AQUALABO

Smart water solutions

NEON_OPEN

Portable measuring device for digital sensors.

User manual

Version 2.1

The latest version of this user manual is available on our website: https://www.aqualabo.fr/

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This manual is updated periodically. Updates are included in new editions.

All information provided in this edition of the manual is subject to change before the products described become available.

CONTENTS

1. WARRANTY 6
2. INFORMATION 7
3. SAFETY 8
3.1 SAFETY INSTRUCTIONS 8
3.2 SAFETY DURING OPERATION 8
3.2.1 Intended use 8
3.2.2 Unauthorised use 8
3.2.3 User qualification 8
3.3 NOTES ON HANDLING 8
3.4 PACKAGING 8
4. PRESENTATION OF THE NEON. 9
4.1 PACKAGE CONTENTS 9
4.2 NEON OPEN DEVICE. 9
4.2.1 General description. 9
4.2.2 Technical specifications. 9
4.3 MAIN FEATURES OF NEON OPEN. 11
5. TECHNICAL SPECIFICATIONS OF SENSORS. 12
5.1 DESCRIPTION OF OPTOD STAINLESS STEEL OR TITANIUM SENSOR. 12
5.2 DESCRIPTION C4E SENSOR – CONDUCTIVITY- SALINITY. 14
5.3 DESCRIPTION PHEHT SENSOR – PH – REDOX – TEMPERATURE or pH-TEMPERATURE. 15
5.4 DESCRIPTION NTU SENSOR – TURBIDITY – TSS (MG/L) – TEMPERATURE. 17
5.5 DESCRIPTION VB5 SLUDGE BLANKET SENSOR. 18
5.6 DESCRIPTION OF THE MES5 SENSOR. 19
6. START-UP 20
6.1 POWER SUPPLY 20
6.1.1 Type of batteries allowed. 20
6.1.2 Replacing the batteries. 20
6.1.3 Starting the sensors. 20
6.2 GENERAL NEON FUNCTIONS. 21
6.2.1 On/off. 21
6.2.2 Navigation keyboard. 21
6.3 SETTINGS 21
6.3.1 Main screen 21
6.3.2 General menu 25
6.3.3 Calibration menu 25
6.3.4 Recording menu 46
6.3.5 Preferences menu 48
7. DATA DOWNLOAD 51

7.1 ACTIVATION AND CONNECTION 51

7.2 HOME SCREEN 51

7.3 DISCONNECT 52

8. SENSOR MAINTENANCE 53

8.1 OPTOD SENSOR 53

8.1.1 Cleaning 53
8.1.2 Replacing the active pad 53
8.1.3 Storage 53
8.1.4 Accessories and consumables 54

8.2 PHEHT OR PHT SENSOR MAINTENANCE 55

8.2.1 Cleaning 55
8.2.2 Cartridge replacement: 55
8.2.3 Storage 56
8.2.4 Accessories and consumables 56

8.3 C4E SENSOR MAINTENANCE 57

8.3.1 Cleaning 57
8.3.2 Storage 57
8.3.3 Accessories and consumables 57

8.4 NTU SENSOR MAINTENANCE 58

8.4.1 Cleaning 58
8.4.2 Storage 58
8.4.3 Accessories and consumables 58

8.5 VB5 SENSOR MAINTENANCE 59

8.5.1 Cleaning 59
8.5.2 Accessories and consumables 59

8.6 MES5 SENSOR MAINTENANCE 60

8.6.1 Cleaning 60
8.6.2 Accessories and consumables 60

1.WARRANTY

New equipment and materials sold by AQUALABO are guaranteed against manufacturing defects for a period of 1 year, excluding consumables (unless expressly stated by AQUALABO), starting from:

- The technical acceptance of the equipment at the factory by the purchaser or their representative,
- Or, failing that,
  - For mainland France: from the date of the delivery note,
  - For other destinations: from the date of shipment certified by LTA, waybill, or bill of lading.

The AQUALABO warranty applies exclusively in the event of a defect resulting from a design fault or a hidden defect. It is strictly limited to the free shipment of replacement parts (excluding consumables) or the repair of the device in our workshops within 10 working days, excluding transport.

The following are expressly excluded from our warranty:

- Any economic damage, in particular for personnel costs, loss of earnings, commercial disruption, etc.
- Any breakdown due to misuse of the device (unsuitable power supply, dropping, attempted modification, etc.), lack of maintenance by the user or poor storage conditions.
- Any breakdown due to the use of parts not supplied by AQUALABO on AQUALABO equipment.
- Any breakdown due to transport of the equipment in packaging other than the original packaging.
- Batteries, antennas and, in general, any item listed in the price list under "accessories".

Our customers are requested to always ask for our agreement before returning a device to us for repair. No returns will be accepted without the prior written agreement of our after-sales service, which will specify the return procedure. In this case, the items must 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 return any device received without this agreement, with postage due. Regardless of the mode and conditions of transport chosen for shipping the equipment to be repaired under warranty, and provided that it is in its original packaging, the corresponding costs and insurance costs shall be borne by the customer.

Any damage related to the return transport of the equipment is covered by the warranty on the express condition that the customer has sent their complaints, within forty-eight hours, by registered letter with acknowledgement of receipt, to the carrier, with a copy of the letter sent to AQUALABO.

For devices with a warranty card, the warranty only applies if the card supplied with the device is returned to AQUALABO, duly completed.

SOFTWARE WARRANTY

Software is guaranteed by the author or distributor of the software under the conditions specified in the documentation accompanying the software packages.
Under no circumstances does AQUALABO provide any warranty regarding software packages.
By express agreement, any economic damage, including personnel costs, loss of earnings, commercial disruption, etc., is formally excluded from our warranty.
The customer is informed that AQUALABO cannot be held liable under any circumstances for the presence of defects or "bugs" that cannot be eliminated from software.

PROPRIETARY RIGHTS AND MANUFACTURING SECRECY

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. Observe the 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 any anomalies, make the usual reservations with the carrier **within 48 hours**. Then consult the packing list and check that everything is in order. Finally, if you find that something is missing or that the equipment is damaged, contact AQUALABO immediately.

The NEON portable device is entirely designed and manufactured by AQUALABO in France.

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3. SAFETY

3.1 SAFETY INSTRUCTIONS

This manual provides important information on the safe operation of the product. Read it carefully to familiarise yourself with the product before putting it into service and using it. This manual must be kept close to the product so that you can always find the information you need.

3.2 SAFETY DURING OPERATION

3.2.1 Intended use

Observe the following points for safe operation:

- Store and use the device under the environmental conditions specified in this manual (see Specifications)
- Do not dismantle the device
- Power the device with the original batteries or those specified in section 6.1.1
- Observe the authorised use below

WARNING:

If the device is used in a manner not specified by Aqualabo (environment, handling, etc.), the protection provided by the device may be compromised.

3.2.2 Unauthorised use

The product must not be used if:

- It is visibly damaged (e.g. after transport),
- It has been stored under unfavourable conditions for a long period of time.

3.2.3 User qualification

We assume that operating personnel know how to handle this equipment due to their professional training and experience. Operating personnel must be able to understand and correctly implement safety labels and safety instructions relating to the use of the product. Trained personnel must be familiar with and follow the instructions in this manual.

3.3 NOTES ON HANDLING

Observe the following points for safe operation:

- During use and storage, the ambient temperature and humidity must be within the limits specified in the TECHNICAL SPECIFICATIONS section.
- In all situations, the device must be protected from the following influences:
  -Intense exposure to light and heat
  -Caustic vapours or vapours with a high solvent content.
- All operations carried out inside the instrument must be performed by AQUALABO or by technicians authorised by AQUALABO.

3.4 PACKAGING

The NEON portable instrument is shipped in packaging designed to protect it during transport. It is essential to keep the original packaging and inner packaging to ensure optimal protection of the device against impact during transport. The original packaging is also a prerequisite for return transport under appropriate conditions in the event of repair. Please note that we accept no warranty claims for damage caused by transport under inappropriate conditions.

4. PRESENTATION OF THE NEON.

4.1 PACKAGE CONTENTS

You have just received your NEON portable device.
The package contains a carrying case with:

- The NEON unit (containing 3 LR6 alkaline batteries, 1.5 volts) with connector and one sensor from the following range:
  - ○ OPTOD Stainless Steel or Titanium sensor (oxygen temperature),
  - ○ PHEHT sensor (pH, redox, temperature),
  - ○ C4E sensor (conductivity, salinity, temperature),
  - ○ NTU sensor (Turbidity, TSS, temperature),
  - ○ MES5 sensor (TSS, Turbidity, sludge, temperature),
  - ○ VB5 sensor (sludge blanket detection, temperature)
- A laminated field manual;
- Calibration solutions corresponding to the sensor

Upon receipt of your device, check the condition of the packaging and, if you notice any anomalies, make the usual reservations with the carrier **within 48 hours**. If you find that something is missing or that the equipment is damaged, contact AQUALABO immediately.

4.2 NEON OPEN DEVICE.

4.2.1 General description.

The NEON Open portable device, when used with digital sensors, can measure dissolved oxygen levels (%Sat and in mg/L), pH, conductivity, salinity, sludge level detection, turbidity, suspended solids and temperature.

The NEON Open portable instrument also offers a recording function (30,000 measurement points) in single-point and automatic modes.

Data transfer to a PC is made easy thanks to the WiFi Transfer function (no additional cable required). Connection via connector and interference-resistant: integrated pre-amplification in the sensor and digital signal processing.

All data relating to calibration, history, users and measurements are processed directly in the sensor and transmitted to the NEON portable device.

The NEON portable unit also contains an atmospheric pressure sensor for automatic compensation of the oxygen parameter in mg/L.

4.2.2 Technical specifications.

Technical Specifications *NEON* Housing	
Weight	880 g
Dimensions (H x W x D)	146 x 88 x 33
Protection rating	IP 67
Operating temperature	-5 to 50 °C
Storage temperature	-10°C to 60°C
Display	Colour LCD Backlight
Materials	ABS, UL 94V-0
Power	3 AA alkaline batteries
Battery life	Backlight level 2/5 ○ 3 AA alkaline batteries, recording frequency 30 seconds: 204 hours Without recording: 840 hours ○ 3 rechargeable VARTA Ni-MH batteries, recording frequency 1 min: 167 hours
Sensor connection	Via Fischer connector Sensors on 3, 7 and 15 m cables

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➢ Description of the front side:

LCD screen

ABS housing

Navigation keypad

Sensor connector

➢ Description of the rear panel:

Waterproof battery compartment
Waterproof
Locked with a screw
(stainless steel

Product information label including serial number.

➢ NEON Portable underside:

Sensor connector

4.3 MAIN FEATURES OF NEON OPEN.

The NEON digital sensor kit offers the following features:

- Automatic recognition of the connected sensor at start-up,
- Simultaneous display of 3 to 4 parameters depending on the connected sensor;
- ZOOM function on a parameter selected by the operator;
- Measurement stability indicator;
- Battery charge status indicator;
- Intensity function Adjustable backlight, backlight (configurable timing) and automatic screen shutdown (optimised battery life);
- Simple calibration menu adapted to the parameters;
- Data recording (30,000 points) in 2 modes: Manual or Automatic with configurable recording frequency;
- Transfer of recordings via WiFi in "csv" format;
- Automatic compensation for calculating oxygen concentration in mg/L (automatic temperature and atmospheric pressure integrated, manual salinity settings);
- Multilingual device: French, English, Spanish, German.

Sensor	List of measured parameters	Measurement range
OPTOD	Temperature Oxygen in % saturation Oxygen in mg/L	0.00-50.00 °C 0-200 0.00-20.00 mg/L
PHEHT	Temperature PH Redox in mV	0.00-50.00 °C 0.00-14.00 -1000 to + 1000 mV
C4E	Temperature Conductivity in µS/cm or mS/cm Salinity in g/kg TDS in ppm	0.00-50.00 °C 0-200 µS/cm; 0-2000 µS/cm 0-20 mS/cm; 0-200 mS/cm 5-60 g/kg 0-133,000 ppm
NTU	Temperature Turbidity in NTU Turbidity in FNU Turbidity in mg/L	0.00-50.00 °C 0-50 NTU/FNU; 0-200 NTU/FNU; 0-1000 NTU/FNU; 0-4000 NTU/FNU 0-4500 mg/L
VB5	Temperature Suspended solids in %	0.00-50.00 °C 0-100 %
MES5	Temperature Sludge sludge in % MES in g/L Turbidity in FAU	0.00-50.00 °C 0-100 % 0.00-50.00 g/L 0-4000 FAU

5. TECHNICAL SPECIFICATIONS OF SENSORS.

5.1 DESCRIPTION OF OPTOD STAINLESS STEEL OR TITANIUM SENSOR.

The OPTOD dissolved oxygen sensor uses optical measurement technology based on luminescence and provides reliable and accurate measurements. With no consumables or maintenance, the OPTOD sensor offers an immediate return on investment. The only maintenance required is replacement of the active oxygen tablet every two years. As it does not consume oxygen, the OPTOD sensor can be used in all types of environments, even where water flow is very low.

The compact and robust sensor, made of 316L stainless steel or titanium (for seawater applications), is particularly well suited to the following typical areas of application:

- Industrial and municipal wastewater treatment plants,
- Wastewater management (nitrification and denitrification),
- Monitoring of natural waters,
- Fish farming, aquaculture,
- Drinking water control.

Measurements	
Measurement principle	Optical measurement by luminescence
Measurement ranges	0.00 to 20.00 mg/L 0-200
Resolution	0.01
Accuracy	+/- 0.1 mg/L +/- 1
Response	90% of the value in less than 60 seconds
Temperature compensation	By NCT (active compensation for temperatures below 0°C)
Measurement range (temperature)	0.00 to 50.00 °C
Resolution (temperature)	0.01 °C
Accuracy (temperature)	0.5
Storage temperature	-10°C to +60°C

Sensors	
Maximum pressure	5 bars
Material in contact with the medium	Standard version in passivated 316L stainless steel: body, strainer and screw thread. For the seawater version, the body, strainer and screw thread are made of titanium. Black active membrane – Do Disk: Optical insulation in silicon.
DO disk	No interaction with: pH 1 – 14; CO_2, H_2S, SO_2 Sensitive to organic solvents such as acetone, toluene, chloroform or methylene chloride and chlorine gas.
Protection rating	IP68
Connection	9 shielded connectors, polyurethane sheath, bare wires or waterproof Fischer connector.
Sensor cable	Standard: 3, 7 and 15 m (other lengths available on request). 100 m max. Up to 100 m with the junction box.

(1) Strainer incorporating the DO disk membrane, made of 316 L stainless steel or titanium.
(2) Sealing gasket,
(3) Sensor body with measuring electronics
(4) Gland
(5) Connection cable

5.2 DESCRIPTION C4E SENSOR – CONDUCTIVITY- SALINITY.

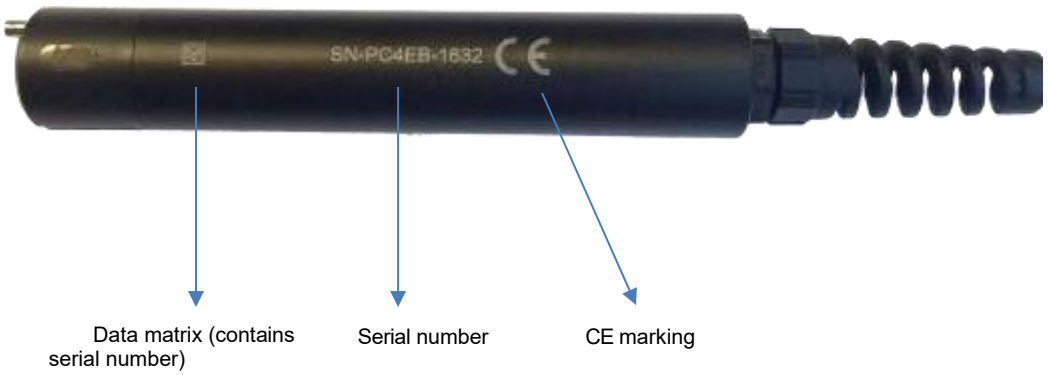
The electrode operates on a 4-electrode technology: an alternating current of constant voltage is established between a pair of primary graphite electrodes. The secondary platinum electrodes regulate the voltage applied to the primary electrodes to compensate for fouling. The voltage measured between the primary electrodes is a function of the resistance of the medium and therefore of its conductivity.
Economical and efficient technology requiring little maintenance and no consumables. Temperature: measurements via

NTC inserted in a stainless-steel sheath.

The compact and robust sensor is particularly well suited to the following typical areas of application:

- Industrial and municipal wastewater treatment plants,
- Monitoring of natural waters,
- Fish farming, aquaculture,
- Drinking water control.

Conductivity and salinity measurement	
Measurement principle	4-electrode conductivity sensor (2 graphite, 2 platinum).
Conductivity measurement range	0-200.0 µS/cm; 0 –2000 µS/cm; 0.00 –20.00 mS/cm 0.0 –200.0 mS/cm
Resolution **Accuracy**	0.01 to 1 depending on the range +/- 1% of full scale Above 100 mS/cm, use an appropriate buffer solution
Salinity measurement range	5-60 g/kg
TDS-KCl measurement range	0–133,000 ppm
Response time	<5 s
Temperature measurement	
Temperature measurement principle	NCT
Operating temperature	0.00 °C to+ 50.00°C
Resolution	0.01 °C
Accuracy	± 0.5 °C
Response time	< 5 s
Sensor	
Storage temperature	0°C to + 60°C
Protection rating	IP 6
Mechanical	
Dimensions	Diameter: 27 mm; Length excluding cable: 157 mm
Weight	350 g (sensor + cable)
Materials in contact with the medium	PVC, POM-C, stainless steel
Maximum pressure	5 bars
Cable/connectors	9 shielded conductors, polyurethane sheath. Fischer connector connection. Standard lengths 3, 7 and 15 m (other lengths available on request)



5.3 DESCRIPTION PHEHT SENSOR – PH – REDOX – TEMPERATURE or pH-TEMPERATURE.

The PONSEL sensor incorporates a reference electrode, used for pH and redox measurements, of the Ag/AgCl type with a KCl-saturated plasticised electrolyte "PLASTOGEL"®
The "PLASTOGEL"® electrolyte communicates directly with the external environment without the use of capillaries or porous materials. There is therefore no risk of the reference being blocked or deactivated.
The measuring electrodes are in the form of a special pH-sensitive glass bulb welded to the end of a crystal tube for pH and in the form of a platinum tip for redox.

