3 : Data value

File example : 0005_20250417104822.txt

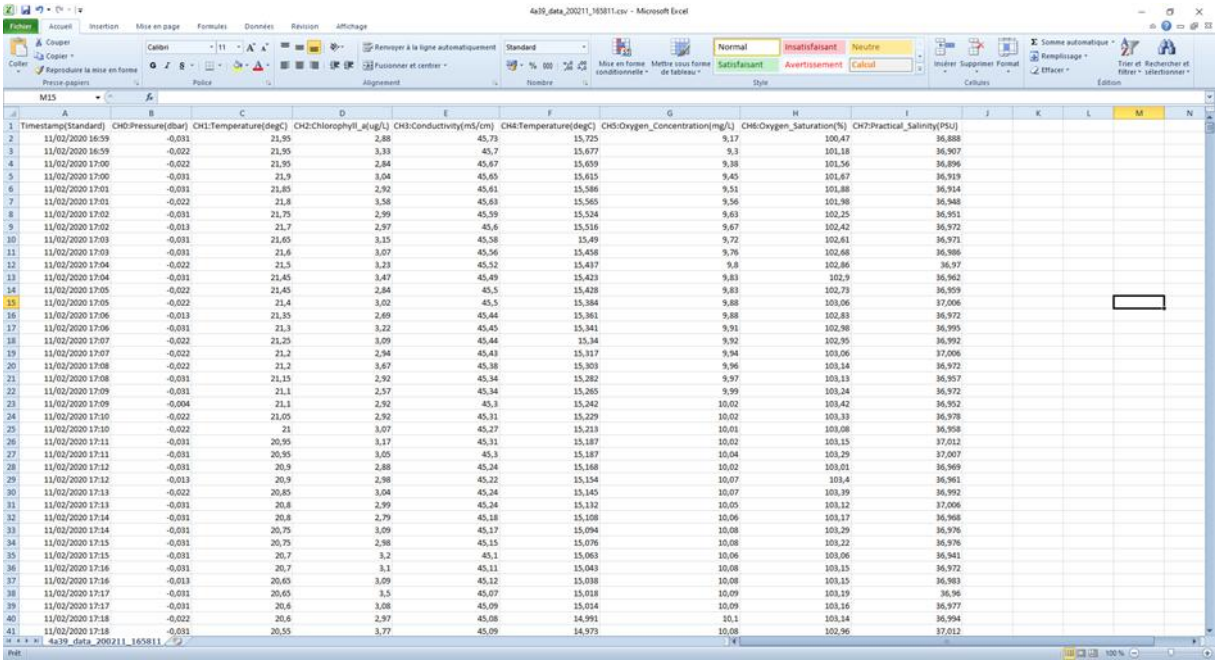
The first line corresponds to the modem start-up alarm (see §0).

```
250417104822 I994     1
250417104840 PRESSURE_01   0,006
250417104840 TEMPERATURE_02       15,25
250417104840 CONDUCTIVITY_04      0,001
250417104840 TEMPERATURE_03       14,088
250417104840 CHLA_09         0,385
250417104840 CHLA_13         11,390
250417104840 OXYGEN_06     10,113
250417104840 OXYGEN_07     98,323
250417104840 TEMPERATURE_25       15,954
250417104840 TURBIDITY_05  14,200
250417104840 SALINITY_48     0,007
250417104840 WATER_HEIGHT_58      0,1
250417104840 TSS_54 85,202
```

6.2 CSV Format

The data is arranged in accordance with the export configuration chosen by the end-user. The name of the file is as follow: serialnumber_data_AAMMJJ_HHMMSS.csv

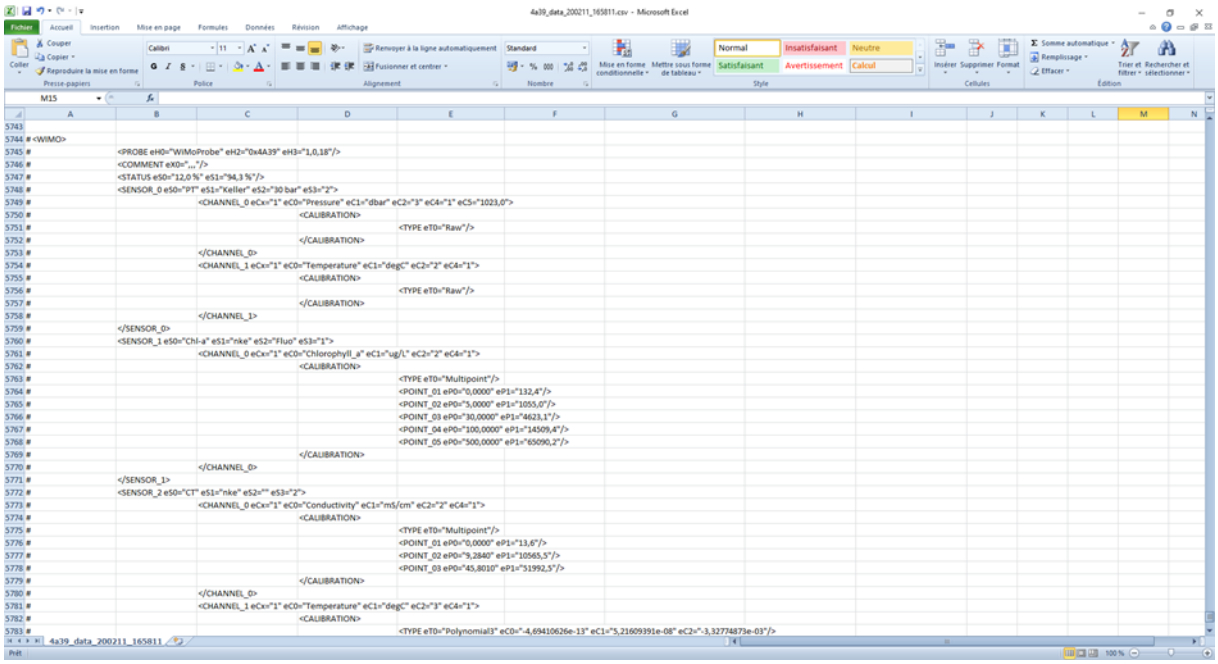
6.2.1 Datas



Timestamp(Standard)	CH0:Pressure(dbar)	CH1:Temperature(degC)	CH2:Chlorophyll_a(ug/L)	CH3:Conductivity(mS/cm)	CH4:Temperature(degC)	CH5:Oxygen_Concentration(mg/L)	CH6:Oxygen_Saturation(%)	CH7:Practical_Salinity(PSU)
11/02/2020 16:59	-0,031	21,95	2,88	45,73	15,725	9,17	100,47	36,888
11/02/2020 16:59	-0,022	21,95	3,33	45,7	15,677	9,3	101,18	36,907
11/02/2020 17:00	-0,022	21,95	2,84	45,67	15,659	9,38	101,56	36,896
11/02/2020 17:00	-0,031	21,9	3,04	45,65	15,615	9,45	101,67	36,919
11/02/2020 17:01	-0,031	21,85	2,92	45,61	15,586	9,51	101,88	36,914
11/02/2020 17:01	-0,022	21,8	3,58	45,63	15,565	9,56	101,98	36,948
11/02/2020 17:02	-0,031	21,75	2,99	45,59	15,524	9,63	102,25	36,951
11/02/2020 17:02	-0,013	21,7	2,97	45,6	15,516	9,67	102,42	36,972
11/02/2020 17:03	-0,031	21,65	3,15	45,58	15,49	9,72	102,61	36,971
11/02/2020 17:03	-0,031	21,6	3,07	45,56	15,458	9,76	102,68	36,986
11/02/2020 17:04	-0,022	21,5	3,23	45,52	15,437	9,8	102,86	36,97
11/02/2020 17:04	-0,031	21,45	3,47	45,49	15,423	9,83	102,9	36,962
11/02/2020 17:05	-0,022	21,45	2,84	45,5	15,428	9,83	102,73	36,959
11/02/2020 17:05	-0,022	21,4	3,02	45,5	15,384	9,88	103,06	37,006
11/02/2020 17:06	-0,013	21,35	2,69	45,44	15,361	9,88	102,83	36,972
11/02/2020 17:06	-0,031	21,3	3,22	45,45	15,341	9,91	102,98	36,995
11/02/2020 17:07	-0,022	21,25	3,09	45,44	15,34	9,92	102,95	36,992
11/02/2020 17:07	-0,022	21,2	2,94	45,43	15,317	9,94	103,06	37,006
11/02/2020 17:08	-0,022	21,2	3,67	45,38	15,303	9,96	103,14	36,972
11/02/2020 17:08	-0,031	21,15	2,92	45,34	15,282	9,97	103,13	36,957
11/02/2020 17:09	-0,031	21,1	2,57	45,34	15,265	9,99	103,24	36,972
11/02/2020 17:09	-0,004	21,1	2,92	45,3	15,242	10,02	103,42	36,952
11/02/2020 17:10	-0,022	21,05	2,92	45,31	15,229	10,02	103,33	36,978
11/02/2020 17:10	-0,022	21	3,07	45,27	15,213	10,01	103,08	36,958
11/02/2020 17:11	-0,031	20,95	3,17	45,31	15,187	10,02	103,15	37,012
11/02/2020 17:11	-0,031	20,95	3,05	45,3	15,187	10,04	103,29	37,007
11/02/2020 17:12	-0,031	20,9	2,88	45,24	15,168	10,02	103,01	36,969
11/02/2020 17:12	-0,013	20,9	2,98	45,22	15,154	10,07	103,4	36,961
11/02/2020 17:13	-0,022	20,85	3,04	45,24	15,145	10,07	103,39	36,992
11/02/2020 17:13	-0,031	20,8	2,99	45,24	15,132	10,05	103,12	37,006
11/02/2020 17:14	-0,031	20,8	2,79	45,18	15,108	10,06	103,17	36,968
11/02/2020 17:14	-0,031	20,75	3,09	45,17	15,094	10,08	103,29	36,976
11/02/2020 17:15	-0,031	20,75	2,98	45,15	15,076	10,08	103,22	36,976
11/02/2020 17:15	-0,031	20,7	3,2	45,1	15,063	10,06	103,06	36,941
11/02/2020 17:16	-0,031	20,7	3,1	45,11	15,043	10,08	103,15	36,972
11/02/2020 17:16	-0,013	20,65	3,09	45,12	15,038	10,08	103,15	36,983
11/02/2020 17:17	-0,031	20,65	3,5	45,07	15,018	10,09	103,19	36,96
11/02/2020 17:17	-0,031	20,6	3,08	45,09	15,014	10,09	103,16	36,977
11/02/2020 17:18	-0,022	20,6	2,97	45,08	14,991	10,1	103,14	36,994
11/02/2020 17:18	-0,031	20,55	3,77	45,09	14,973	10,08	102,96	37,012

