DATASHEET

DIGITAL SENSORS

Sensor maintenance notice

OPTOD sensor: digital sensor for dissolved oxygen and temperature measurements.

Description	Oxygen: Luminescent membrane sensitive to oxygen content of the studied environment. Gas exchange between the membrane and from the environment. Temperature: NTC.
Material	Version Inox 316L, Polyamide, silicon, quartz; polyurethane jacketed cable. Version Titanium, Polyamide, silicon, quartz; polyurethane jacketed cable.
Safeway	The membrane is vulnerable to : - chemicals (organic solvents, acids, peroxide), - mechanical treatments (impact, abrasion, tearing).
Measure/ Interference	For measurement, you must eliminate bubbles trapped under the membrane. Presence of chlorine will distort the measure (overestimation of dissolved oxygen level). During the introduction of the sensor in measurement environment, wait for sensor's temperature stabilization before measure processing. To optimize a sustainable functioning of your probe, we recommend you to respect a frequency of measure superior to 10 seconds.
Operating temperature	0°C to 50°C Compensation of temperature effective on 0-40°C
Maintenance	After each use, rinse meticulously the sensor and the membrane with clear water. If deposits like biofilm or mud persist, wipe the membrane gently with a sweet cloth or an absorbent paper. ***Attention*** : For the Titanium version clean the body of the sensor by means of acetone (do not use methylated spirit, ethanol or methanol). ***Attention***: do not unscrew the strainer containing the DODISK only in case of change. In case of replacement of the strainer, replace the strainer and re-screw slowly so that the air can evacuate slowly.
Storage	Keep the membrane hydrated with the protective case and a moist absorbent surface (like cotton). After dry storage, rehydrate the membrane for a 12 hours period.
Storage temperature	- 10°C to + 60°C

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

Oxygen calibration	On a clean sensor, check once in a while the 0 %Sat value by dipping the sensor in a water solution + sulphite (sulphite concentration <2%). If there is an offset on point 0, proceed with the complete sensor calibration. ***Warning! Do not put the sensor in contact with the sulphite solution for more than one hour.*** The calibration in 2 points is achieved with one sulphite solution (offset) then after rinsing and drying, the slope of sensor is achieved by exposing the sensor to water vapor saturated air (or in a clear water saturated with air).
Temperature calibration	The sensor's temperature calibration is achieved in 2 steps: - step 1 (offset) : the sensor is put in a jar which contains a water bath + ice, - step 2 (slope) : the sensor is put in a known temperature environment (with stabilized temperature). This temperature could be measure with a certified thermometer.

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

NTU sensor : digital sensor for turbidity and temperature measurements.

Description	Turbidity: measure nephelometric measure by IR diffusion (wavelength 880 nm) at 90°. Temperature: NTC.
Materials	PVC, PMMA, Polyamide, DELRIN ; Polyurethane jacketed cable
Safeway	The optical windows are vulnerable to: - chemicals (organic solvents, acids and strong bases, peroxide, hydrocarbons), - mechanical treatments (impact, abrasion).
Measure/ Interfering	While in use, the sensor must not make contact with walls or bottom of the jar. A minimal clearance of 2/3 cm is recommended (depending on the environment concentration). Bubbles on optical parts can interfere with the measurement. On environment change, wait sensor's temperature stabilization before proceeding with measurement. In the range of 0 to 20 NTU and in case of sensor the saturation (9999 value), it is recommended to use the protection strainer to avoid various interferences like edge effects, solar radiation..
Operating temperature	0°C to 50°C
Maintenance	After each use, rinse meticulously the sensor with clear water. If deposits like biofilm or mud persist, clean the sensor with soapy water and wipe the head with a soft cloth or an absorbent paper.
Storage	Put the protection case on the head of the sensor to protect the optical part.
Temperature of storage	- 10°C to + 60°C
Turbidity calibration in NTU	The NTU sensor is an optical sensor which just need of a few calibration. On a clean sensor, check once in a while the 0 NTU value by dipping sensor in bubble free clear water. If the 0 point is shifted, proceed with the complete sensor calibration (on 1 or 4 ranges). For this procedure, a Formazin solution, with concentration matching the middle of the measurement range, will be necessary. This solution will be prepared from a 4000 NTU main solution. For the preparation of solutions, take a flask of 200 mL. Introduce the necessary volume of Formazin (cf. table below) and fill up to 200 mL with distilled water. The formazin solutions of concentrations lower at 1000 NTU deteriorate quickly, so do not preserve a solution during several days. The solution at 2000 NTU can be preserve in the refrigerator for 2 or 3 weeks in a opaque flask.
Turbidity calibration in mg/L	Turbidity in mg / L, it is necessary to calibrate the sensor on a real sample. The calibration is achieved in 2 steps : - Step 1 (offset) : immerse the sensor in distilled water (0 mg / L), - Step 2 (slope) : immerse the sensor into a sample of sludge, maintained under agitation, and validate the theoretical value measured by the sensor. Analysis the sample dry weight in the laboratory according to the NF standard IN 872 for a range of 0-500 mg / L and according to the NF standard T 90 105 2 for a concentration > 500 mg / L.
Temperature calibration	The calibration of the temperature sensor is achieved in 2 steps: - step 1 (offset) : the sensor is put in a jar which contains a water bath + ice, - step 2 (slope): the sensor is put in a known temperature environment (air or water of thermostated bath). This temperature could be measure with a certified thermometer.

