HYDROCLEAN_P

User Manual

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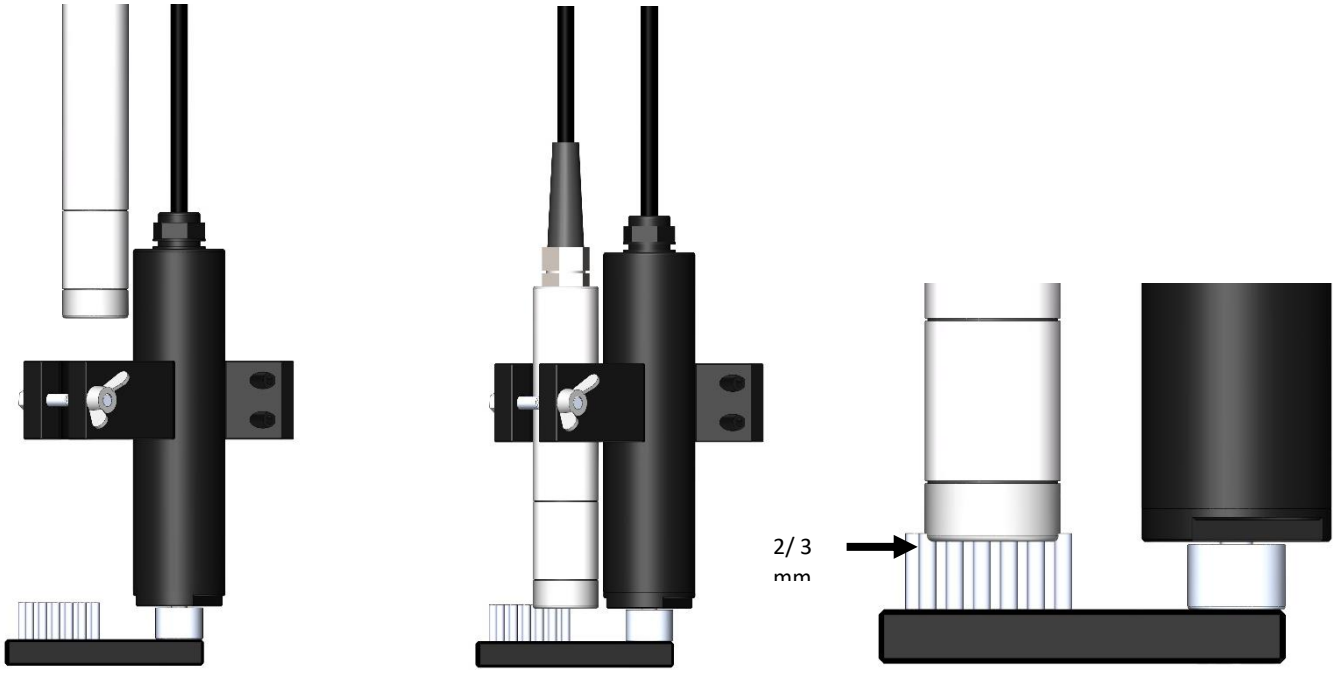
I. Product Description

HYDROCLEAN_P is an accessory for the OPTOD probes (oxygen) and NTU (Turbidity, TSS mg/L). Its purpose is to clean the surfaces of the sensors using a mechanical brush. It is fastened directly to the body of the probes, or to a wall with an optional wall-mount device (PF-ACC-C-00435). HYDROCLEAN_P comes in the 2 versions (OPTOD and NTU sensor).

II. Sensor Mounting

II.1 Oxygen sensor

HYDROCLEAN_P is intended and designed to accommodate Ponsel brand Turbidity (NTU) and Oxygen (OPTOD) sensors. The sensors are placed as indicated on the image below (illustration for the OPTOD sensor).



(1) **(2)** **(3)**

As the OPTOD and NTU sensors have a different body diameter, HYDROCLEAN_P is fastened to these probes in a different way.

For the OPTOD sensor, simply position the sensor in the mounting bracket **(1)**, and then tighten the bolt and butterfly nut supplied with HYDROCLEAN_P to lock the sensor in place **(2)**. The probe has to push approximately 2 up 3 mm into the brush bristles (this is to put the head of the probe and HYDROCLEAN_P body on the same level) **(3)**.