Temperature: measurements via NTC inserted into a stainless-steel sheath.

The compact and robust sensor is particularly well suited for the following typical areas of application:

- Industrial and municipal wastewater treatment plants,
- Wastewater management (nitrification and denitrification),
- Natural water monitoring,
- Fish farming, aquaculture,
- Drinking water control.

pH measurement	
pH measurement principle	Combined electrode (pH/reference): special glass, Ag/AgCl reference. Gel electrolyte (KCl)
Measuring range	0–14 pH
Resolution/Accuracy	0.01 pH; +/- 0.1 pH
Redox measurement	
Measurement principle Redox	Combined electrode (redox/reference): Platinum tip, Ag/AgCl reference. Gel electrolyte (KCl)
Measuring range	- 1000.0 to+ 1000.0 mV
Resolution/Accuracy	0.1 mV;± 2 mV
Response time	< 5 s
Temperature measurement	
Temperature measurement principle	CTN
Operating temperature	0.00 °C to+ 50.00°C
Resolution	0.01 °C
Accuracy	± 0.5 °C
Response time	< 5 s
Storage temperature	0°C to + 60°C
Protection rating	IP 68
Sensor	
Dimensions of mounted sensor	Lower part: diameter 21 mm; length 92 mm, Upper part: diameter 27 mm; length 103 mm, Sensor length when mounted: without cable gland 210 mm; length with cable gland: 260 mm.
Weight	350 g (Sensor + cable)
Materials in contact with the medium	PVC, POM-C, special pH glass, platinum, polyurethane
Maximum pressure	5 bars
Cable/connector	9 shielded conductors, polyurethane sheath. Fischer connector connection

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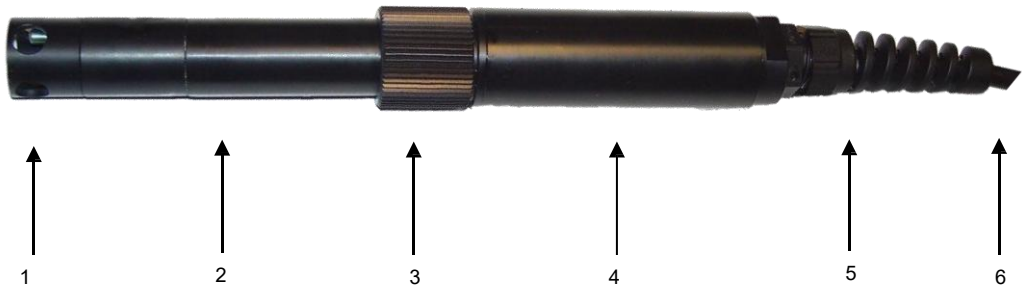


(1) Protective strainer
(2) Cartridge (consumable part)
(3) Clamping ring
(4) Sensor body with measuring electronics
(5) Cable gland
(6) Connection cable securely connected

5.4 DESCRIPTION NTU SENSOR – TURBIDITY – TSS (MG/L) – TEMPERATURE.

The measurement principle is based on nephelometry: a diode emits infrared light (850 nm) and a receiving diode positioned at 90° measures the scattered radiation (standardised measurement). The sensor can be calibrated with a Formazine standard.

Very economical optical technology requiring little maintenance and no consumables.

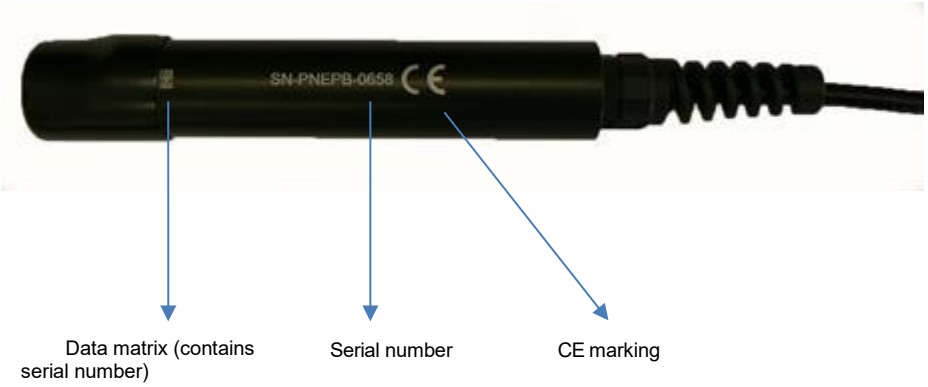
Temperature: measurements via NCT.

The compact and robust sensor is particularly well suited for the following typical areas of application:

- Municipal wastewater treatment (inlet/outlet monitoring).
- Sewerage networks (load monitoring),
- Industrial effluent treatment,
- Surface water monitoring, dredging sites.

Measurements		
Measurement principle	90° IR diffusion	
Measurement ranges	**5 to 4000 NTU in 5 ranges**: ▪ 5 - 50 NTU ▪ 5–200 NTU ▪ 5 – 1000 NTU ▪ 5 – 4000 NTU ▪ AUTO range	**0-4500 mg/L range** **Calibration:** 0-500 mg/L range according to standard NF EN 872 range >500 mg/l according to standard NF T 90 105 2
Resolution	from 0.1 to 1 automatic depending on the range	
Accuracy	< 5% of NTU reading	
Response	< 5	
Operating temperature	0°C to+ 50°C	
Temperature measurement	Via CTN	
Storage temperature	-10°C to+ 60°C	

Sensor	
Weight	300 g (with 3-metre cable)
Materials	PVC, POM-C, PMMA, polyamide
Maximum pressure	5 bars
Cable/Connectors	9 shielded conductors, polyurethane sheath, waterproof metal Fischer connector
Protection rating	IP68



5.5 DESCRIPTION VB5 SLUDGE BLANKET SENSOR.

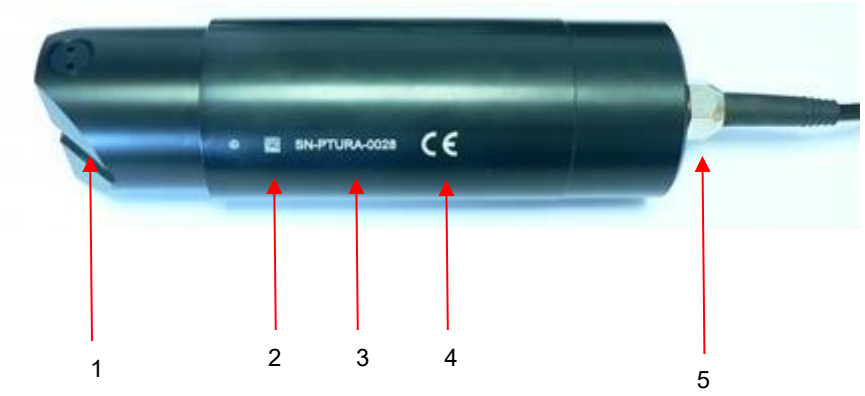
The VB5 sensor operates on a measurement principle based on the attenuation of the IR signal at 870 nm through a 5 mm optical slit. The sensor provides mud veil measurements as a percentage of IR transmission. For greater accuracy, the sensor optics are temperature-controlled.

The VB5 sensor is particularly well suited for the following typical areas of application:

- Municipal wastewater treatment: Primary and final settling tanks.
- Industrial effluent treatment: Primary and final settling tanks.
- Non-collective sanitation

Measurements	
Measuring principle	Optical measurement IR absorption
Measurement ranges Sludge veil	0 - 100% clear water
Mud veil resolution	0.01 to 0.1
Sludge veil accuracy	+/- 2%
Measuring range (temperature)	0.00 to 50.00 °C
Resolution (temperature)	0.01 °C
Accuracy (temperature)	0.5°C
Storage temperature	-10°C to+ 60°C

Sensors	
Maximum pressure	5 bars
Material in contact with the medium	POMC, nickel-plated brass (PE)
Weight	750 g (sensor)
Materials in contact with the medium	DELRIN
Cable/connectors	9 shielded conductors, polyurethane sheath, waterproof metal Fischer connector
Protection rating	IP68



1	Measuring slot (optical path 5 mm)
2	Data matrix (contains serial number)
3	**Serial number: SN-PTURAX-YYYY** X: version YYYY: number
4	CE marking
5	Gland

5.6 DESCRIPTION OF THE MES5 SENSOR.

The MES5 sensor operates on a measurement principle based on the attenuation of the IR signal at 870 nm through a 5 mm optical slit. The sensor provides measurements of MES, turbidity, sludge veil as a percentage of IR transmission and temperature. For greater accuracy, the sensor optics are temperature-controlled.

The POMC sensor is particularly well suited to the following typical areas of application:

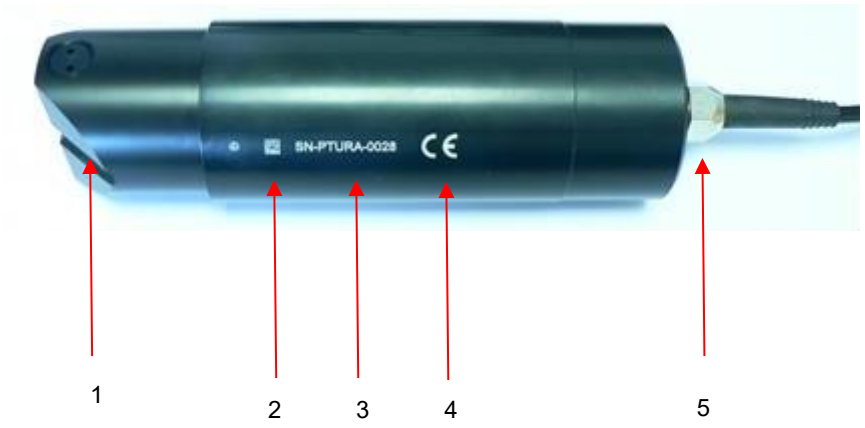
○ Municipal wastewater treatment (inlet/network (TSS, turbidity), aeration tank (TSS), settling tank (sludge blanket), outlet (turbidity).

○ Industrial effluent treatment (Aeration Tank (TSS), Settling Tank (Sludge Blanket), Outlet (Turbidity)

○ Sludge treatment systems.

Measurements	
Measurement principle	Optical measurement IR absorption
Measurement ranges	TSS: 0-50 g/L Turbidity: 0-4000 FAU Sludge blanket: 0-100%; 100% in clear water
Resolution	TSS: 0.01 g/L Turbidity: 0.01 to 1 FAU Sludge blanket: 0.01 to 0.1%
Accuracy	TSS: 10% Turbidity: +/- 5% (range 200-4000 FAU) Sludge Blanket: +/- 2%
Measurement range (temperature)	0.00 to 50.00 °C
Resolution (temperature)	0.01 °C
Accuracy (temperature)	0.5°C
Storage temperature	-10°C to +60°C

Sensors	
Maximum pressure	5 bars
Material in contact with the medium	POMC, nickel-plated brass (PE)
Weight	750 g (sensor)
Materials in contact with the medium	DELRIN
Maximum pressure	5 bars
Cable/connectors	9 shielded conductors, polyurethane sheath, waterproof metal Fischer connector
Protection rating	IP68



1	Measuring slot (optical path 5 mm)
2	Data matrix (contains serial number)
3	**Serial number: SN-PTURAX-YYYY** X: version YYYY: number
4	CE marking
5	Cable gland

6. START-UP

6.1 POWER SUPPLY

6.1.1 Type of batteries allowed.

The measuring device is supplied with 3 AA alkaline batteries. The user must never mix batteries of different types.
types.
It is possible to use 3 AA NiMH rechargeable batteries, 1.2 V (VARTA type), but the operating time of the NEON portable device will be reduced.

6.1.2 Replacing the batteries.

The 3 used AA alkaline batteries must be replaced in a perfectly clean environment.
and dry so as not to contaminate the inside of the case.
The operator must ensure that the batteries are installed in accordance with the polarity markings in the battery compartment.

When closing the case, the operator must ensure that:
- replace the battery compartment cover correctly,
- tighten the screw firmly to crush the seal between the cover and the battery compartment.

Otherwise, the correct functioning of the NEON device or the degree of water resistance of the housing can no longer be guaranteed.
The operator must also ensure that the batteries are checked regularly to prevent damage to the equipment caused by used batteries.

6.1.3 Starting the sensors.

○ **OPTOD sensor**:

For the OPTOD sensor, remove the black protective cap (keeping the sensor head down and unscrewing the cap to the right (the direction is indicated on the protective case).

The sensor is delivered dry and the DODISK must be rehydrated to optimise measurements. After dry storage,
rehydrate the membrane for 12 hours (overnight) in clean water.

○ **C4E sensor**:

For the C4E sensor, remove the black protective cap (keeping the sensor head facing downwards and unscrewing the cap to the right).

○ **PHEHT & PHTsensor:**

For the PHEHT sensor, remove the black protective cap (holding the sensor head downwards and unscrewing the cap to the right (the direction is indicated on the protective case).

The sensor is delivered dry and must be rehydrated to ensure optimal measurements.
After dry storage, rehydrate the membrane for 12 hours in a storage solution (1SC009), a 3 mol/l KCl solution or a pH buffer solution.

○ **NTU sensor:**

For the NTU sensor, remove the black protective cap (keeping the sensor head facing downwards and unscrewing the cap to the right).

○ **VB5 sensor:**

For the Sludge blanket sensor, remove the black protective cap (keeping the sensor head facing downwards and unscrewing the cap).

○ **MES5 sensor:**

For the TSS sensor, remove the black protective cap (holding the sensor head downwards and unscrewing the cap).

6.2 GENERAL NEON FUNCTIONS.

6.2.1 On/off.

Connect the sensor equipped with a Fischer connector to the NEON housing, then switch on the NEON.

To turn the NEON Open instrument on and off, hold down the On/Off button for a few seconds.

NOTE: If the equipment does not start up, the user should check the power supply (batteries correctly installed in the battery compartment).

6.2.2 Navigation keyboard.

1	ON/OFF
2	LED
3	Activation Screen lighting
4	Arrow Up/WIFI activation 1
5	MENU & ESCAPE
6	Right arrow
7	OK/Confirm
8	Arrow Down/WIFI activation 2

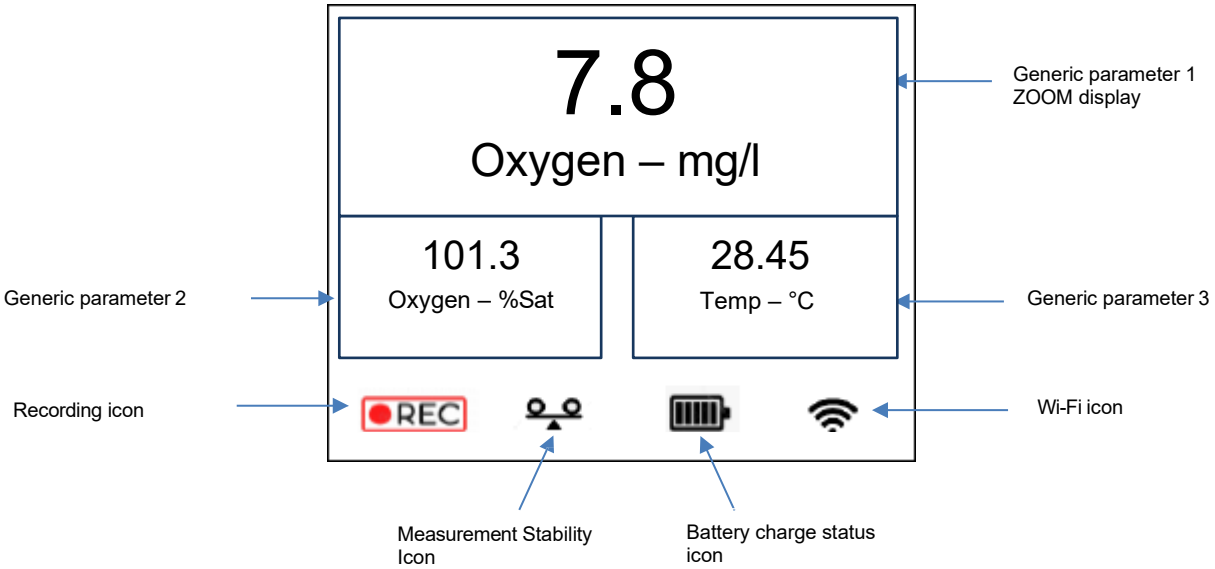
6.3 SETTINGS

6.3.1 Main screen

○ **Oxygen sensor**:

The main screen displays the following information in real time:

- the parameters measured by the oxygen sensor and the associated units: temperature (°C), oxygen in mg/L, oxygen in % saturation. A ZOOM function allows you to view a parameter in a larger format.

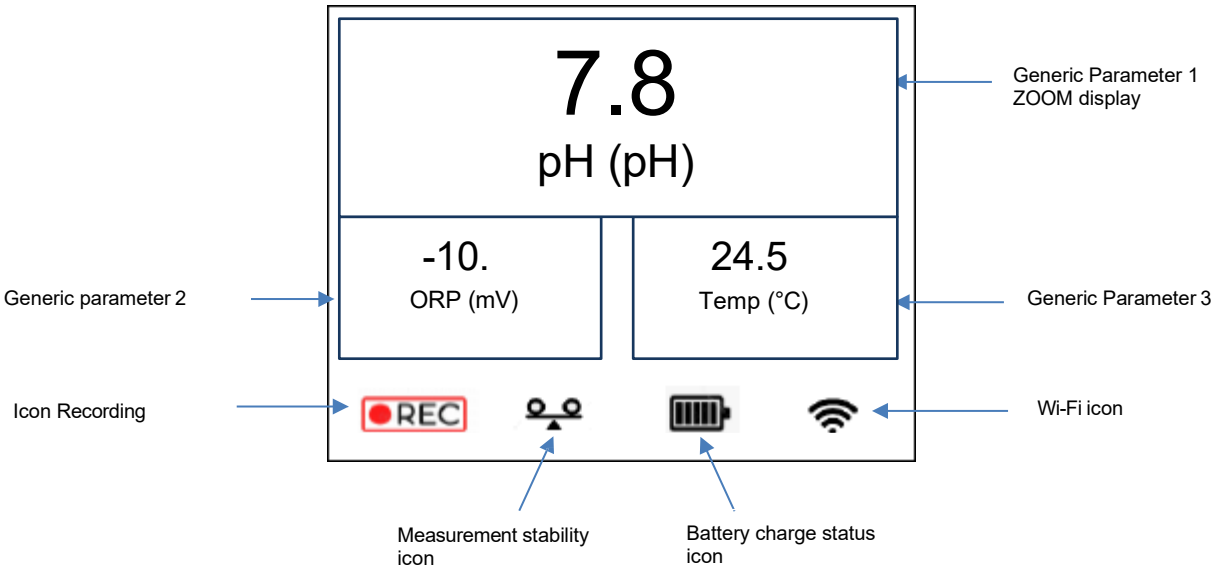


○ **pHEHT sensor**:

The main screen displays the following in real time:

- The parameters measured by the PHEHT sensor and the associated units: Temperature (°C), pH in pH units, Redox potential in mV. A ZOOM function allows a parameter to be viewed in a larger format.

- A series of icons (at the bottom of the screen) allow you to monitor the battery charge status, measurement stability, data recording activation and WiFi activation for data transfer to a PC.

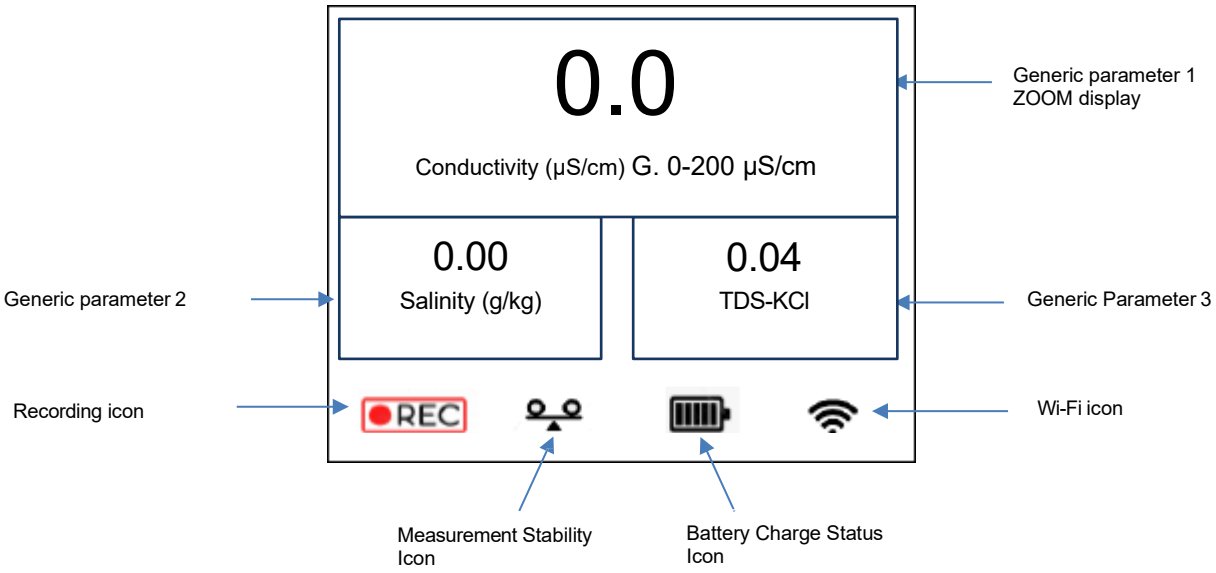


○ **Conductivity/Salinity/TDS sensor:**

The main screen displays the following in real time:

- The parameters measured by the C4E sensor and the associated units: Temperature (°C), Conductivity in µS/cm or mS/cm (with an indication of the working range), Salinity in g/kg and TDS-KCL (ppm). A ZOOM function allows a parameter to be viewed in a larger format.

- A series of icons (at the bottom of the screen) allow you to monitor the battery charge status, measurement stability, data recording activation and WiFi activation for data transfer to a PC.

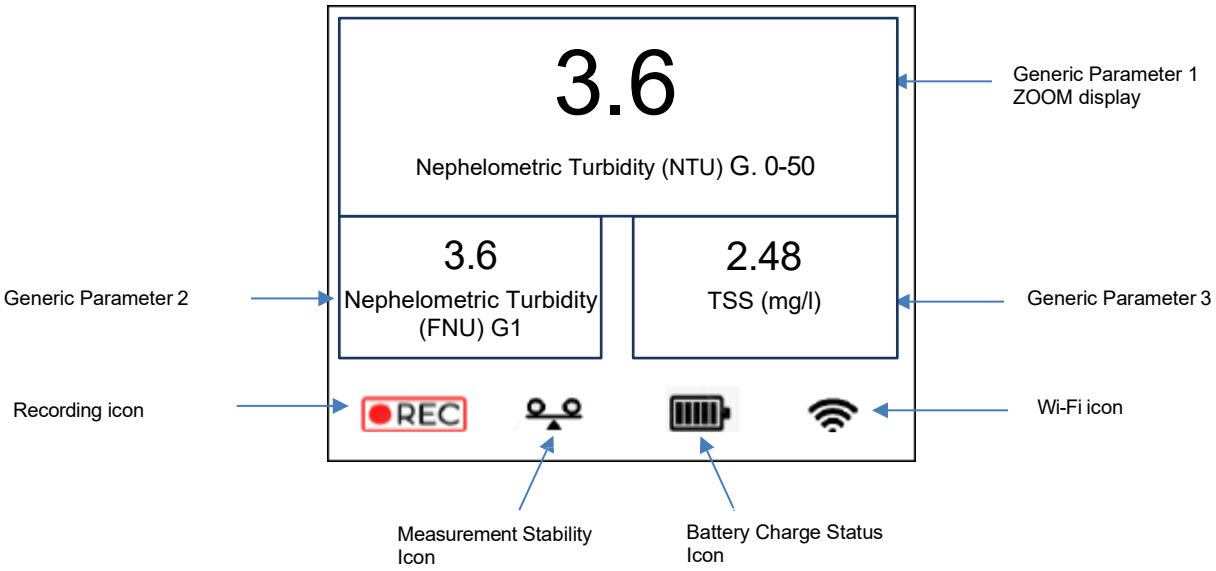


○ **NTU sensor:**

The main screen displays the following in real time:

- the parameters measured by the NTU sensor and the associated units: Temperature (°C), Turbidity in NTU (working range used by the sensor), Turbidity in FNU (working range used by the sensor), Turbidity in mg/l. A ZOOM function allows a parameter to be viewed in a larger format.

- A series of icons (at the bottom of the screen) allow you to monitor the battery charge status, measurement stability, data recording activation and WiFi activation for data transfer to a PC.

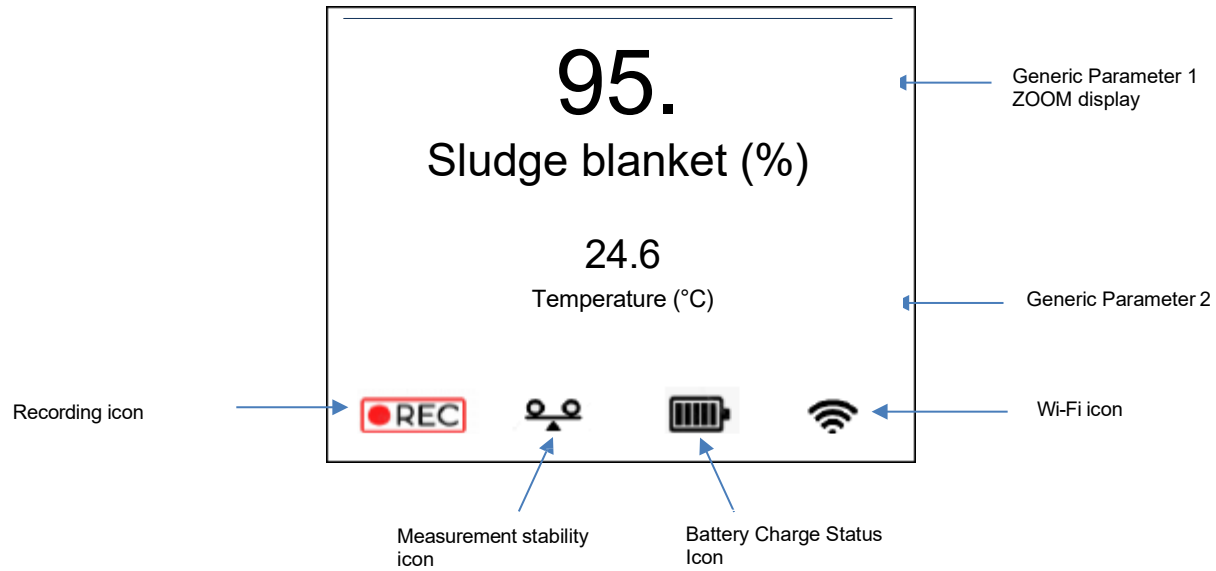


○ **VB5 sensor:**

The main screen displays the following in real time:

- The parameters measured by the Sludge Blanket sensor and the associated units: Temperature (°C), Sludge Blanket (%). A ZOOM function allows you to view a parameter in a larger format.

- A series of icons (at the bottom of the screen) allow you to monitor the battery charge status, measurement stability, data recording activation and WiFi activation for data transfer to a PC.

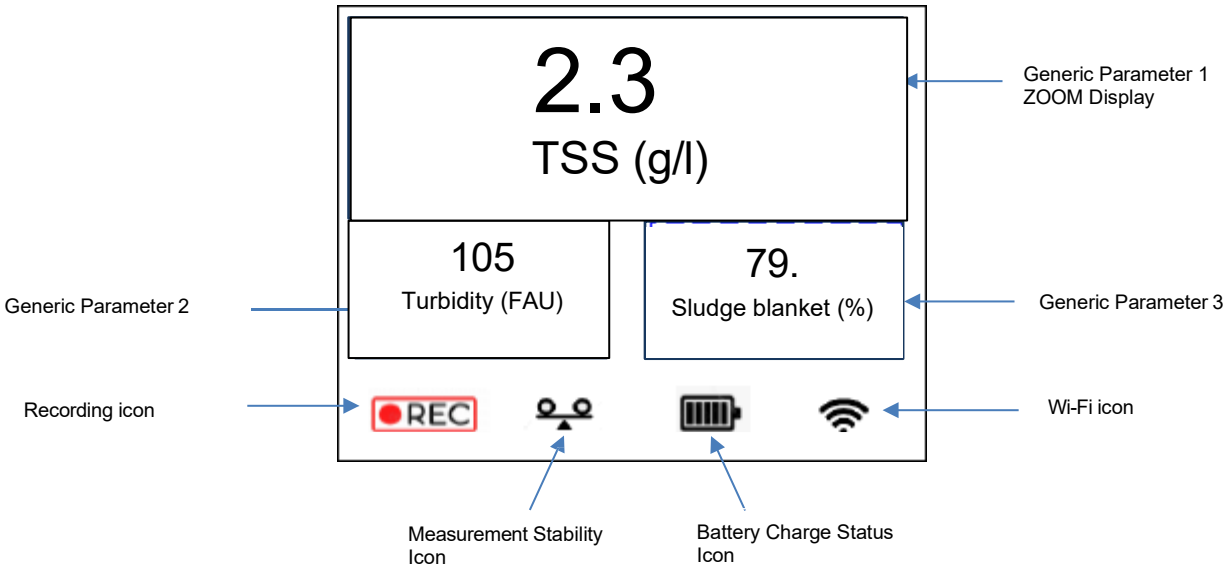


○ **MES5 sensor:**

The main screen displays the following in real time:

- The parameters measured by the MES sensor and the associated units: TSS (g/l), Turbidity (FAU), Temperature (°C), Sludge Blanket (%). A ZOOM function allows a parameter to be viewed in a larger format.

- A series of icons (at the bottom of the screen) allow you to monitor the battery charge status, measurement stability, data recording activation and Wi-Fi activation for data transfer to a PC.



- A series of icons (at the bottom of the screen) allow you to monitor the battery charge status, measurement stability, data recording activation and Wi-Fi activation for data transfer to a PC.

When the Generic 1 parameter changes, the measurement stability icon disappears, and the measurement fluctuates. As soon as this parameter is stable; the stability icon appears and the measurement flashes.

○ By pressing the Up and Down keys, you can scroll through the generic parameters in position 1 (ZOOM), 2 or 3.

○ To adjust the backlight intensity, press and hold the "LIGHT" button and use the UP/DOWN buttons.

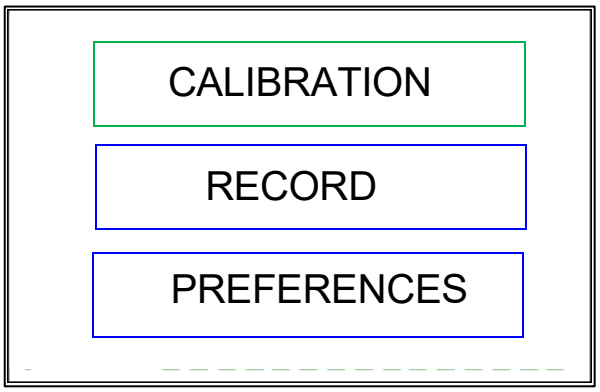
○ To enable/disable recording, select the "OK" button. For more details, refer to the
6.3.4 Recording menu

○ To access the GENERAL MENU, press the "ESC" button.

○ Pressing the DOWN/UP buttons simultaneously (WIFI Activation 1 and WIFI Activation 2) gives access to the software update. This function is reserved for maintenance operations and access is restricted.

6.3.2 General menu

The "GENERAL MENU" screen provides access to the Calibration and Recording functions, as well as to the preference settings (date/time configuration, information about the NEON portable device and the sensor, standby time configuration, language selection, RESET function for the settings).

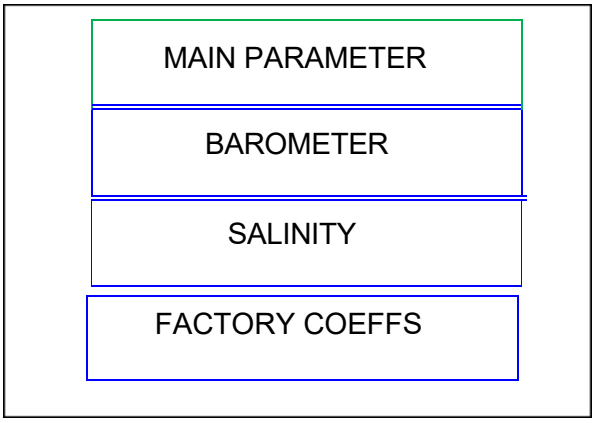


To access the desired menu, move the cursor using the up and down arrows and confirm your selection by pressing the "OK" button. To return to the previous screen, press the "ESC" button.
When the cursor is positioned on a menu, the menu frame turns green.

6.3.3 Calibration menu

6.3.3.1 Oxygen sensor calibration.

The calibration menu allows you to calibrate the sensor connected to the NEON portable device (MAIN SETTINGS menu), adjust the atmospheric pressure measurement (BAROMETER menu), set the salinity value used to compensate for the oxygen concentration parameter (mg/L) (SALINITY menu) and restore the factory calibration coefficients (FACTORY COEFF menu).



To access the desired menu, move the cursor using the up and down arrows and confirm your selection with the "OK" button. To return to the previous screen, press the "ESC" button.

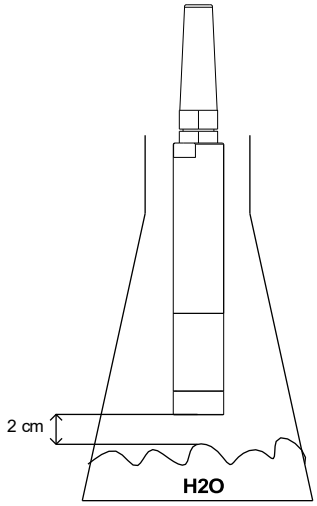
Main parameter

This menu allows you to calibrate the OPTOD sensor at a single point (slope only – 100% saturation) or at two points (offset 0% and slope 100%).

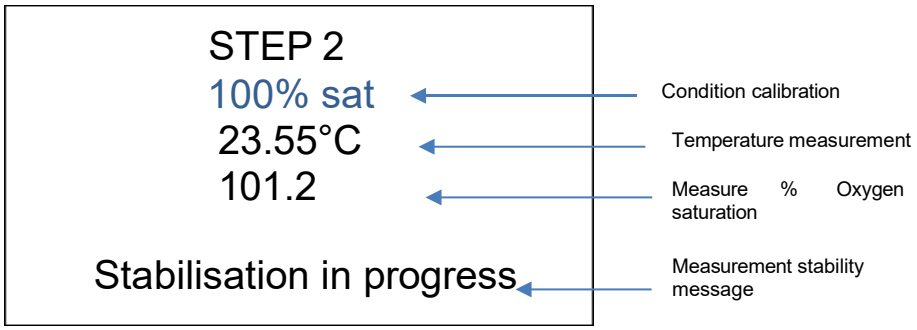
To access the desired menu, move the cursor using the up and down arrows and confirm your selection with the "OK" button. To return to the previous screen, press the "ESC" button.

SLOPE calibration only:

For the OPTOD sensor, it is possible to calibrate only the slope by adjusting to 100% in air saturated with water vapour.
This can normally be achieved by placing the sensor in air saturated with water vapour (e.g. directly above a water surface) or as shown in the illustration below:

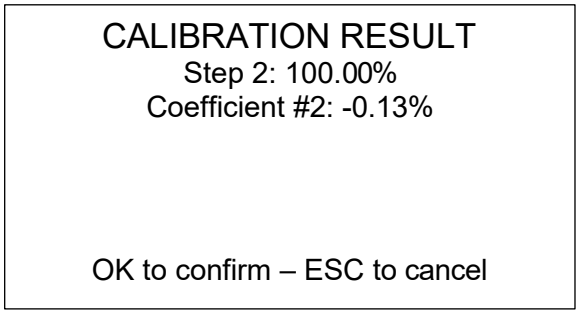


Fill the bottom of a vial with water and position the sensor just above the water. Wait for the measurement to stabilise at 100%. As soon as the message at the bottom of the screen indicates "Stable, OK to validate", press the OK button.



The calibration sequence can be interrupted at any time by pressing the Escape (ESC) key.

After confirming the calibration step, a screen appears with the calibration results.



OFFSET and SLOPE calibration:

With two-point calibration, the zero point (0% - offset) and the slope (100%) of the sensor are calibrated. This calibration method offers the highest possible level of accuracy and is particularly recommended for measurements in environments with low oxygen concentrations.

Calibration is then carried out as follows:

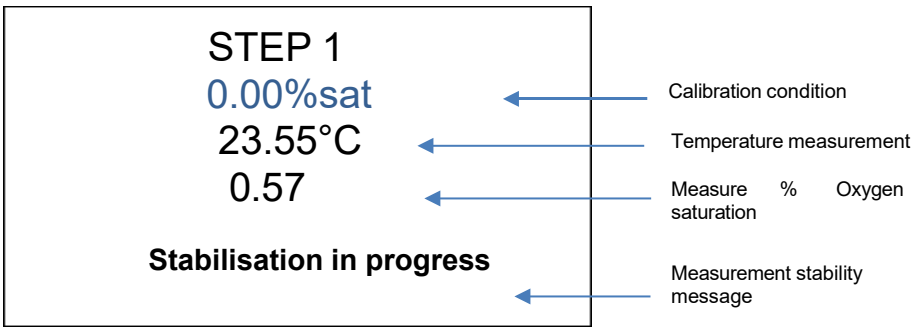
1) Offset calibration: 0% oxygen saturation.

The previously cleaned sensor (see Cleaning section 8.1) is immersed in a sulphite solution (sulphite concentration <2% by weight, max. 2 g in 100 ml of water) to determine the zero point (0% saturation). Mix the solution with the sensor so that the oxygen saturation decreases more quickly (the oxygen bound to the DODISK must be consumed).

Caution: *The sensor membrane must not be in contact with the sulphite solution for more than one hour.*

Wait for the measurement to stabilise and press OK as soon as the message "Stable, OK to confirm" appears.

The calibration sequence can be interrupted at any time by pressing the Escape (ESC) key.



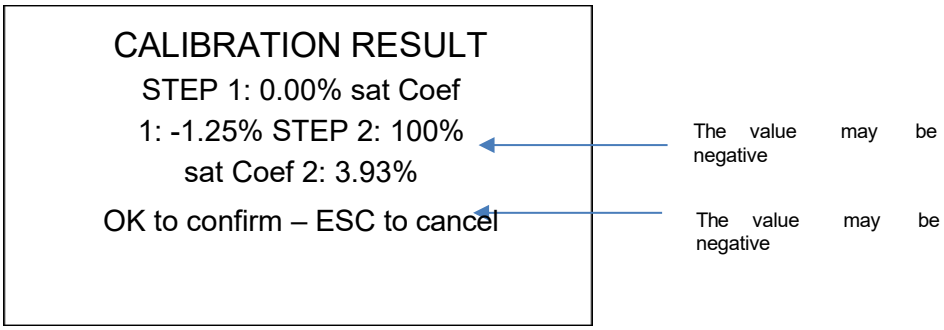
Rinse the oxygen sensor and active membrane thoroughly with clean water, then gently dry the membrane in order to remove all traces of water.

2) Slope calibration: 100% oxygen saturation.

For this calibration step, please refer to the previous chapter, "Slope Calibration Only".

Calibration results:

At the end of a calibration step, Slope only or 2-point calibration (offset and slope), a screen appears displaying the calibration results.



The acceptance tolerances for the calibration steps are:

+/- 6.00% for the offset step,
+/- 30% for the slope step.

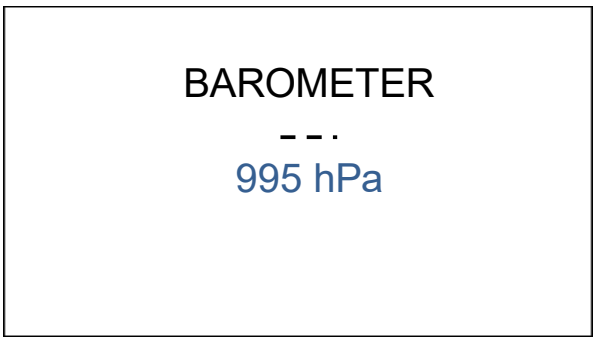
If the tolerances are exceeded, it is advisable to check that the active pad is clean and that the membrane is not damaged. If the pad is damaged, replace it. Please refer to Chapter 8. OPTOD sensor Maintenance for more information.

To validate the calibration and complete this procedure, press the OK button.

If the calibration is rejected, press the Escape (ESC) key.

Barometer

The atmospheric pressure parameter is used in a compensation calculation to automatically calculate the concentration of dissolved oxygen in the water in mg/L. It is therefore important to be able to check this measurement, which is taken by the pressure sensor integrated into the NEON unit, and to recalibrate this parameter in the event of drift.



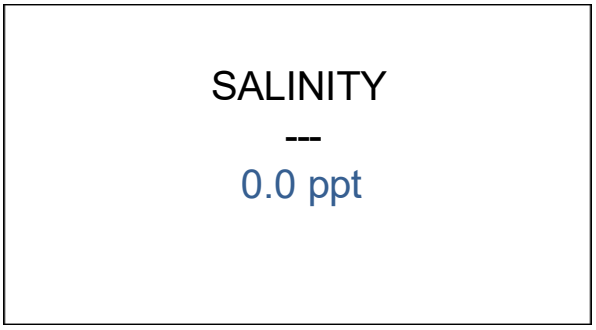
The atmospheric pressure can be adjusted within the range 450-1200 hPa.

Adjust the atmospheric pressure measurement using the Up/Down arrows (the text will turn white) and confirm with the "OK" button (the text will then turn green).

To return to the previous screen, press Escape (ESC).

Salinity

The salinity parameter is used in a compensation calculation to automatically calculate the concentration of Dissolved oxygen in water in mg/L. It is therefore important to be able to enter the salinity value.

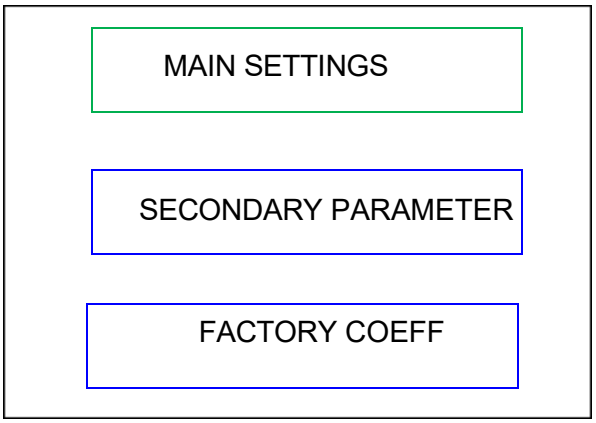


By default, the salinity value is set to 0.0 ppt and can be configured between 0.0 and 70.0 ppt.

To adjust the desired value, use the Up/Down arrows (the text will turn white) and confirm with the OK key (the text will then turn green) and then Escape (ESC) to return to the main screen.

6.3.3.2 PHEHT sensor calibration.

The calibration menu allows you to calibrate the sensor connected to the NEON portable device (MAIN SETTINGS menu) for the pH and Redox Potential parameters and restore the factory calibration coefficients (FACTORY COEFFICIENTS menu).



To access the desired menu, move the cursor using the up and down arrows and confirm your selection by pressing the "OK" button. To return to the previous screen, press the "ESC" button.

Main parameter pH

This menu provides access to the 3-point calibration steps using standard solutions with pH 7, pH 4 and pH 9.

Calibration of the first point: STEP 1 at pH 7

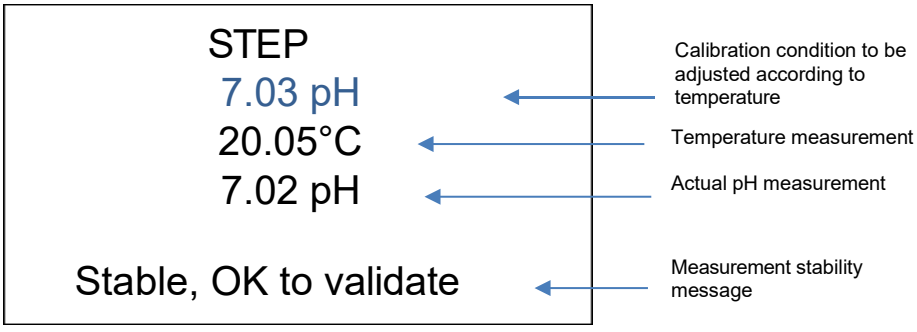
Immerse the sensor head in a pH 7 standard solution, wait for the measurement to stabilise and for the Temperature stabilisation. Once the temperature has stabilised, note down the value and refer to the table showing pH values according to temperature (see label on the back of the bottle or table below).

The actual value of the pH buffer solution must then be adjusted according to the measured temperature.

PH Standard 7.01 at 25°C	°C	°F	pH
	0	32	7.1
	5	41	7.10
	10	50	7.07
	15	59	7.04
	20	68	7.03
	25	77	7.01
	30	86	7.00
	35	95	6.99
	40	104	6.98
	45	113	6.98

If the buffer solution temperature is 20 °C, the standard value must be adjusted to 7.03 pH.

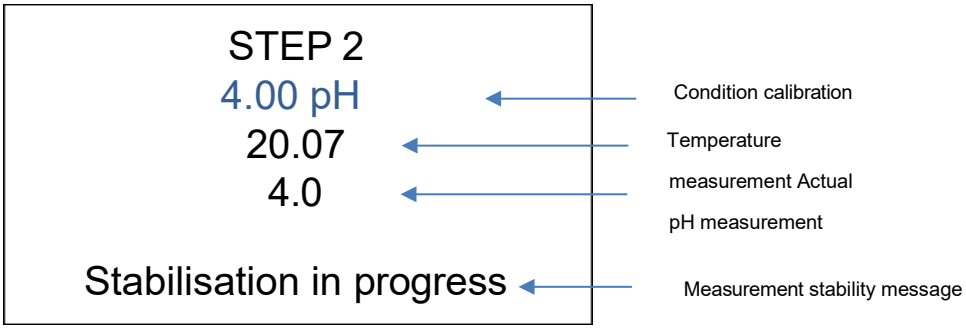
To adjust this value, use the Up and Down arrows.



You can then confirm the calibration step by pressing OK.

Calibration of the second point: STEP 2 at pH 4

After rinsing and wiping the sensor, immerse the sensor head in a pH 4 solution.
As soon as the temperature stabilises, note its value and refer to the pH value variation table in
Depending on temperature (see label on the back of the bottle or the table below).



The actual value of the pH buffer solution must then be adjusted according to the measured temperature.

PH Standard 4.01 at 25°C	°C	°F	pH
	0	32	4.01
	5	41	4.00
	10	50	4.00
	15	59	4.00
	20	68	4.00
	25	77	4.01
	30	86	4.02
	35	95	4.03
	40	104	4.04
	45	113	4.05

If the temperature of the buffer solution is 20 °C, the standard value must be adjusted to 4.00 pH.

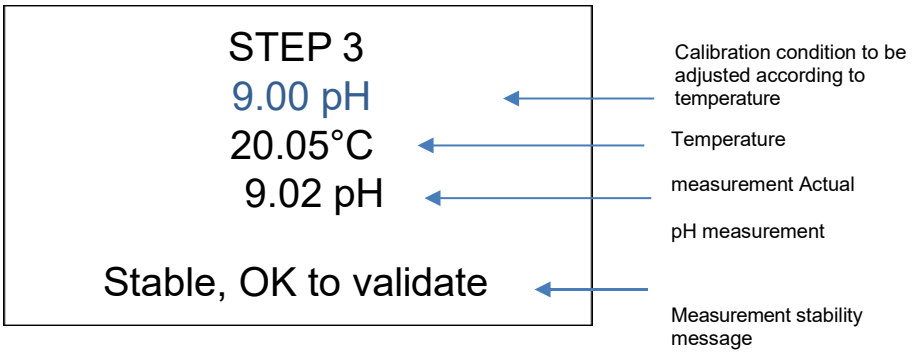
To adjust this value, use the Up and Down arrows.

You can then confirm the calibration step by pressing OK.

Calibration of the second point: STEP 3 at pH 9

After rinsing and drying the sensor, immerse the sensor head in a pH 9 solution.
Once the temperature stabilises, note its value and refer to the table of pH value variations (see label on the back of the bottle or the table below).

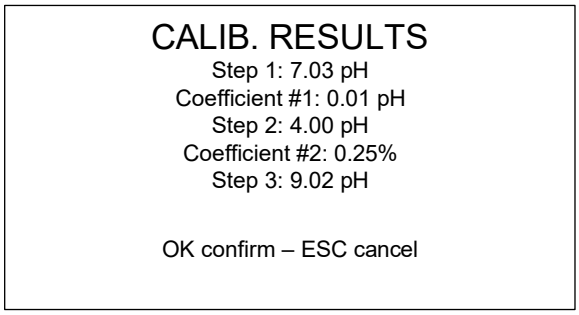
The actual value of the pH buffer solution must then be adjusted according to the measured temperature.



The calibration sequence can be interrupted at any time by pressing the Escape (ESC) key.

Calibration results:

After validating the calibration step, a screen appears with the calibration results.



The acceptance tolerances for the calibration steps are: +/- 0.5% for the offset step.

If the tolerances are exceeded, it is advisable to check the cleanliness of the glass ball (pH measuring element) or even replace the sensor cartridge. Please refer to chapter 8 PHEHT sensor maintenance notice for more information.

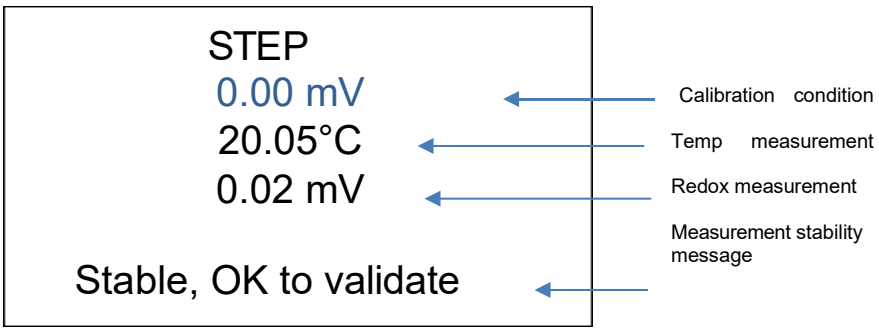
To confirm the calibration and complete this procedure, press the OK button. If the calibration is rejected, press the Escape (ESC) button.

Secondary parameter: Redox.

To access the calibration menu for the redox potential parameter, select the following in the calibration menu:
SECONDARY PARAMETER

Calibration OFFSET: Electronics

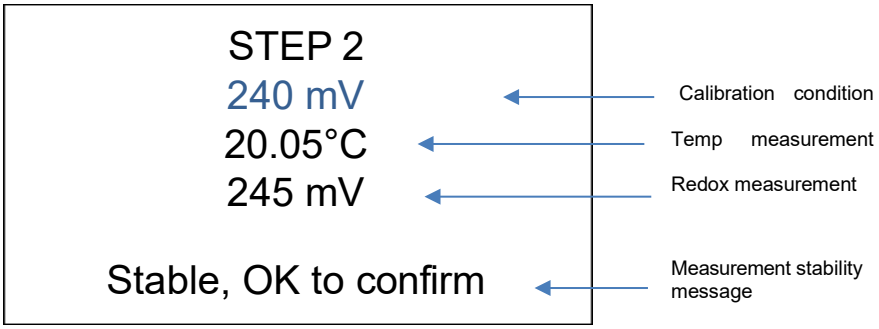
This step consists of setting the electronic zero for the Redox Potential parameter. Place the dry sensor in the air and wait for the measurement to stabilise.



When the measurement has stabilised, confirm the calibration step by pressing OK.

Slope calibration: 240 mV buffer solution

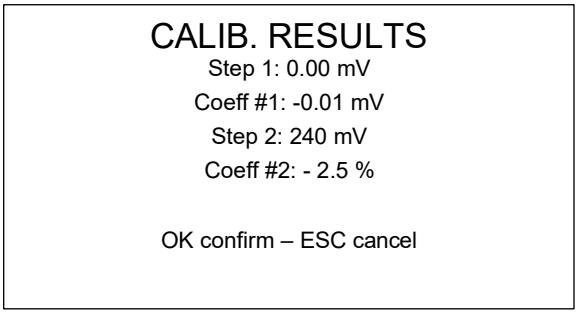
To calibrate the second point, immerse the sensor head in the 240 mV buffer solution and wait for the measurement stabilises. Please note that the platinum pellet on the sensor cartridge must be immersed in the buffer solution.



When the measurement has stabilised, confirm the calibration step by pressing OK.

Calibration results:

At the end of a calibration step, a screen displaying the calibration results appears.



The acceptance tolerances for the calibration steps are:

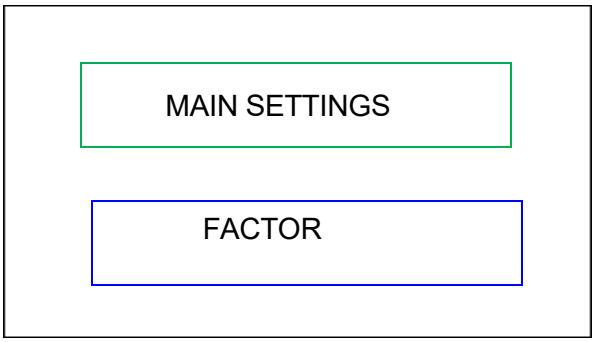
+/- 10 mV for the offset step,
+/- 30% for the slope step.

If the tolerances are exceeded, it is advisable to check that the plate is clean or even to change the sensor cartridge. Please refer to chapter 8. PHEHT SENSOR MAINTENANCE for more information.

To validate the calibration and finalise this procedure, press the OK button. If the calibration is rejected, press the Escape (ESC) button.

6.3.3.3 C4E sensor calibration.

The calibration menu allows you to calibrate the sensor connected to the NEON portable device (MAIN SETTINGS menu), for the Conductivity parameter and restore the factory calibration coefficients (FACTORY COEFF menu).

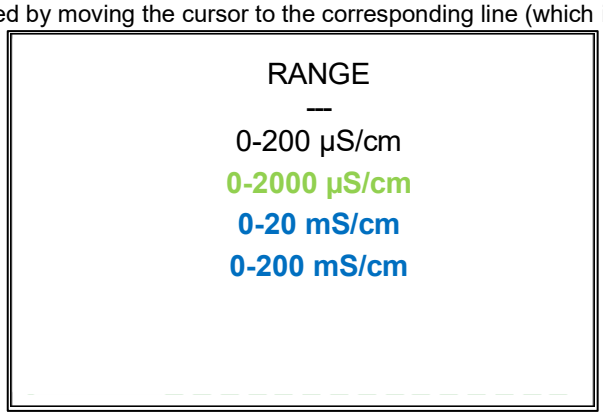


To access the desired menu, move the cursor using the up and down arrows and confirm your selection by pressing the "OK" button. To return to the previous screen, press the "ESC" button.

Main parameter Conductivity

This menu provides access to the calibration of the Conductivity parameter, which can be performed on 4 ranges [0-200 µS/cm, 0-2000 µS/cm, 0-20 mS/cm and 0-200 mS/cm]. Each range can be calibrated independently of the others.
µS/cm, 0-2000 µS/cm, 0-20 mS/cm and 0-200 mS/cm). Each range can be calibrated independently of the others.

First select the range to be calibrated by moving the cursor to the corresponding line (which is displayed in white).



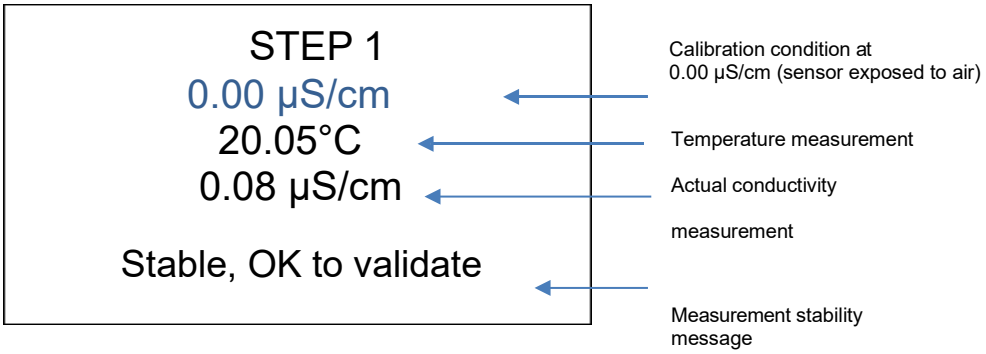
A complete calibration process is carried out in two steps:

Step 1 (offset): the sensor is positioned in the air and used to set the value 0 µS/cm;
Step 2 (slope): the sensor is immersed in a buffer solution whose value corresponds to the calibrated range. The table below provides examples of standard solutions for the measurement range:

Measuring range	**Concentration of standard solutions**
0.0-200.0 µS/cm	84.0 µS/cm
0 -2,000 µS/cm	1.413 µS/cm
0.00 - 20.00 mS/cm	12,880 µS/cm
0.0 – 200.0 mS/cm	111.8 mS/cm or 53.00 mS/cm for measurements in sea water

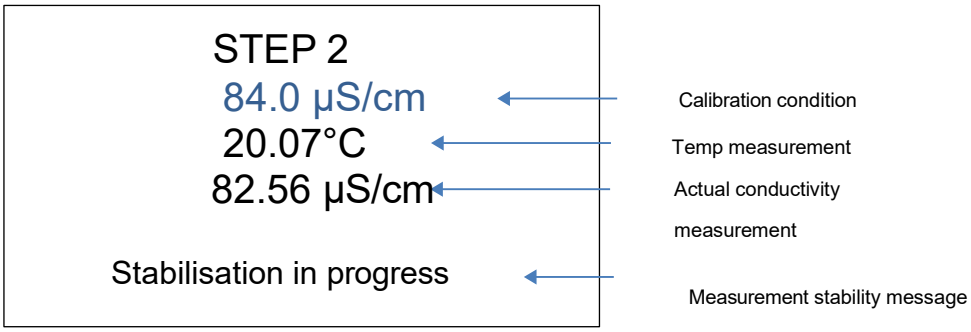
Calibration of the 0-200 µS/cm range: Step 1.

Position the C4E sensor, clean and dry (see the C4E sensor cleaning section in Chapter 8.1), in the air and wait for the signal to stabilise at 0 µS/cm.
As soon as the measurement stabilises at 0 µS/cm, confirm the calibration step using the OK button.



Calibration of the 0-200 µS/cm range: Step 2 with a buffer solution.

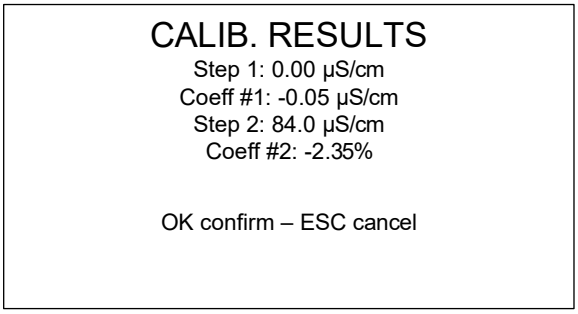
Immerse the sensor in a buffer solution at 84 µS/cm and wait for the measurement to stabilise.



Confirm the second calibration step by pressing OK.

Calibration results:

After validating the calibration step, a screen appears with the calibration results.



The acceptance tolerances for the calibration steps are:

+/- 10 µS/cm for the offset stage,

+/- 30% for the slope.

If the tolerances are exceeded, it is advisable to check the cleanliness of the measuring electrodes (conductivity measuring element). Please refer to chapter 8. C4E SENSOR MAINTENANCE for more information.

To validate the calibration and complete this procedure, press the OK button. If the calibration is rejected, press the Escape (ESC) button.

Calibration of the 0-2000 µS/cm range:

To calibrate the 0-2000 µS/cm range, repeat the previous steps (Step 1 Offset with the sensor exposed to air and Step 2 (slope) with the buffer solution at 1413 µS/cm).

For this measurement range, the acceptance tolerances are:
+/- 30 µS/cm for the offset and +/- 30% for the slope.

Calibration of the 0-20 mS/cm range:

To calibrate the 0-20 mS/cm range, repeat the previous steps (Step 1 Offset with the sensor in air and Step 2 (slope) with the buffer solution at 12,880 µS/cm).

For this measurement range, the acceptance tolerances are:
+/- 1000 µS/cm for the offset and +/- 30% for the slope.

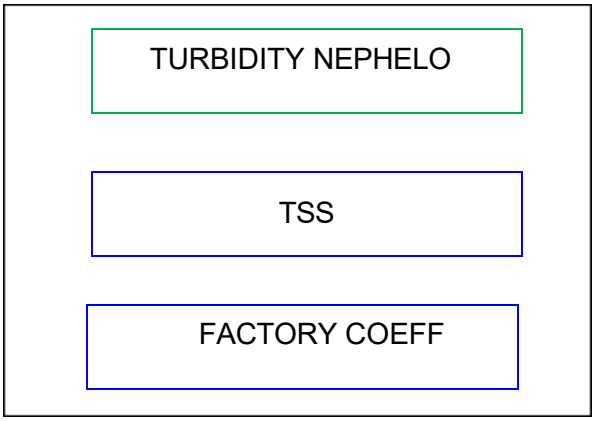
Calibration of the 0-200 mS/cm range:

To calibrate the 0-200 mS/cm range, repeat the previous steps (Step 1 Offset with the sensor in air and Step 2 (slope) with the buffer solution at 111.8 mS/cm or 53 mS/cm in the case of a seawater application).

For this measurement range, the acceptance tolerances are:
+/- 100 mS/cm for the offset and +/- 30% for the slope.

6.3.3.4 NTU sensor calibration.

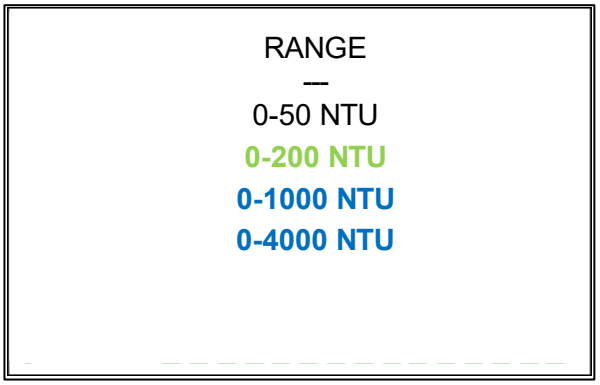
The calibration menu allows you to calibrate the sensor connected to the NEON portable device (MAIN SETTINGS menu) for the turbidity parameter and restore the factory calibration coefficients (FACTORY COEFF menu).



To access the desired menu, move the cursor using the up and down arrows and confirm your selection by pressing the "OK" key. To return to the previous screen, press the "ESC" key.

Main parameter Turbidity

This menu provides access to the Turbidity parameter calibration, which can be performed on 4 ranges [0-50 NTU, 0-200 NTU, 0-1000 NTU and 0-4000 NTU). Each range can be calibrated independently of the others.



First select the range to be calibrated by moving the cursor to the corresponding line (which is displayed in white).

A complete calibration process is carried out in two steps:

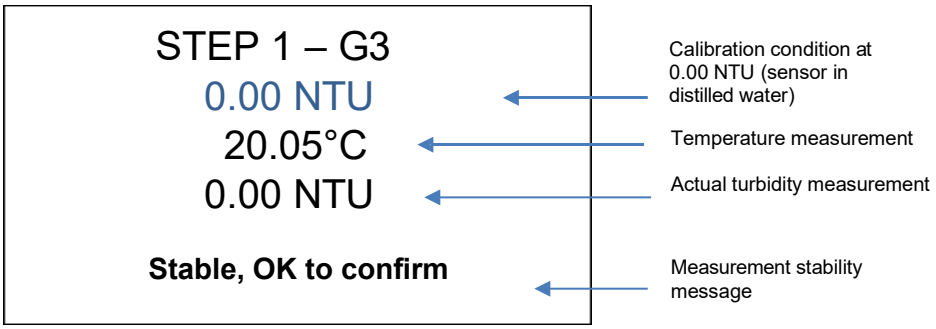
Stage 1 (offset): the sensor is immersed in a bottle containing distilled water and is used to set the value 0 - NTU;
Step 2 (slope): the sensor is immersed in a FORMAZINE solution whose value corresponds to the calibrated range.

The table below provides examples of standard solutions for the measurement range:

Measuring range	Formazine solution
0.0-50.0 NTU	25 NTU
0.0-200.0 NTU	100 NTU
0-1000 NTU	500 NTU
0-4000 NTU	2000 NTU

Calibration of the 0-1000 NTU range: Step 1.

Position the NTU sensor, clean and dry (see the NTU sensor cleaning section in Chapter 8.1), in an opaque container filled with distilled water to simulate 0 NTU.
Once the measurement stabilises at 0 NTU, confirm the calibration step using the OK button.

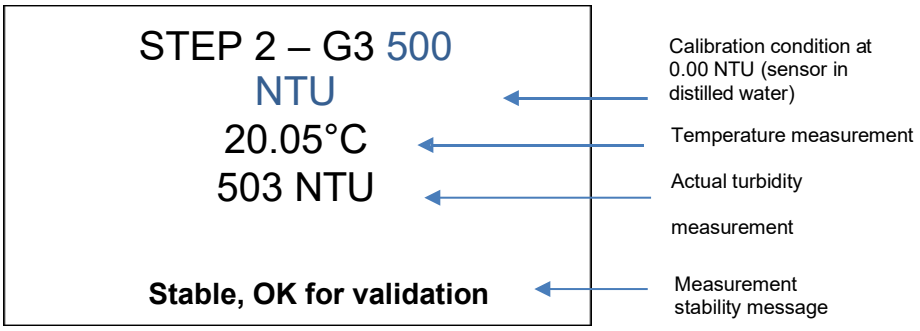


Calibration of the 0-1000 NTU range: Step 2 with a Formazine solution.

To calibrate the 0-1000 NTU range, repeat the previous steps Step 1 Offset with the sensor in distilled water and Step 2 (slope) with a 500 NTU Formazine solution.

To prepare solutions, take a 200 ml bottle. Add the required volume of Formazine at 4000 NTU (25 ml for a 500 NTU solution) and fill to 200 ml with distilled water.

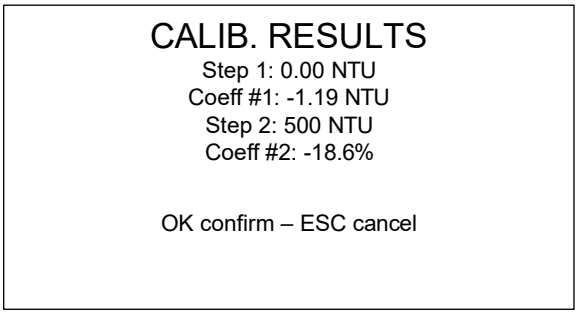
Formazine solutions at concentrations below 1000 NTU deteriorate rapidly, so do not store a solution for several days.



Confirm the second calibration step using the OK button.

Calibration results:

After validating the calibration step, a screen appears with the calibration results.



The acceptance tolerances for the calibration steps for the 0-1000 NTU range are:

+/- 25 NTU for the offset step,
+/- 30% for the slope.

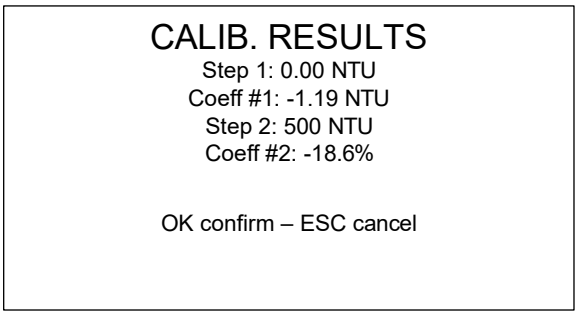
If the tolerances are exceeded, it is advisable to check the cleanliness of the measuring electrodes (measuring element for turbidity). Please refer to chapter 8. NTU SENSOR MAINTENANCE for more information.

To confirm the calibration and complete this procedure, press the OK button. If the

Calibration is rejected, press the Escape (ESC) button.

Calibration results:

After validating the calibration step, a screen appears with the calibration results.



The acceptance tolerances for the calibration steps for the 0-1000 NTU range are:

+/- 25 NTU for the offset step,
+/- 30% for the slope.

If the tolerances are exceeded, it is advisable to check the cleanliness of the measuring electrodes (measuring element for turbidity). Please refer to chapter 8. NTU SENSOR MAINTENANCE for more information.

To confirm the calibration and complete this procedure, press the OK button. If the

calibration is rejected, press the Escape (ESC) button.

Calibration of the 0-50 NTU range:

To calibrate the 0-50 NTU range, repeat the previous steps: Step 1 Offset with the sensor in distilled water and Step 2 (slope) with a Formazine solution at 25 NTU.

Immerse the sensor in a 50 NTU Formazine solution and wait for the measurement to stabilise.

To prepare solutions, take a 200 ml bottle. Add the required volume of Formazine at 4000 NTU (1.25 ml for a solution at 25 NTU) and fill to 200 ml with distilled water.

Formazine solutions at concentrations below 1000 NTU deteriorate rapidly, so do not store a solution for several days.
Confirm the second calibration step by pressing OK.

For this measurement range, the acceptance tolerances are:
+/- 5 NTU for the offset and +/- 30% for the slope.

Calibration of the 0-200 NTU range:

To calibrate the 0-200 NTU range, repeat the previous steps: Step 1 Offset with the sensor in distilled water and Step 2 (slope) with a 100 NTU Formazine solution.

To prepare solutions, take a 200 ml bottle. Add the required volume of Formazine at 4000 NTU (5 ml for a 100 NTU solution) and fill to 200 ml with distilled water.

Formazine solutions at concentrations below 1000 NTU deteriorate rapidly, so do not store a solution for several days.

For this measurement range, the acceptance tolerances are:
+/- 10 NTU for offset and +/- 30% for slope.

Calibration of the 0-4000 NTU range:

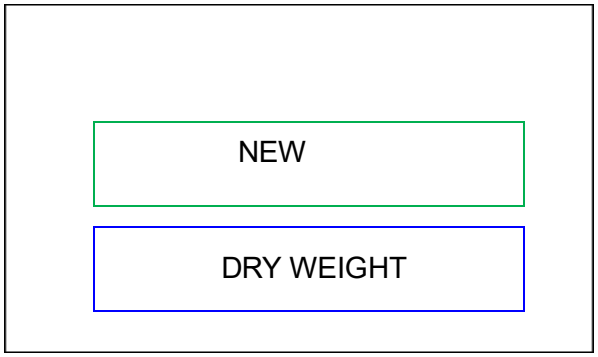
To calibrate the 0-4000 NTU range, repeat the previous steps Step 1 Offset with the sensor in water distilled and Step 2 (slope) with a Formazine solution at 2000 NTU.

To prepare solutions, take a 200 ml bottle. Add the required volume of Formazine at 4000 NTU (100 ml for a solution at 2000 NTU) and fill to 200 ml with distilled water.

For this measurement range, the acceptance tolerances are:
+/- 50 NTU for the offset and +/- 30% for the slope.

Turbidity parameter in mg/l.

The Turbidity parameter in mg/l is said to be calibrated on a real sample using a deferred calibration mode requiring a sample to be taken and analysed in a laboratory.



To access the calibration menu for the Turbidity parameter in mg/L, select the NEW menu. A complete calibration

process is carried out in two steps:

Step 1 (offset): the sensor is immersed in a bottle containing distilled water and allows the value 0 NTU.

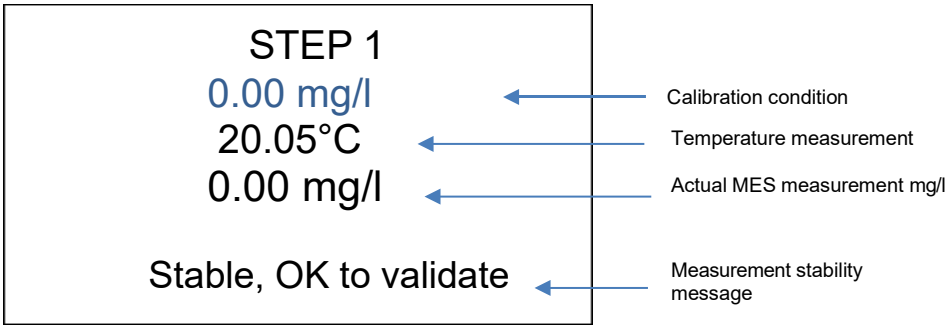
Step 2 (slope): the sensor is immersed in a real sample, which must then be taken to the laboratory to analyse the concentration in mg/l.

The final step is to enter and validate the actual content in mg/l.

Offset calibration:

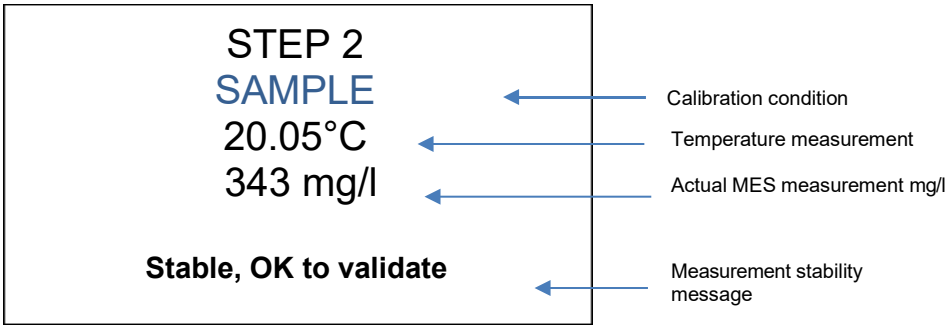
Position the NTU sensor, clean and dry (see the NTU sensor cleaning section in Chapter 8.1), in an opaque container filled with distilled water to simulate 0 mg/l.

Once the measurement stabilises at 0 mg/l, confirm the calibration step using the OK button.



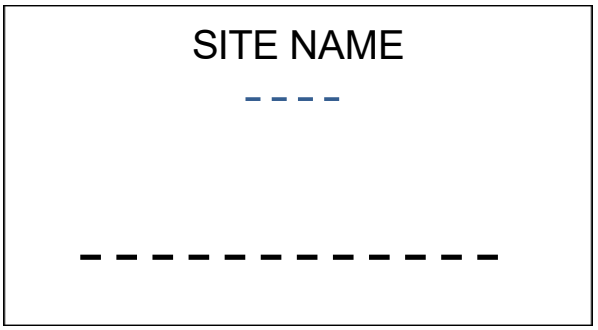
Slope calibration:

Step 1: Take a water sample and immerse the sensor in this water.

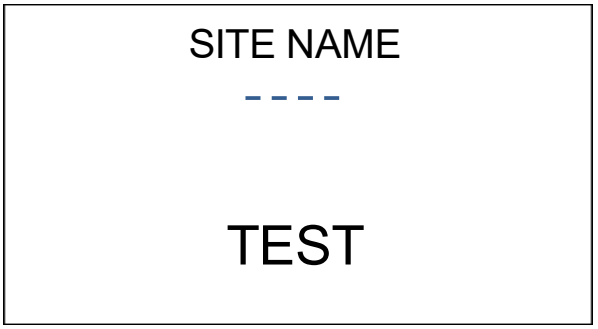


Once the measurement has stabilised, confirm by pressing OK.

Step 2: After validating the value in mg/l, a screen appears where you can enter a file name.

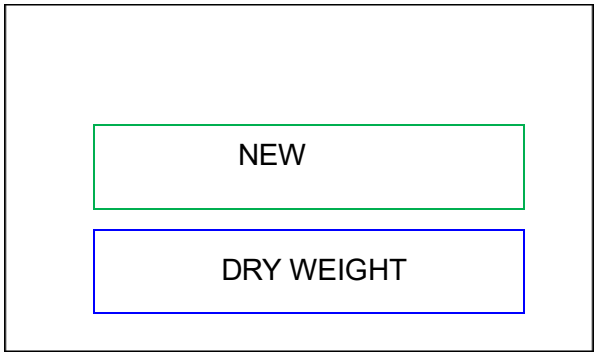


Use the up/down arrows to scroll through the letters/numbers and the right arrow to change the cursor position.

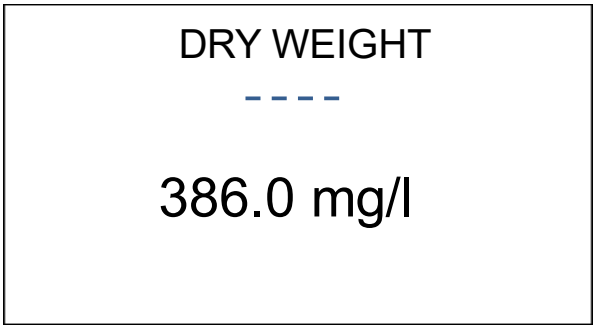


To confirm the name of your file, press OK.

Step 3: Once you have received the laboratory measurement result, select the Turbidity calibration menu in mg/L again, then enter the DRY WEIGHT menu.
Select the file name corresponding to the desired point and confirm with the ENTER key.

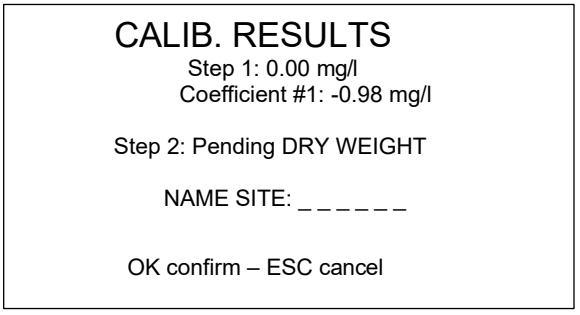


To change the DRY WEIGHT value, use the Up/Down arrows and confirm with the OK button.



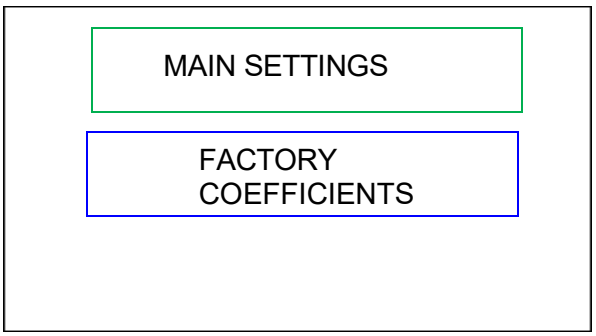
Calibration result:

After validating the calibration step, a screen appears with the calibration results.



6.3.3.5 VB5 sensor calibration.

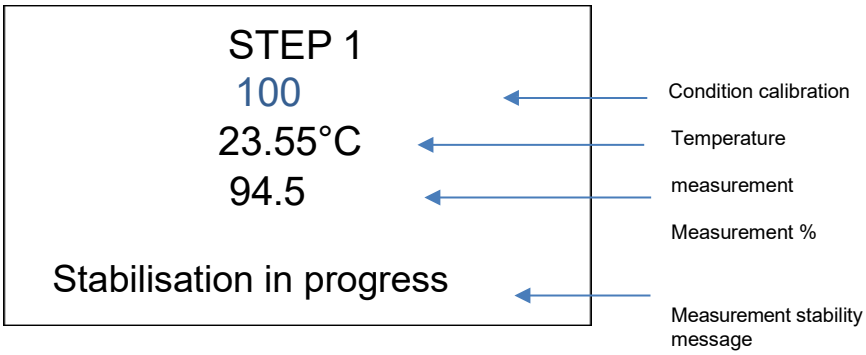
The calibration menu allows you to calibrate the sensor connected to the NEON portable device (MAIN SETTINGS menu), i.e. the Sludge Layer parameter, and restore the factory calibration coefficients (FACTORY COEFFICIENTS menu).



To access the desired menu, move the cursor using the up and down arrows and confirm your selection by pressing the "OK" button. To return to the previous screen, press the "ESC" button.

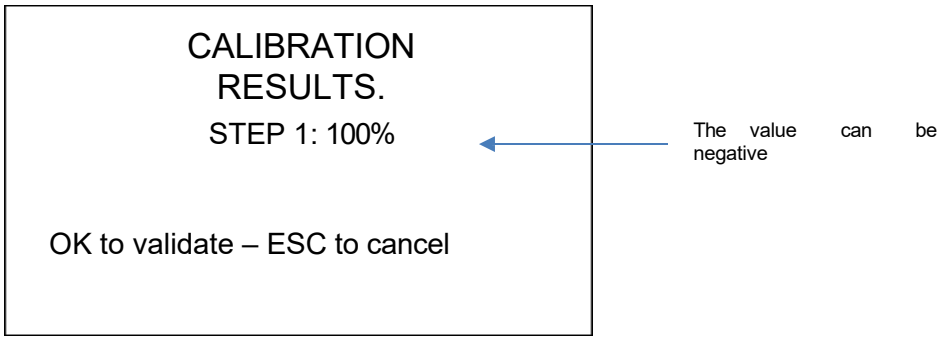
Main parameter

This menu allows you to calibrate the Sludge setting at a single point (100% in clear water).
Insert the sensor into a container filled with tap water, taking care not to trap any bubbles in the slit containing the optics (measurement errors).
Wait for the sensor temperature to stabilise at the water temperature.



Calibration results:

At the end of a calibration step, a screen displaying the calibration results appears.

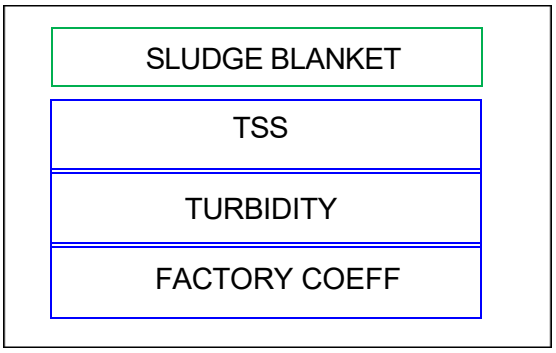


To validate the calibration and finalise this procedure, press the OK button.

If the calibration is rejected, press the Escape (ESC) key.

6.3.3.6 MES5 sensor calibration.

The calibration menu allows you to calibrate the sensor connected to the NEON portable device (MAIN SETTINGS menu), i.e. the Sludge parameter, and restore the factory calibration coefficients (FACTORY COEFFICIENTS menu).



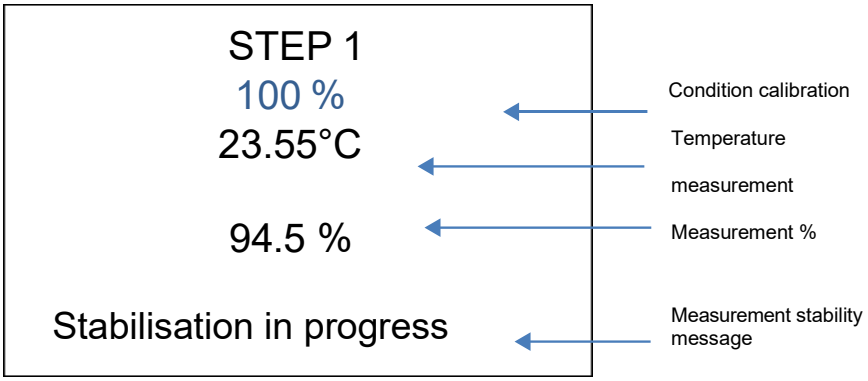
To access the desired menu, move the cursor using the up and down arrows and confirm your selection by pressing the "OK" button. To return to the previous screen, press the "ESC" button.

Sludge parameter

This menu allows you to calibrate the Sludge parameter at a single point (100% in clear water).

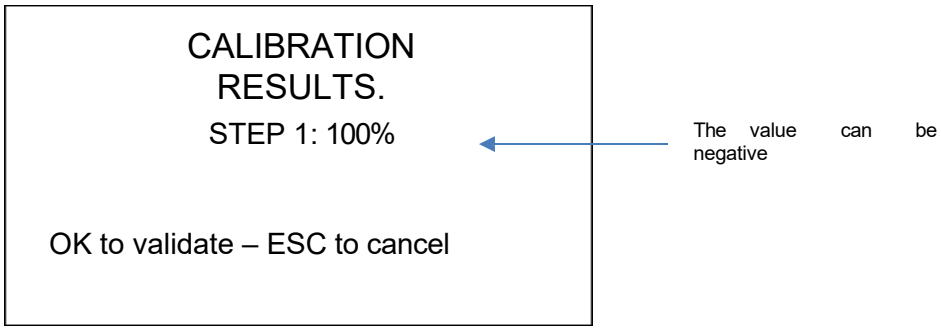
Insert the sensor into a container filled with tap water, taking care not to trap any bubbles in the slit containing the optics (measurement errors).

Wait for the sensor temperature to stabilise at the water temperature.



Calibration results:

At the end of a calibration step, a screen displaying the calibration results appears.

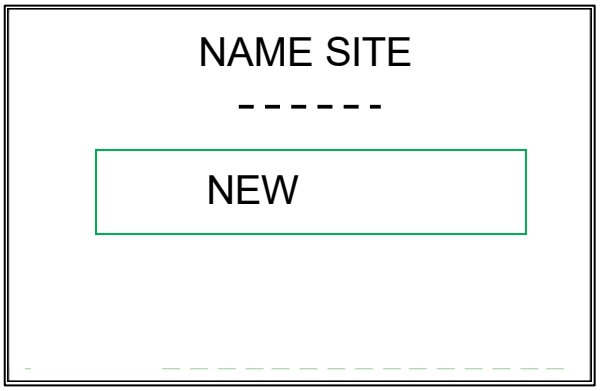


To validate the calibration and finalise this procedure, press the OK button.

If the calibration is rejected, press the Escape (ESC) key.

MES parameter in g/l

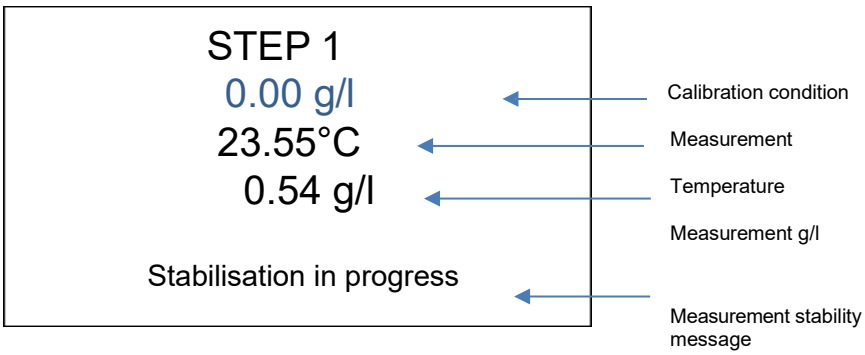
The Turbidity parameter in g/l must be calibrated on a real sample using a deferred calibration mode requiring sampling and laboratory analysis



To access the calibration menu for the Turbidity parameter in g/L, select the NEW menu. A complete calibration process is carried out in two steps:
Step 1 (offset): the sensor is immersed in a bottle containing distilled water to set the value to 0 g/l.
Step 2 (slope): the sensor is immersed in a real sample, which must then be taken to the laboratory to analyse the concentration in g/L.
The final step consists of entering and validating the actual content in g/l.

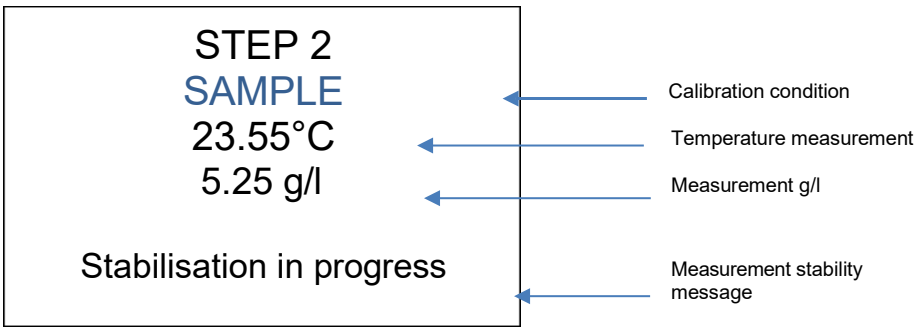
Offset calibration:

Position the MES sensor, clean and dry (see the MES sensor cleaning section in Chapter 8.1), in an opaque container filled with distilled water to simulate 0 g/l.
As soon as the measurement stabilises at 0 g/l, confirm the calibration step using the OK button.



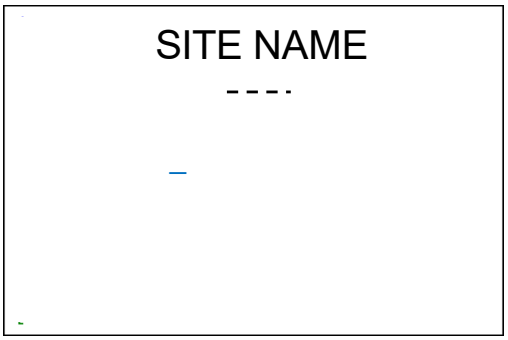
Slope calibration:

Step 1: Take a water sample and immerse the sensor in the water.

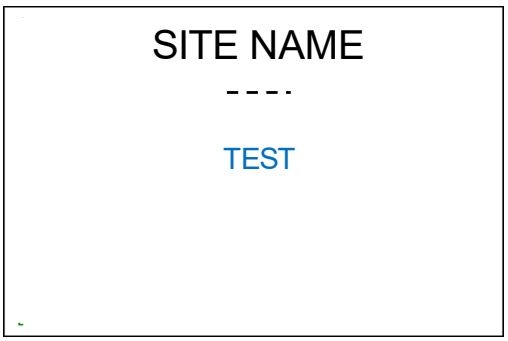


Once the measurement has stabilised, confirm with the OK button.

Step 2: after validating the value in mg/l, a screen appears with the option to enter a file name.

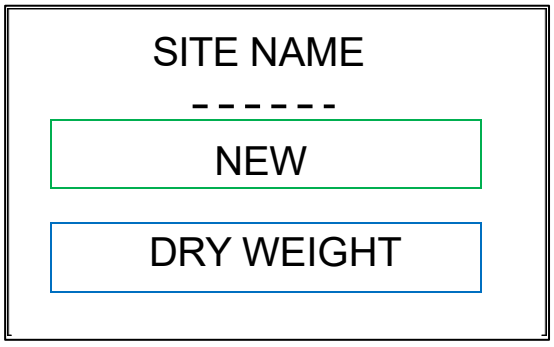


Use the up/down arrows to scroll through the letters/numbers and the right arrow to change the cursor position.



To confirm the name of your file, press OK.

Step 3: Once you have received the laboratory measurement results, select the MES calibration menu in g/L again and enter the DRY WEIGHT menu.
Select the name of the file corresponding to the desired point and confirm by pressing ENTER.



To change the DRY WEIGHT value, use the Up/Down arrows and confirm with the OK button.

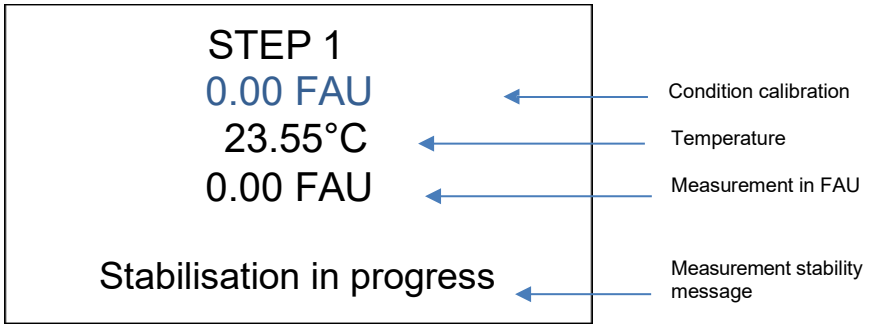
Turbidity parameter in FAU.

This menu provides access to the Turbidity parameter calibration.
A complete calibration process is carried out in two steps:

Step 1 (offset): the sensor is immersed in a bottle containing distilled water and allows the value 0 NTU;
Step 2 (slope): the sensor is immersed in a FORMAZINE solution whose value corresponds to the calibrated range.

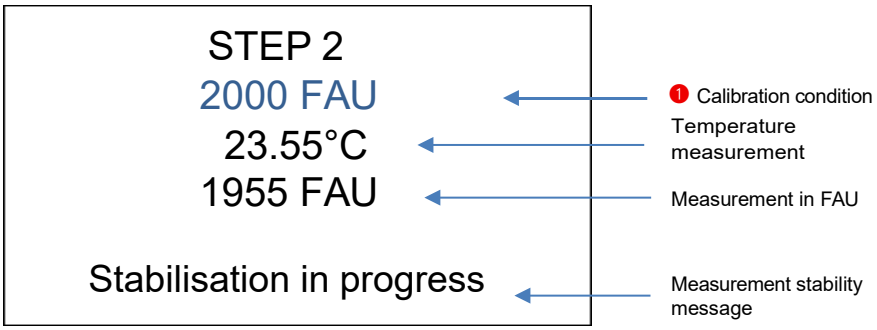
Offset calibration: Step 1.

Position the clean and dry MES5 sensor (see the MES5 sensor cleaning section in Chapter 8.1) in an opaque container filled with distilled water to simulate a 0 FAU.
As soon as the measurement stabilises at 0 FAU, confirm the calibration step using the OK button.



Slope calibration: Step 2 with a Formazine solution.

To calibrate the 0-4000 NTU range, prepare a Formazine solution at 2000 NTU. Take a 200 ml bottle add the required volume of Formazine at 4000 NTU (100 ml for a 2000 NTU solution) and fill to 200 ml with distilled water.



It is possible to calibrate the slope to another turbidity value depending on the setpoint measured in the medium. Formazine solutions at concentrations below 1000 NTU deteriorate rapidly, so do not store a solution for several days.

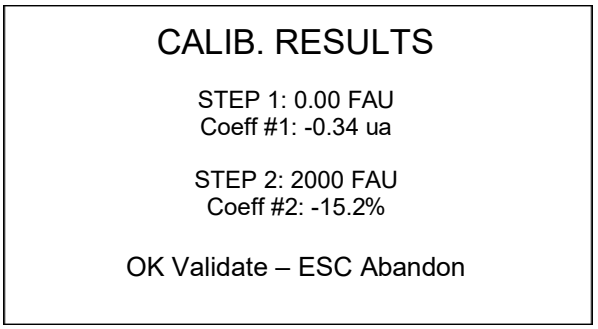
Below are some examples of how to prepare a Formazine solution:
In a 200 ml bottle, pour X volume of Formazine solution at 4000 NTU and top up to 200 ml with distilled water.

Formazine solution value	Formazine volume at 4000 NTU
500 NTU	25 ml
1000 NTU	50 ml
2000 NTU	100 ml
3000 NTU	150 ml

To change the calibration target value (labelled "❶ Calibration condition"), press the Up/Down keys on the NEON handheld keyboard.

Calibration results:

After validating the calibration step, a screen appears with the calibration results.



6.3.3.7 Factory coefficients

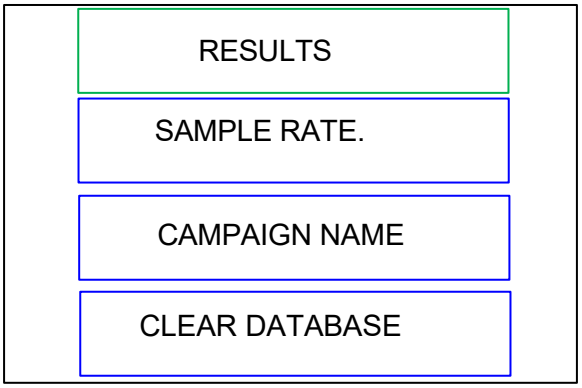
In the event of incorrect handling during calibration or functional verification of the sensor, possible to use the factory calibration coefficients to restore the sensor to its original coefficients.

To confirm the transmission of the factory settings to the sensor, press OK and then Escape (ESC) to return to the previous screen.

6.3.4 Recording menu

This menu allows you to view the data recorded in the NEON portable device, set the recording frequency, configure file names and delete recorded data.

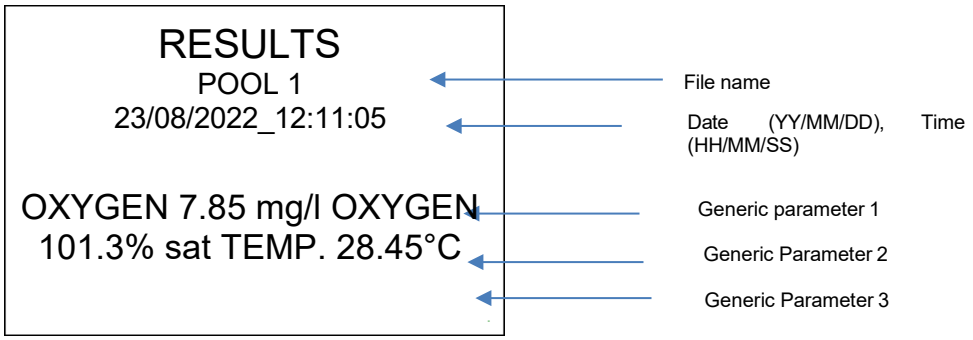
Note: please note that activating the recording function will affect the battery life.
Remember to stop recording data before turning off your NEON.



To select an option, use the Up/Down arrows and confirm with the OK button.

6.3.4.1 RESULTS

This menu allows you to view the data recorded in the NEON portable device.



To scroll through the records, use the Down (previous record) and Up (next record) keys.
To return to the previous menu, press the Escape (ESC) key.

From the RECORDINGS menu, activate data transfer via Wi-Fi.

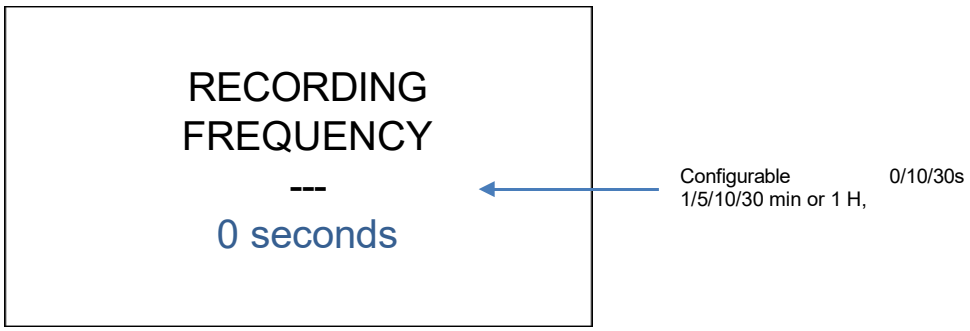
6.3.4.2 Recording Frequency

This menu allows you to configure a recording frequency for Automatic recording mode.

The NEON portable device can record data (30,000 data points) in two modes:

Mode 1: **Instant recording**. In this case, the user can trigger a single recording by pressing the OK button. The measurement frequency is then set to 0 seconds,

Mode 2: **Automatic recording** (with manual start). In this case, the measurement campaign is started by pressing the OK button and the NEON device will follow the frequency set in this menu. To stop recording, press the OK button again.

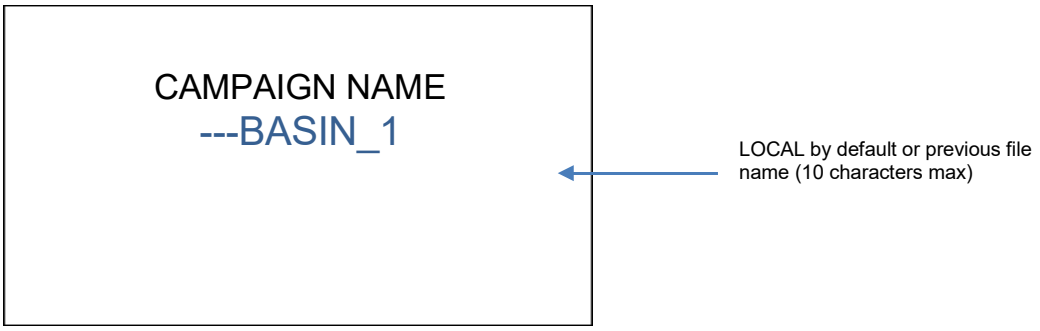


The default value is 0 seconds (displayed in blue), SINGLE recording mode, which is triggered by pressing the OK button on the main screen. When recording is activated on the main screen, the recording icon appears. REC

The frequency can be changed (to 10s/30s, 1/5/10/30 min or 1 H) using the Up and Down arrow keys Down buttons (the display will turn white). To confirm the desired frequency, press the OK button (the display will turn green). To return to the previous menu, select the Escape (ESC) button.

6.3.4.3 Campaign name

The name of the data recording file can contain up to 10 characters (option to select letters, numbers, a space and the character _).



Use the Up/Down arrows to scroll through the characters (white text) and press OK to confirm your choice (green text).
Available characters: 0 to 9, alphabet (A to Z), space and _.
Then press ESCAPE (ESC) to confirm the name and exit the menu.

You must create a different file name for each sensor to avoid conflicts.

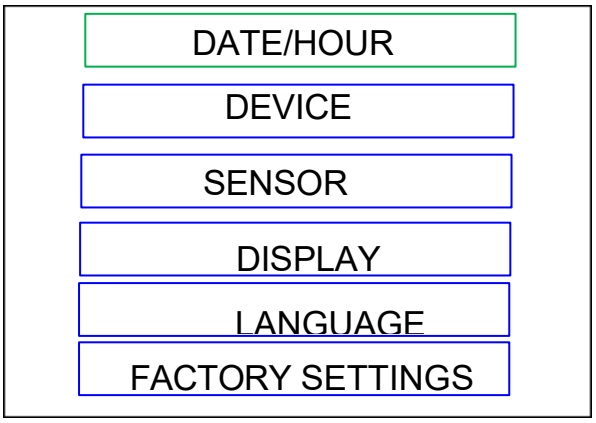
6.3.4.4 Delete data

To delete all data stored in the NEON portable device, press the OK button.
The text turns green and the message "Data deleted" appears.

To return to the previous screen, press Escape (ESC).

6.3.5 Preferences menu

The PREFERENCES menu allows you to set the date and time of the NEON device (useful for time-stamping stored data), view information about the software/electronics versions of the NEON portable device and the associated sensor, set the standby time and then the complete shutdown of the screen, choose the language and return to the initial configuration of the device.



6.3.5.1 Date and time

The date format is unique and cannot be changed: YYYY/MM/DD.

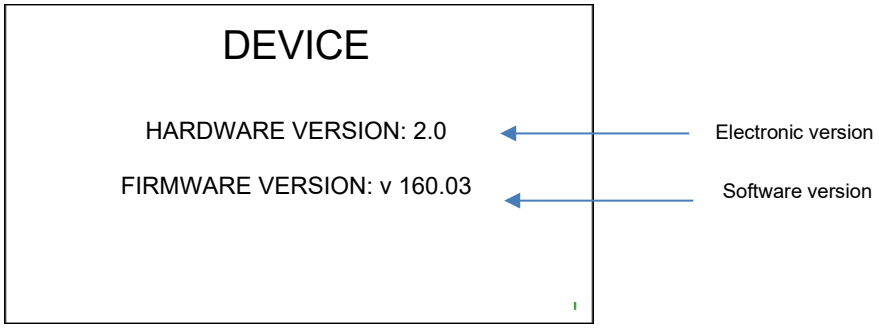
To change the date and time, place the cursor on the desired line and use the Up/Down arrows to change the digits from 0 to 9. The text will then turn white. Confirm your settings by pressing OK (the text will turn green).

To return to the previous screen, press the Escape (ESC) key.

6.3.5.2 DEVICE

In this section, you will find information about the software version and the electronic card version.

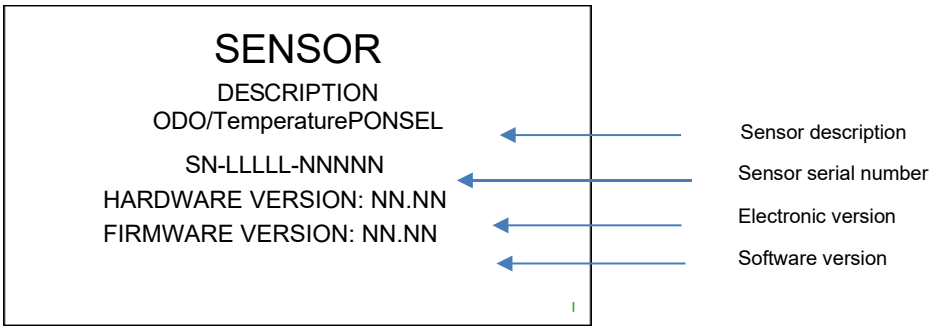
You may be asked for this information if you contact our Hotline.



To return to the previous screen, press the Escape (ESC) key.

6.3.5.3 SENSOR

This window displays information about the sensor connected to the NEON box: its description, serial number, electronic board version and software version.

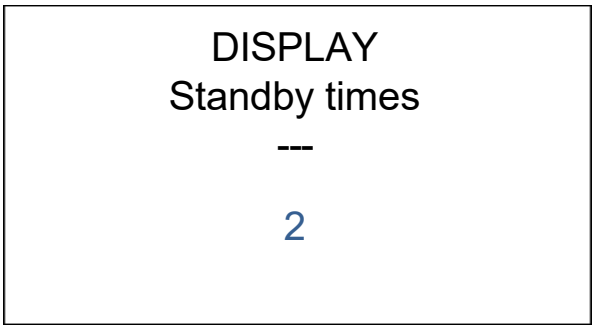


To return to the previous screen, press Escape (ESC).

6.3.5.4 DISPLAY

Using the screen configuration menu, you can configure the delay before the screen goes into standby if the keyboard is not used.

Please note: the screen activation time affects battery life.



By default, the delay before standby is activated is 2 minutes and can be set to the following times: 2, 5, 15 or 30 minutes.

To scroll through the timings, select the Up/Down keys (the text turns white) and confirm with the OK key (the text turns green).

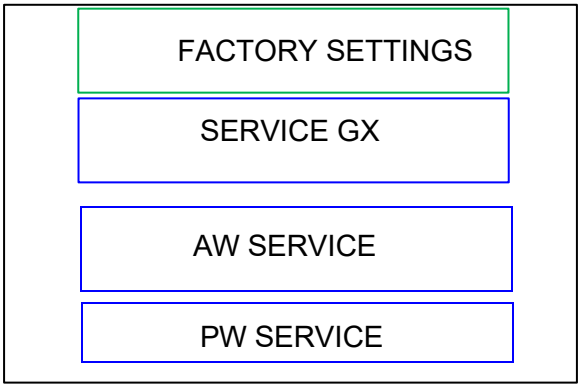
To exit this menu, press the Escape (ESC) key.

6.3.5.5 LANGUAGE

The NEON portable device offers 4 languages: English, French, Spanish and German.

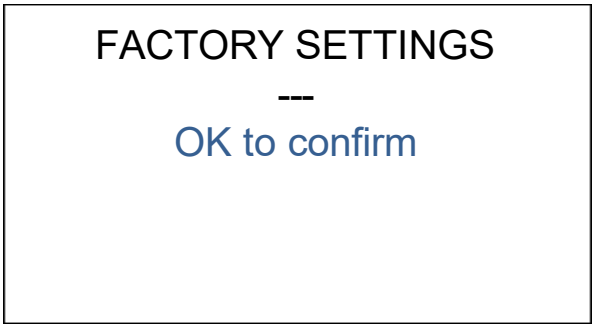
To select the language, use the Up/Down arrows (text turns white) and confirm with the OK button.
To return to the previous screen, press the Escape (ESC) key.

6.3.5.6 Factory settings



➢ **FACTORY SETTINGS**

With this menu, you can ERASE the device to restore the factory settings.



To confirm the reset, press the OK button.
This action will reset the factory settings for: the backlight intensity level, the standby delay (2 min), the default salinity value (0.00 ppt), the default atmospheric pressure value (1013 hPa), the name of the measurement campaign (LOCAL) and the language to English.

To exit this screen, press Escape (ESC).

➢ **SERVICE GX: intended for AQUALABO service**

➢ **AW SERVICE: for AQUALABO service**

➢ **SERVICE PW: for AQUALABO service**

7. DATA DOWNLOAD

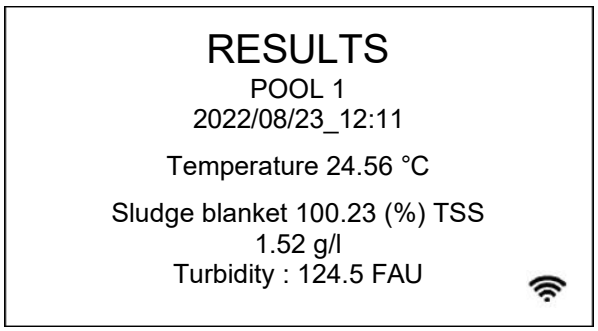
7.1 ACTIVATION AND CONNECTION

Note: please note that activating the WiFi function will affect the battery life.

To activate the connection to the NEON's embedded web page and retrieve the stored data, enter the menu displaying the data recorded in the NEON portable device: GENERAL MENU >> RECORDING >>RESULTS.

Then press the keys with the WiFi icons simultaneously (keys 4 and 8 in the photo in section 6.2.2 Navigation keyboard). Activation may take more than 5 seconds.

The WiFi activation icon ( ) appears at the bottom of the results display window.

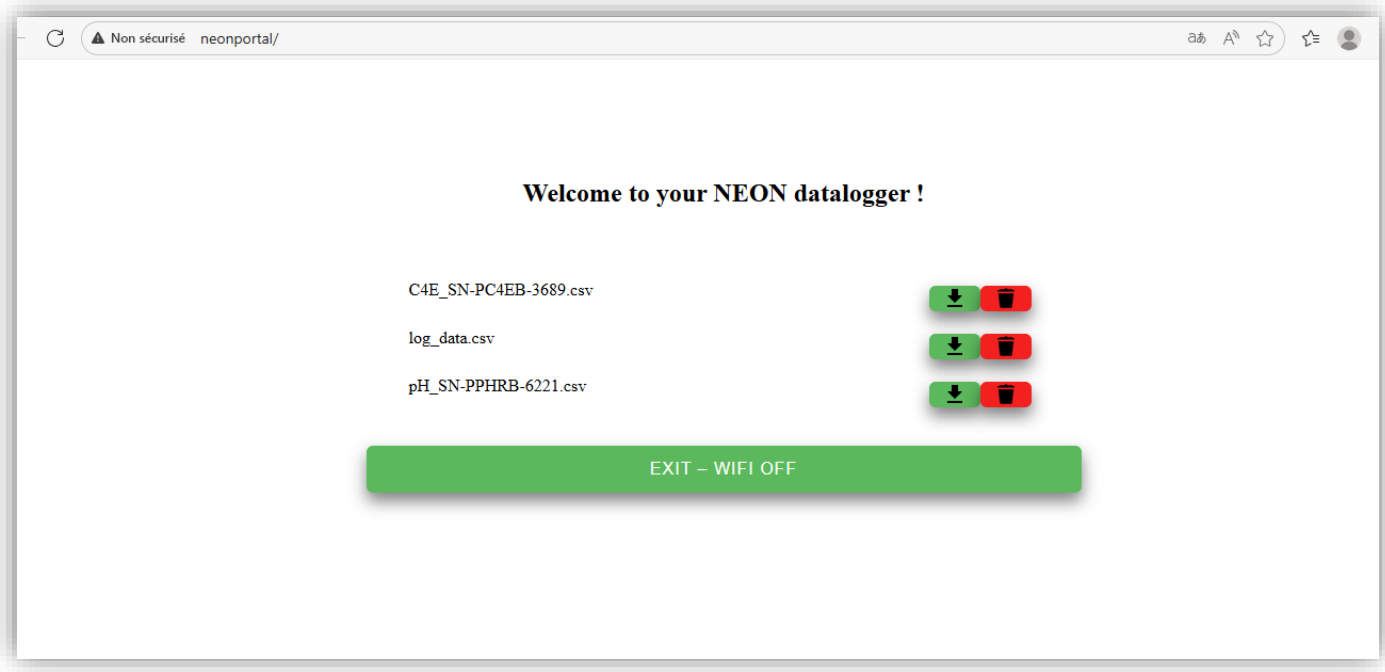


On the device that will receive the data files, in the menu displaying available Wi-Fi devices, select "**NeonPortal**".

The home page for retrieving data in CSV format will then open automatically.

7.2 HOME SCREEN

The home page for retrieving data in CSV format will then open automatically.



Depending on the web browser installed on your device, the process may not be automatic.
In this case, enter the following address in your browser: http://192.168.4.1/.

To activate data download, select the sensor line and click on the icon  .

The record file contains:

- Data measured by the sensor,
- The atmospheric pressure measured by the NEON equipment (in the case of the oxygen sensor),
- The salinity setpoint entered by the operator (in the case of the oxygen sensor),
- The temperature and humidity inside the NEON portable device.

To delete a data file, click on the icon 

7.3 DISCONNECT

To disconnect the NEON device from the computer, click on the "EXIT" tab.
The Wi-Fi icon at the bottom of the "RESULTS" menu will disappear.

Please note: remember to disconnect the WiFi function at the end of recording, as WiFi has an impact on the battery life of the NEON.

8. SENSOR MAINTENANCE

8.1 OPTOD SENSOR

The sensor must always be kept clean, especially in the area around the membrane and the optical part.
The presence of a biofilm on the membrane can cause measurement errors.

A dirty membrane should be cleaned with warm soapy water. A soft sponge can be used for cleaning (do not use an abrasive sponge).

If the sensor is taken out of service, it must be rinsed before being stored, and the cap must be fitted with a protective cover and a damp cotton pad to ensure that the sensor remains moist.

8.1.1 Cleaning

Rinse the sensor and membrane thoroughly with clean water.
If deposits such as biofilm or sludge persist, gently wipe the membrane with a soft cloth or absorbent paper.

Caution: For the Titanium version, when cleaning the sensor body, use acetone (do not use methyl alcohol, ethanol or methanol).

8.1.2 Replacing the active pad

If the pad is damaged or there are difficulties with the calibration process, the DODISK must be replaced.

1 Unscrew the DODISK (1), made of stainless steel or titanium, from the sensor body with the measuring electronics (3). Make sure that the sensor's optical window (2) is clean and free of water or moisture.

2 Remove the DODISK (stainless steel version ref. PF-CSO-C-00041, titanium version PF-ACC-C-00045) from the opaque protective film and screw it slowly onto the sensor body. When screwing, make sure that the optical window of the sensor is clean and dry.

3 Rehydrate the membrane for 12 hours and recalibrate the sensor at 2 points (section 5.2.1).

Caution: Only unscrew the strainer containing the DODISK if it needs to be replaced. Unscrewing too quickly could damage the sensitive membrane.

8.1.3 Storage

In order to keep the tablet active and ready for use, keep the membrane hydrated with the protective case and a damp absorbent pad (cotton).

After dry storage, rehydrate the membrane for 12 hours.

8.1.4 Accessories and consumables

Spare parts/Consumables	
PF-CSO-C-00041	Strainer with integrated DODISK for OPTOD Inox sensor
PF-CSO-C-00045	Strainer with integrated DODISK for OPTOD Titanium sensor
PF-ACC-C-00472	OPTOD protective strainer
ME-BOU-S-00021	Protective cap for OPTOD sensor
1SS012	Sodium sulphite 25g for calibration

8.2 PHEHT OR PHT SENSOR MAINTENANCE

The maintenance programme indicates the minimum intervals for regular maintenance tasks. Perform maintenance tasks more frequently for applications that cause electrode fouling. ***Note:*** *It is not necessary to disassemble the probe for maintenance or cleaning.*

• The sensor must always be clean, especially in the area around the pH glass bulb and the platinum disc (Redox measurement).
The presence of a biofilm on the pH bulb can cause measurement errors.
• A dirty bulb must be cleaned with warm soapy water.
• For redox measurements, clean the platinum disc using fine-grained abrasive paper to optimise redox potential measurements.
• If the sensor is taken out of service, it must be rinsed before storage, and the protective cap must be fitted with a moist absorbent surface (such as cotton) and storage solution (1SC009).

8.2.1 Cleaning

Rinse the sensor and glass bulb thoroughly with clean water.
For pH glass: if deposits such as biofilm or sludge persist, place the sensor in a cleaning solution (1SN004) for a few hours and rinse thoroughly before use.
Avoid using a soft cloth or absorbent paper as the glass ball is extremely vulnerable to friction.
For the redox part, clean the platinum disc with damp abrasive paper (type P1200 or P220) and rinse the electrode with clean water.

8.2.2 Cartridge replacement:

The measurement principle incorporates an Ag/AgCl reference electrode, used for pH and ORP measurements, immersed in a plasticised electrolyte saturated with KCl "PLASTOGEL" ®.

The "PLASTOGEL"® electrolyte communicates directly with the external environment without any capillary or porous interposition. There is therefore no risk of the reference closing or dismantling. Plastogel tends to become depleted in KCl depending on the use of the PHEHT sensor. When Plastogel is depleted, the probe no longer responds to pH variations and/or is very slow to stabilise. In this case, the cartridge must be replaced.

8.2.2.1Step 1: Removing the PHEHT probe.

Diagram 1: To remove the protective cap (d) from the PHEHT probe, hold the electronic part (a) in one hand and undo the clip (b) with the other hand **(**Diagram 2). Remove the clip (Diagram 3) while holding the electronic part (a) in one hand and remove the cartridge with the other hand (Diagram 4).

Diagram 1 Diagram 2 Diagram 3 Diagram 4

8.2.2.2Step 2: Reassemble the PHEHT sensor.

Hold the electronic part with one hand, place the half-moon-shaped connector of the new PHEHT cartridge (d) in front of the connector on the electronic part and align the two (Diagram 5).
Remove the protective casing and replace the collar on the sensor, holding the sensor by the electronic part. Finish by tightening the clamp.

Perform a full calibration to configure the sensor with its new cartridge.

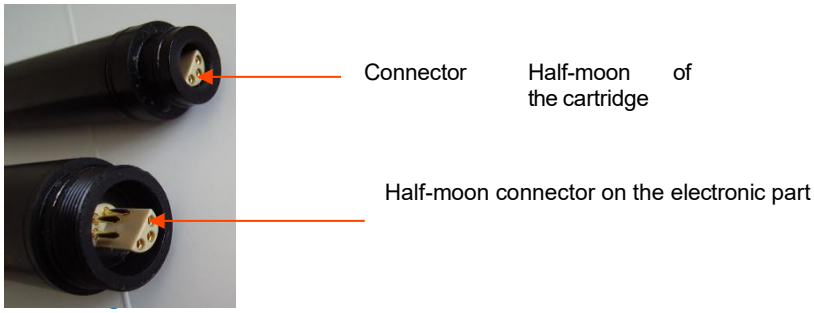


Diagram 5

8.2.3 Storage

If the sensor is taken out of service, it must be rinsed before storage, and the protective cap must be fitted with a damp absorbent material (such as cotton wool) and preservation solution (1SC009).

8.2.4 Accessories and consumables

Spare parts/Consumables	
PF-CAP-C-00155	NUM PHEHT SENSOR CARTRIDGE
ME-BOU-S-00020	PHEHT sensor protection cap
1TP060	pH 7.01 buffer solution – 125 ml
1TP061	pH 4.01 buffer solution – 125 ml
1TP012	Buffer solution pH 9 – 125 ml

8.3 C4E SENSOR MAINTENANCE

The maintenance programme indicates the minimum intervals for regular maintenance tasks. Perform maintenance tasks more frequently for applications that cause electrode fouling.

- The sensor must always be clean, especially in the area around the measuring electrodes (graphite and platinum).
- If the sensor is taken out of service, it must be rinsed before being stored with its protective cap.

8.3.1 Cleaning

Rinse the sensor and the slot containing the measuring electrodes thoroughly with clean water.

To clean the electrodes (graphite and platinum), insert an abrasive strip (type P1200) into the slot containing the measuring electrodes and sand them lightly under running water.

8.3.2 Storage

If the sensor is taken out of service, it must be rinsed before storage, and the protective cap must be replaced on the sensor head.

8.3.3 Accessories and consumables

Spare parts/Consumables	
ME-BOU-S-00013	Sensor protection cap C4E
14SCS19	Conductivity solution 1413 µS/cm - 125 ml
1SC013	Conductivity solution 12880 µS/cm - 125 ml
1SE044	Conductivity solution 84 µS/cm - 125 ml
11SC035	Conductivity solution 111800 µS/cm (25°C) - 125 ml
1SC043	Conductivity solution 53000 µS/cm (25°C) - 500 ml

8.4 NTU SENSOR MAINTENANCE

The maintenance programme indicates the minimum intervals for regular maintenance tasks. Perform maintenance tasks more frequently for applications that cause fouling of the sensor head and optics in particular.

8.4.1 Cleaning

• The sensor must always remain clean, especially in the area around the optical windows.
Deposits on the optical windows can cause measurement errors.

• Deposits such as biofilm or slime must be carefully removed with warm soapy water and a sponge. Never use abrasive agents (no scouring pads).

8.4.2 Storage

If the sensor is taken out of service, it must be rinsed before storage, and the protective cap must be replaced on the sensor head.

8.4.3 Accessories and consumables

Spare parts/Consumables	
ME-BOU-S-00013	NTU sensor protective cap
1SF009	Formazine solution 4000 NTU brown bottle - 125 ml

8.5 VB5 SENSOR MAINTENANCE

The following points must be observed during continuous operation of the sensor:

- The sensor must always be kept clean, especially in the area around the optical windows. The presence of deposits on the optical windows can lead to measurement errors.
- Deposits such as biofilm or sludge must be carefully removed with warm soapy water and never use abrasive agents (e.g., scouring pads).
- If the sensor is taken out of service, it must be rinsed, ready for storage, and the protective cap provided must be installed.

8.5.1 Cleaning

Rinse the sensor and optics thoroughly with clean water.
If deposits such as biofilm or mud remain, gently clean the optics with water.
Soap and wipe with a soft cloth or paper towel.

8.5.2 Accessories and consumables

Spare parts/Consumables	
ME-BOU-S-00018	VB5 sensor protection cap

8.6 MES5 SENSOR MAINTENANCE

The following points must be observed during continuous operation of the sensor:

- The sensor must always be kept clean, especially in the area around the optical windows. The presence deposits on the optical windows can lead to measurement errors.
- Deposits such as biofilm or slime should be carefully removed with warm soapy water and a soft cloth.

  Never use abrasive agents (e.g., scouring pads).

  • If the sensor is taken out of service, it must be rinsed, ready for storage, and the protective cap provided must be installed.

8.6.1 Cleaning

Rinse the sensor and optics thoroughly with clean water.
If deposits such as biofilm or mud persist, gently clean the optics with soapy water and wipe with a soft cloth or absorbent paper.

8.6.2 Accessories and consumables

Spare parts/Consumables	
ME-BOU-S-00018	MES5 sensor protection cap