Measurement range	**Concentration Formazin solution**	**Volume of Formazin (mL)**
0.0-50.0 NTU	25 NTU	1,25 mL
0.0-200.0 NTU	100 NTU	5 mL
0-1000 NTU	500 NTU	25 mL
0-4000 NTU	2000 NTU	100 mL

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

PHEHT sensor: digital sensor for pH/Redox/ Temperature measurements.

Description	pH/ Redox : Potentiometric measure ; pH : pair of electrodes with a reference (Ag/AgCl gel) / H_3O^+ ions sensitive glass Redox : pair of electrodes with a reference (Ag/AgCl gel) /platinum disk Temperature : NTC.
Materials	Glass, platinum, PVC, Polyamide, DELRIN, Inox 316L (protective sleeve of the temperature probe); polyurethane jacketed cable.
Safeway	The glass electrode is vulnerable to: - chemicals (organic solvents, acids and strong bases, peroxide, hydrocarbons), - mechanical treatments (impacts). The redox potential electrode is sensitive to sulphide adsorption on platinum.
Measure/ Interfering	During the introduction of sensor in the measurement environment, wait sensor's temperature stabilization before proceeding with measurement..
Operating temperature	0°C to 50°C
Maintenance	After each use, rinse meticulously the sensor with clear water. **pH**: If deposits like biofilm or mud persist, put the sensor in a cleaning solution (PF-CSO-C-00010) for a few hours and rinse profusely before use. Avoid using a soft cloth or an absorbent paper because the glass ball is extremely vulnerable to frictions. **Redox:** clean the platinum disk with an abrasive moist paper (type P1200 or P220).
Storage	Maintain the glass membrane **hydrated in the protection case with a few drops of preservation agent solution** (PF-CSO-C-00005) or, if it is not available, with the solution of pH4. Rinse profusely the bulb of glass before use. After storage in dry environment, put the sensor in a standard solution PH4 for 12 hours. The case protects against direct impact on the head of the sensor. The platinum electrode is preserved dry.
Temperature of storage	0°C to + 60°C
pH calibration	Using a clean sensor, proceed with sensor calibration in 2 steps (offset and slope at PH7 and PH4 for example).
Redox verification	Using a clean sensor, check the electronic 0 by putting the sensor in free air and a second point with standard solution at 240 mV (or 470 mV).
Temperature calibration	The calibration of temperature sensor is performed in 2 steps: - step 1 (offset) : the sensor is put in a jar which contains a water bath + ice, - step 2 (slope): the sensor is put in a known temperature environment (stabilized T°C). This temperature could be measure with a certified thermometer.
Changing the cartridge	To avoid deteriorating the electronic part of the sensor, **take the cartridge in one hand** and unscrew the clamping ring with the other hand. Remove the used cartridge and put the new cartridge before to screw back the clamping ring.