6.2.2 settings

At the end of the measurement file entire configuration used for data acquisition is inserted in XML format. This part is used to display the information about the file in the interface but can also be used by the end-user to find the full configuration of his WiMo. If compression has been enabled the configuration will be in a separate file.



```
<WIMO>
<PROBE eH0="WiMoProbe" eH2="0x4A39" eH3="1,0,18"/>
<COMMENT eX0="..."/>
<STATUS e50="12,0 %" e51="94,3 %"/>
<SENSOR_0 e50="PT" e51="Keller" e52="30 bar" e53="2">
    <CHANNEL_0 eCx="1" eC0="Pressure" eC1="dbar" eC2="3" eC4="1" eC5="1023,0">
        <CALIBRATION>
            <TYPE eT0="Raw"/>
        </CALIBRATION>
    </CHANNEL_0>
    <CHANNEL_1 eCx="1" eC0="Temperature" eC1="degC" eC2="2" eC4="1">
        <CALIBRATION>
            <TYPE eT0="Raw"/>
        </CALIBRATION>
    </CHANNEL_1>
</SENSOR_0>
<SENSOR_1 e50="Chl-a" e51="nke" e52="Fluo" e53="1">
    <CHANNEL_0 eCx="1" eC0="Chlorophyll_a" eC1="ug/L" eC2="2" eC4="1">
        <CALIBRATION>
            <TYPE eT0="Multipoint"/>
            <POINT_01 ePD="0,0000" eP1="132,4"/>
            <POINT_02 ePD="5,0000" eP1="1055,0"/>
            <POINT_03 ePD="30,0000" eP1="4623,1"/>
            <POINT_04 ePD="100,0000" eP1="14509,4"/>
            <POINT_05 ePD="500,0000" eP1="65090,2"/>
        </CALIBRATION>
    </CHANNEL_0>
</SENSOR_1>
<SENSOR_2 e50="CT" e51="nke" e52="" e53="2">
    <CHANNEL_0 eCx="1" eC0="Conductivity" eC1="mS/cm" eC2="2" eC4="1">
        <CALIBRATION>
            <TYPE eT0="Multipoint"/>
            <POINT_01 ePD="0,0000" eP1="13,6"/>
            <POINT_02 ePD="9,2840" eP1="10565,5"/>
            <POINT_03 ePD="45,8010" eP1="51992,5"/>
        </CALIBRATION>
    </CHANNEL_0>
    <CHANNEL_1 eCx="1" eC0="Temperature" eC1="degC" eC2="3" eC4="1">
        <CALIBRATION>
            <TYPE eT0="Polynomial3" eC0="-4,69410626e-13" eC1="5,21609391e-08" eC2="-3,32774873e-03"/>
```

The description of the XML fields is as follows

PROBE	
eH0	Product name
eH1	Product type
eH2	Serial number
eH3	Software version
eH4	Number of channels
COMMENT	
eX0	Comment on Deployment
STATUS	
eS0	Memory capacity
eS1	Battery capacity
SENSOR_X	
eS0	Sensor ID
eS1	Manufacturer
eS2	Sensor name
CHANNEL_X	
eC0	Measurement channel name and type
eC1	Unit
eC2	Number of measurement precision digits
eC4	Measurement mean (do not change without nke notice)
CALIBRATION	
eT0	Type of calibration (Raw, linear, etc.)
eC0	If Steinardt for example, A coefficient
eC1	If Steinardt for example, B coefficient
POINT	
eP0	Physical value of the calibration point
eP1	Raw value of the calibration point
MEASURE	
eS0	Sampling Type (continuous…)
START	
eS0	Start mode (manual, on date, on condition)
STOP	
eS0	Stop mode (manual, on date, on condition)
EXPORT	
eX0	Data export type
eX1	Decimal separation (point or comma)
eX2	Separation of fields (space, tab, semicolon)
DATA	
eD0	Recording period
eD1	Starting date (ISO-8601)
eD2	Stopping date (ISO-8601)
eD3	Number of records

7 Management of alarm files

There are different sources of alarms managed by the probe:

- Information alarms
- System supervisor alarms (eg low battery voltage).
- Sensor alarms (e.g. brush blockage).
- Communication system alarms (eg: GPS loss).

The table below lists the code of the alarms that are likely to be transmitted

Code	Commentaires
I990	System power-on information
I991	External power supply presence information
I992	Low internal temperature information
I993	High internal temperature information
I994	Information on switching on the Modem
I995	Information on pausing/resuming Solar Panel mode (On / Off)
Défauts	
D990	Low battery voltage fault
D991	Brush position fault incompatible with the sensor positions
D992	Low remaining battery capacity fault
D993	Memory card access fault
D994	Low remaining memory capacity fault
D995	GPS drift fault
Défaillances	
Fxx0	I2C command write failure with sensor « xx »
Fxx1	I2C configuration write failure with sensor « xx »
Fxx2	Failure to read I2C result with sensor « xx »
Fxx3	I2C no response failure with sensor « xx »
Fxx4	Failure during I2C acquisition with sensor « xx »
Fxx5	I2C result failure with sensor « xx »
Fxx6	I2C cleaning failure with broom « xx »

Exemples :

- Information on switching on the Modem:

  2025-03-19 17:15:38;I994;1;Start

- WiMo probe alarm on low battery voltage:

  2021-11-22 11:57:32;D990;1;Voltage=6.9 V

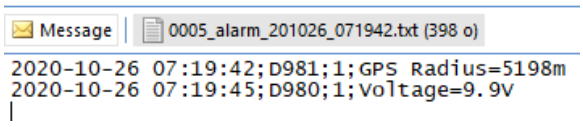
  2021-11-22 11:58:33;D990;0;Voltage

- Non-response alarm of the Chl-a sensor placed on slot n°5 of the probe.

  2021-10-20 22:40:01;F053;1;Chl-a

  2021-10-20 22:55:01;F053;0;Chl-a

- Alarm on GPS drift (distance 5198m from the original location) + low Modem battery voltage.



8 Accessories available

8.1 Modem

The 4G WiMo coupled to the WIMO multi-parameter probe is able to transmit its data using the deployed 3G/4G networks. The modem is multi-operator and is compliant with French and foreign networks.

The modem once connected to a WIMO probe is automatically detected. The probe is then able to set it up. The modem retrieves files acquired by the WIMO and transmits them at the user defined rate.

It has a GPS inside and can use it to transmit its position through the 3G/4G network. The end-user can setup the modem to monitor a circular area with alarm transmission if the buoy goes outside this area.

WIMO Modem specifications		
Features	transmission 3G/4G & GPS	
Operating environment	Freshwater and sea water	
Waterproof	IP67	
Communication	3G/4G / serial link	
Power Supply	Internal 8 Type C Alkaline batteries	
Temperature	Storage (no battery): -20°C à 70°C	
	Operating : - 2 à +50°C	
Size	Diameter :	114 mm
	Total length:	242 mm
Weight	1.65 kg	

8.1.1 Modem settings

Refer to the modem manual for installation and configuration.

When the modem is started (after a complete shutdown), an alarm file is sent to confirm the successful start of the WiMo probe and Modem pair.

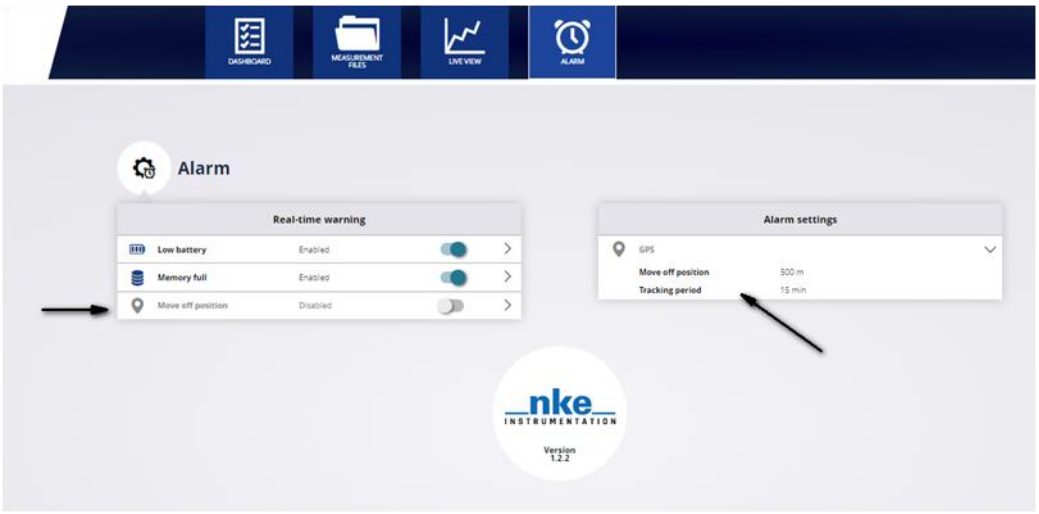
```
2024-01-08 15:54:34;I994;1;Start
```

The modem can only be configured if it is connected and detected by a WiMo probe. Detection is done when you click on the Refresh button in the “Network and communication” window.

Modem Refresh Button

Modem detection causes new elements to appear in the WEB interface specific to the modem.

- « Network and communication ».
  - « GPS » line: Allows the activation and configuration of the GPS
  - « 3G\4G » line: Enables activation and configuration of the transmission mode.
- « Alarm ».
  - « Move off position » line: : Allows the activation of GPS Tracking mode.
  - « Alarm setting » line: Allows you to define the avoidance radius and the recurrence of the alarms.



8.2 WiMo 20 liters buoy

The WIMO float 20 liters allows to easily deploy a WIMO or WiMo Plus probe equipped with a 3G/4G Modem at sea or on inland bodies of water. It provides protection against shocks and reduces the development of biofouling on the probe's body. When mounted on the float, the sensors of the WIMO are located 1 meter bellow the water surface The float has been designed to facilitate the extraction of the probe without tools and thus easily carry out the maintenance of the sensors

The system supplied by nke is made up of the following sub-assemblies

- A central body fitted with a 20-litre float.
- A WIMO support pole.
- Kit of screws and tools
- Optional: a maritime signaling light and a cross of Saint Andrew

8.3 Buoy 100 L

The 100 L buoy is a compact, robust, and relatively easy-to-deploy solution designed to meet a wide range of maritime, river, and coastal applications.
It has been specially developed to house WiMo probes as well as their transmission and positioning modem.

It provides an ideal support for monitoring water quality in ports, estuaries, lakes, or marine environments exposed to moderate conditions.

Thanks to its modular and autonomous design, the 100 L buoy can be configured as needed:

- Simple pole for mounting WiMo probes and the modem.
- Pole equipped with solar panels and an integrated lithium battery pack for extended autonomy.
- Signaling kit including a Saint Andrew’s cross and a signal light for increased visibility.

The poles can be removed from the float without tools, enabling easy maintenance of sensors.

User manuel 100L : Buoy 100L_UTI.pdf

8.4 WiMo coastal buoy

The coastal WiMO buoy is designed to host a Wimo multiparameter probe and its 3G/4G modem. Possible deployment areas are coastal areas, laks and rivers..

9 Return a product to the factory

For a consideration of your product by our after-sales service it is essential to follow the RMA procedure. Any material returned without an RMA number will not be taken into account.

- In case of shipment for repair or expertise, obtain an RMA number by using the procedure available on the website:
  https://nke-instrumentation.com/product-return-form/

Pack the product in its original shipping box to prevent damage in transit

nke Instrumentation
6 rue Gutenberg, ZI de Kerandré
56700 Hennebont, France
Tel +33 2 97 36 41 31 – Fax +33 02 97 55 17

www.nke-instrumentation.com