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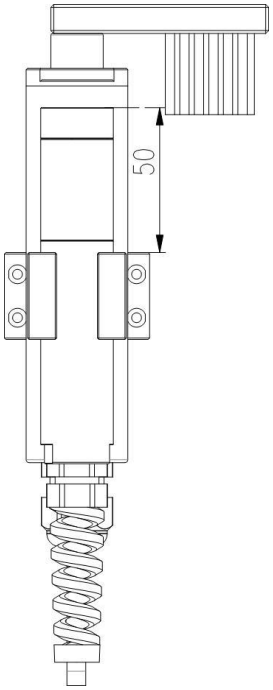


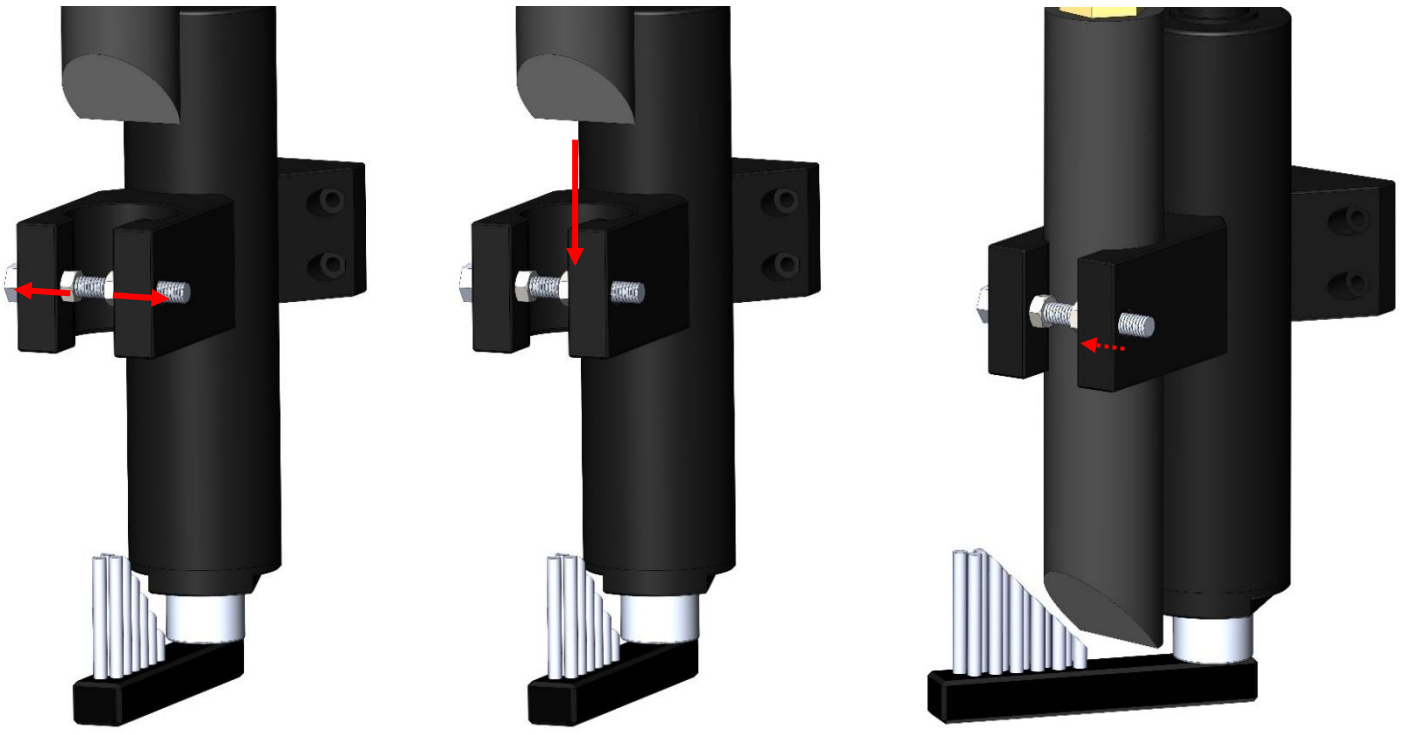
For an optimal positioning of the HYDROCLEAN_P system with the OPTOD sensor, please see the diagram opposite.

Once the probe is in place, power up the device (irrespective of the version), and perform a scan to check that the probe is correctly positioned.

II.1 Turbidity sensor

For the turbidity probe, the mounting bracket has to be opened first **(1)** and then the sensor inserted **(2)**. To do this, simply open the mounting bracket using the nuts and bolt (as shown in the following image). Once the mounting bracket is sufficiently open, simply insert the NTU sensor and then close the bracket (slightly) to lock the NTU sensor in place **(3)**. Make sure you direct the optical surface (angular side) of the probe outward, and not toward HYDROCLEAN_P.

(1) **(2)** **(3)**



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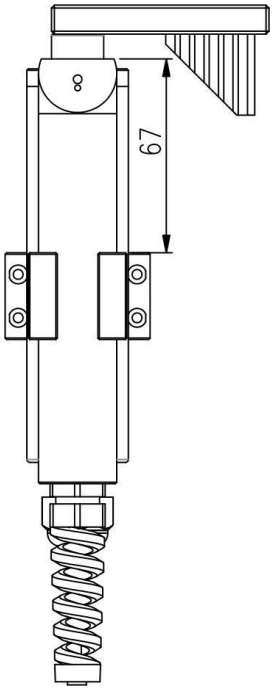

For an optimal positioning of the HYDROCLEAN_P system with the Turbidity sensor, please see the diagram opposite.

Once the probe is in place, power up the device (irrespective of the version), and perform a scan to check that the probe is correctly positioned.

Even if the brush is can be operated manually, it is strongly advised not to. If the brush has to be moved manually, it is recommended to do so gently, holding it at the end (and not at its center).

Attention the sensor and cleaning system HYDROCLEAN must be kept immersed in water. In the case of use out of water, the active pellet of the oxygen sensor and the head of the turbidity sensor will be damaged.

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III. Standalone Version

The standalone version of HYDROCLEAN_P is intended for long periods of use in all types of environments. It has a built-in rotary selector to choose the cycle time (time between scans), 2 size A* lithium batteries for long life (4.5 months for a 2h cycle) and an IP68 watertight case as protection from its environment.

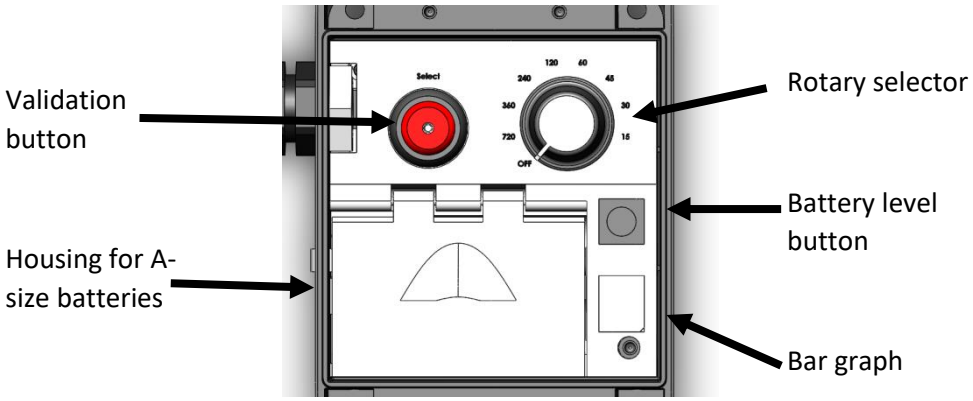
III.1 Start-up

Once the sensor has been mounted on HYDROCLEAN_P, simply insert the batteries in the control unit.

HYDROCLEAN_P will then perform a cleaning operation, and allow you to choose the cycle time (rotary selector). When the desired time has been selected, you can validate by pressing the validation button for 1s. If the selector is not rotated, HYDROCLEAN_P will, after 5s, validate the selector position and will begin its cycle.

III.2 Settings

Press the validation button for approximately 1 second to adjust the time between each cleaning. As soon as you enter the cycle time selection mode, the bar graph's central LED comes on and an indicator light shows that the selector rotation has been taken into account. The following times are available: 15, 30, 45, 60, 120, 240, 360, 720 min.



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III.3 Changing the batteries

The batteries will have to be replaced when the HYDROCLEAN_P standalone version's energy runs out. It is essential to change out both batteries at the same time and replace them with two identical batteries with the same characteristics: 3.6V, average discharge current 130mA (characteristic of a battery).

* *See the Technical Specifications for size A lithium batteries*

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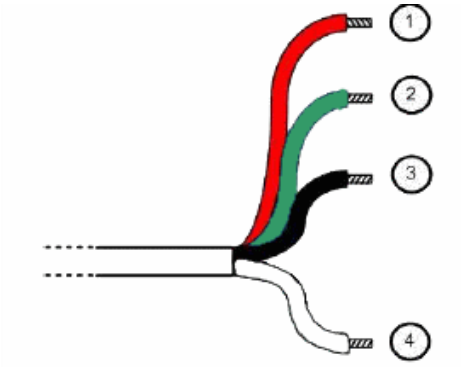
IV. External trigger version

The HYDROCLEAN_P's external trigger version can be incorporated into any system. It has a wide range of operating power supply and triggering: 5VDC to 24VDC. Feedback via a dedicated wire helps check the proper operation of the device after each cleaning.

IV.1 Start-up

HYDROCLEAN_P is connected as follows:



1-Red/ Rouge	Supply voltage V+ Alimentation V+
2-Green/Vert	FeedBack / Rétroaction
3-Black/Noir	Ground / Terre
4-White/Blanc	Trigger / Déclenchement

Once connected, HYDROCLEAN_P will run a cleaning operation and will wait for a cleaning signal on its white connector. The green connector (No.2) is optional, it does not have to be connected for HYDROCLEAN_P to operate.

IV.2 Triggering

A high-state pulse (in our case between 5V and 24V) has to be sent for more than 1 second (the current used depends on the voltage but remains less than 20mA) to trigger the cleaning operation. This will trigger a cleaning cycle. To perform several cleaning operations simply leave the trigger signal between 5V and 24V.

IV.3 Feedback

HYDROCLEAN_P feeds back a good or bad operation indication to its green connector. A 5V pulse for 1s indicates that the cleaning was performed correctly. Four 0.25s pulses indicates that there has been a failure when cleaning, however, the cleaning function does not necessarily stop (HYDROCLEAN_P operates in degraded mode).

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V. Properties

Criterion	Level	Unit
Mechanical characteristics		
Manual angle of rotation	360°	
Cleaning angle of rotation	100° +/- 10°	
Rotation speed (nominal voltage of 9V)	15	rpm
Fluid MAX flow speed	2	m/s
MAX depth of use[1]	50	m
Immersed block materials	POMc/Stainless Steel316	
Brush bristle material	Nylon	
Immersed block weight	0.3	kg
Control unit / connection weight	0.3 / 0.15	kg
Electrical characteristics of version to be incorporated		
Power supply range	5 to 24	V
MAX current used[2]	0.25	A
Average current used excluding cleaning	3	mA
Voltage of logic signals 0/1 (inputs and outputs)	In: 0/ 5-24V | Out: 0/5V	V
Electrical characteristics of standalone version batteries		
Battery voltage[3]	3.6	V
Battery discharge current[3]	0.13	A
Minimum capacity required	3.600	Ah
Battery size	Type A / Diam.17 x 50.5	mm
Heat characteristics		
Immersed block operating temperature	2°C to 30°C	
Unit operating temperature[5]	0°C to 40°C	
General characteristics		
Control unit ingress protection rating (closed only)	IP68	
Control unit material	PC	
Control unit flammability rating	UL94V-0	
Connection unit ingress protection rating	IP54	
Control unit material	ABS	
Connection unit flammability rating	UL94V-0	
Standalone version useful life[4]	4½ months	
Standard cable length (other on request, up to 50m)	7 / 15	m

[1] Maximum depth of use recommended and warranty. Warning, the speed of the currents at such a depth may exceed 2m/s.

[2] Maximum current used during mechanical locking of a cleaning cycle.

[3] Unit voltage of the recommended battery (guaranteed operating conditions). Both batteries MUST be the same (same manufacturer reference). The uninterrupted discharge current of the batteries must be at least 130mA (a higher current may be used, check with the manufacturer). The batteries must be inserted in the direction indicated on the unit.

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[4] Nominal duration indicated and warranty for both Li/$SOCl_2$ batteries, 3.6V and 3.6Ah each, with a cleaning cycle every 120min. **The 2 batteries have to be changed simultaneously.**

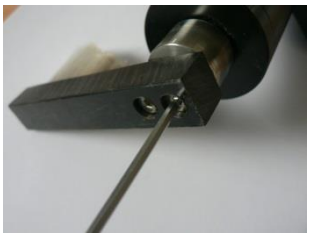
[5] Temperature affects the delay between each cleaning on the standalone version, within ±10min, as well as battery life.

VI. Maintenance.

VI.1 Changing the brush.

The operator can replace the nylon brush when it loses efficiency. The operation consists of unscrew the two M3x10 countersunk head screws using a 2mm hex key. Then simply fit the replacement brush and tighten the 2 screws.


Hex key 2; brush in place


Unscrewing the first screw


Brush removed

VI.2 Spare Parts

PF-ACC-C-00429	NTU sensor version replacement brush
PF-ACC-C-00430	OPTOD sensor version replacement brush
PF-ACC-C-00431	Li/SOCl2 batteries (sold in pairs)
PF-ACC-C-00193	Additional cable
PF-ACC-C-00435	Wall mount system for HydroClean_P

VI.3 Hot line/After-sales Services.

For any technical assistance please contact our technical support team on +33 (0)4 11 71 97 41.

For any return to our after-sales service, please affix the device return authorization voucher to the parcel (downloadable from our Internet site: https://www.aqualabo.fr/userfiles/image/upload/SAV_AQL_2018_RMA_FrGB_CAUDAN.pdf) at the following address:

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115 rue Michel MARION
56850 CAUDAN
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