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

EHAN sensor: digital sensor for Redox annular/ Temperature measurements.

Description	Redox : pair of electrodes with a reference (Ag/AgCl gel) /platinum ring Temperature : NTC.
Materials	Glass, platinum, PVC, Polyamide, DELRIN; polyurethane jacketed cable.
Safeway	The redox potential electrode is sensitive to sulphide adsorption on platinum.
Measure/ Interfering	During the introduction of sensor in the measurement environment, wait sensor's temperature stabilization before proceeding with measurement..
Operating temperature	0°C to 50°C
Maintenance	After each use, rinse meticulously the sensor with clear water. Clean the platinum ring with an abrasive moist paper (type P1200 or P220).
Storage	Maintain the head of the sensor **hydrated in the protection case with a few drops of preservation agent solution** (PF-CSO-C-00005) or, if it is not available, with the solution of KCl. Rinse profusely the sensor before use. After storage in dry environment, put the sensor in a KCl solution for 12 hours. The case protects against direct impact on the head of the sensor.
Temperature of storage	0°C to + 60°C
Redox verification	Using a clean sensor, check the electronic 0 by putting the sensor in free air and a second point with standard solution at 240 mV (or 470 mV).
Temperature calibration	The calibration of temperature sensor is performed in 2 steps: - step 1 (offset) : the sensor is put in a jar which contains a water bath + ice, - step 2 (slope): the sensor is put in a known temperature environment (stabilized T°C). This temperature could be measure with a certified thermometer.
Changing the cartridge	To avoid deteriorating the electronic part of the sensor, **take the cartridge in one hand** and unscrew the clamping ring with the other hand. Remove the used cartridge and put the new cartridge before to screw back the clamping ring.

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

C4E sensor: digital sensor for Conductivity/Salinity/TDS/Temperature measurements.

Description	Conductivity : Amperometric measure with a system of 4 electrodes; Temperature: NTC.
Materials	Graphite, platinum, PVC, Polyamide, DELRIN, Inox 316L (protective sleeve for the temperature probe); polyurethane jacketed cable.
Safeway	The 4 electrodes are sensitive to deposits (some fat, hydrocarbons, biofilm, mud)
Measure/ Interference	During the introduction of sensor in the measurement environment, wait sensor's temperature stabilization before proceeding with measurement.
Operating temperature	0°C to 50°C
Maintenance	After each use, rinse meticulously the sensor with clear water. If deposits like biofilm or mud are still in the measuring gap or on the electrodes, use a moist abrasive paper to clean the surface of electrodes.
Storage	The case protects against direct impact on the head of the sensor. For a short-term storage, place a soft cloth or an absorbent paper at the bottom of the case with some drops of buffer solution in 1413 µS / cm.
Temperature of storage	- 10°C to + 60°C
Conductivity calibration	Using a clean sensor, proceed with the calibration of sensor in 2 steps (offset and slope with a standard solution of conductivity adapted for measurement range) on 1 or 4 ranges :

Measurement range	**Concentration standard solution of conductivity**
0.0-200.0 µS/cm	84 µS/cm
0-2000 µS/cm	1 413 µS/cm
0.00-20.00 mS/cm	12,88 mS/cm
0.0-200.0 mS/cm	111,8 mS/cm

Temperature calibration	The calibration of temperature sensor is performed in 2 steps: - step 1 (offset) : the sensor is put in a jar which contains a water bath + ice, - step 2 (slope): the sensor is put in a known temperature environment (air or water from a thermostated bath). This temperature could be measure with a certified thermometer.

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

CTZ sensor : digital sensor with inductive technology for Conductivity/Salinity/ /Temperature measurements.

Description	Conductivity : Inductive technology measurement; Temperature: NTC.
Materials	EPDM, PVC, Stainless steel (protective sleeve for the temperature probe); polyurethane jacketed cable.
Safeway	Technology of measure "insensible" to the fouling. Watch however that the buckle is not blocked.
Measure/ Interference	During the introduction of sensor in the measurement environment, wait sensor's temperature stabilization before proceeding with measurement. The sensor is not adapted to the measures on the low range.
Operating temperature	0°C to 50°C
Maintenance	After each use, rinse meticulously the sensor with clear water..
Storage	The sensor is preserved dry.
Temperature of storage	- 10°C to + 60°C
Conductivity calibration	Using a clean sensor, proceed with the calibration of sensor in 2 steps (offset and slope with a standard solution of conductivity adapted for measurement range) :

Measurement range	**Concentration standard solution of conductivity**
0-2000 µS/cm	1 413 µS/cm
0.00-20.00 mS/cm	12,88 mS/cm
0.0-100.0 mS/cm	20 mS/cm

Temperature calibration	The calibration of temperature sensor is performed in 2 steps: - step 1 (offset) : the sensor is put in a jar which contains a water bath + ice, - step 2 (slope): the sensor is put in a known temperature environment (air or water from a thermostated bath). This temperature could be measure with a certified thermometer.

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

MES5 – VB5 sensor : digital sensor for Suspended Solid – Turbidity – Sludge Blanket detection and temperature measurements.

<table>
<tr><td>Description</td><td>Optical IR (870 nm) based on IR absorption
Temperature: NTC.</td></tr>
<tr><td>Materials</td><td>DELRIN, Nickel-plated brass, EPDM ; Polyurethane jacketed cable</td></tr>
<tr><td>Safeway</td><td>The optical windows are vulnerable to:
- chemicals (organic solvents, acids and strong bases, peroxide, hydrocarbons),
- mechanical treatments (impact, abrasion).</td></tr>
<tr><td>Measure/ Interfering</td><td>Bubbles on optical parts can interfere with the measurement.
On environment change, wait sensor’s temperature stabilization before proceeding with measurement.</td></tr>
<tr><td>Operating temperature</td><td>0°C to 50°C</td></tr>
<tr><td>Maintenance</td><td>After each use, rinse meticulously the sensor with clear water.
If deposits like biofilm or mud persist, clean the sensor with soapy water and wipe the head with a soft cloth or an absorbent paper.</td></tr>
<tr><td>Storage</td><td>Place the protection case on the head of the sensor with a bottom of water to maintain the hydrated optical windows.</td></tr>
<tr><td>Temperature of storage</td><td>- 10°C to + 60°C</td></tr>
<tr><td>Turbidity calibration in FAU</td><td>On a clean sensor, check once in a while the 0 NTU value by dipping sensor in bubble free clear water. If the 0 point is shifted, proceed with the complete sensor calibration.
For this procedure, a Formazin solution, with concentration matching the middle of the measurement range, will be necessary. This solution will be prepared from a 4000 NTU main solution.
The formazin solutions of concentrations lower at 1000 NTU deteriorate quickly, so do not preserve a solution during several days.
The solution at 2000 NTU can be preserve in the refrigerator for 2 or 3 weeks in a opaque flask.

<table>
<tr><th>Measurement range</th><th>Concentration Formazin solution</th><th>Volume of Formazin (mL)</th></tr>
<tr><td>0-4000 FAU</td><td>2000 NTU</td><td>100 mL</td></tr>
</table>
</td></tr>
<tr><td>Suspended Solid calibration in g/L</td><td>Turbidity in g / L, it is necessary to calibrate the sensor on a real sample.
The calibration is achieved in 2 steps :
- Step 1 (offset) : immerse the sensor in distilled water (0 mg / L),
- Step 2 (slope) : immerse the sensor into a sample of sludge, maintained under agitation, and validate the theoretical value measured by the sensor. Analysis the sample dry weight in the laboratory according to the NF standard T 90 105 2.</td></tr>
<tr><td>Sludge blanket detection in %</td><td>For a use of the sensor in mode Sludge Blanket detection the sensor is tested on 1 point:
- 1 offset with some distilled water (100 %),</td></tr>
<tr><td>Temperature calibration</td><td>The calibration of the temperature sensor is achieved in 2 steps:
- step 1 (offset) : the sensor is put in a jar which contains a water bath + ice,
- step 2 (slope): the sensor is put in a known temperature environment (air or water of thermostated bath). This temperature could be measure with a certified thermometer.</td></tr>
</table>

AQUALABO
90 rue du Professeur P. Milliez
94506 Champigny-sur-Marne
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr