AQUALABO

*Smart water solutions*

NEW

# PHEHT Monobloc

## DIGITAL SENSOR DEDICATED TO PH, REDOX POTENTIAL AND TEMPERATURE MEASUREMENTDIGISENS RANGE


## APPLICATIONS

Surface water monitoring, groundwater…

Urban wastewater treatment (inlet, aeration basin, outlet)

Industrial wastewater treatment

Deodorization channels

Water quality control Fish farming/aquaculture

## ADVANTAGES

- Combination pH/Redox/Temp sensor
- Range :
  - pH : 0,00 to 14,00 units
  - Redox : - 1000 to + 1000 mV
  - T°C : 0°C to + 50,00°C
- RS485/SDI12 Digital sensor technology: measurement reliability
- Calibration data inside
- Enhanced electronic protection

## DIGITAL TECHNOLOGY

The PONSEL sensor incorporates a reference electrode, used for pH and Redox measurements, type Ag/ AgCl plastic electrolyte saturated in KCl «PLASTOGEL»®

The electrolyte «PLASTOGEL»® communicates directly with the external environment without the interposition of capillaries or porous elements. There is therefore no risk of blanking or defusing the reference.

The measuring electrodes are in the form of a special glass bulb sensitive to pH and welded at the end of a crystal tube for pH and in the form of a platinum tip for redox.

A component of the CTN type, inserted in a cylindrical stainless-steel sheath that promotes contact with the liquid, makes it possible to obtain the temperature parameter.

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## DIGITAL COMMUNICATION / BUILT-IN TRANSMITTER

The "smart" pH/Redox/Temp sensor stores calibration and history data within the sensor. This allows you a "plug and play" system without re-calibration.

Thanks to the Universal **Modbus RS485** protocol, the PONSEL pH/Redox/T sensor can be connected to all devices commonly used (Datalogger, Controller, Automat, Remote System…).

## MECHANICAL

The sensor body is composed of PVC and POM-C. The sealing of the assembly is achieved by combination of O-rings, a polyamide cable gland and resin sealing.

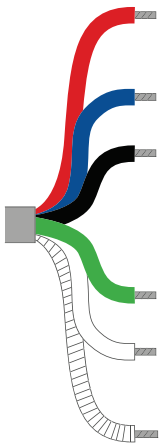
## TECHNICAL FEATURES

| | |
|---|---|
| **pH** | |
| **Measure principle** | Combined electrode (pH/ref): special glass, Ag/AgCl ref. Gelled electrolyte (KCl) |
| **Range** | 0 – 14 pH |
| **Resolution /Accuracy** | 0,01 pH ; ± 0,1 pH (full power mode) |
| **Linearity** | $R^2$ >0.99 (2<pH<10) (full power mode) |
| **Response time** | T90 < 20s (variation pH4/pH9) |
| **Redox** | |
| **Measure principle** | Combined electrode (Redox/reference): Platinum tip, Ag/AgCl AgAgCl. Gelled reference (KCl) |
| **Range** | - 1000,0 to + 1000,0 mV |
| **Resolution /Accuracy** | 0,1 mV ; ± 2 mV |
| **Response time** | T90 < 5 s |
| **Temperature** | |
| **Technology** | NTC |
| **Range** | 0,00 °C to + 50,00°C |
| **Resolution /Accuracy** | 0,01 °C / ± 0,5 °C |
| **Linearity** | $R^2$ >0.99 |
| **Response time** | T90< 50 s |
| **Sensor** | |
| **Storage temperature** | 0°C to + 60°C |
| **Protection** | IP 68 |
| **Interface** | Modbus RS-485[1] as standard and SDI-12[2,3] option<br>1,2. sensor responds in Modbus/SDI12 mode including during standby<br>3. Using and connecting the SDI12 bus can increase standby consumption up to 100 uA depen line (up or down).<br>Consumption is not increased if line SDI12 is disconnected or released at 0V (Modbus RTU only) |
| **Measurement Refresh rate** | Maximum < 1 seconde |
| **Power supply** | 5[1,2] à 12[3,4] volts (warm-up time 100 ms)<br>1. Absolute minimum 4.5V with 1m cable, start and precision not guaranteed under 5V<br>2. Minimum voltage subject to cable length losses<br>3. 13V Absolute maximum with continuous over-consumption of more than 2 mA<br>4. Small overconsumption between 12V and 12.5V |
| **Power consumption** | Standby: 15µA<br>Average RS485 (1 measure/seconde) : 5.7 mA<br>Average SDI12 (1 measure/seconde) : 9.5 mA<br>Current pulse: 500 mA (1 ms) |
| **EMC Compliance** | NF EN 61326-1: 2021-06<br>RS-485 Modbus RTU & SDI12<br>1. The sensor is qualified for standard use with a dedicated cable including power supply and communication lines specific to the sensor network.<br>2. When connected to a DC power supply network separated from the RS485 communication lines; additional shielding must be used on the system to protect the sensors from shock waves from an impact. |

## TECHNICAL FEATURES

| Sensor | |
|---|---|
| **Dimensions** | Diameter: 27 mm ; Lenght: 171,5 mm |
| **Weight** | 350 g (sensor + 3 m cable) |
| **Material** | PVC, DELRIN, special pH glass, platinum, polyamide |
| **Pressure** | 5 bars |
| **Cable** | Coaxial armoured, Polyurethane, bare wire or Fisher connector |

## ELECTRICAL CONNECTIONS



| *Cable length* ***up to 15m*** | *Cable lenght* ***15 to 100 meters*** |
|---|---|
| 1 RED : POWER SUPPLY V+ | 1 RED, PURPLE, YELLOW, ORANGE, PINK : POWER SUPPLY V+ |
| 2 BLUE : SDI-12 | 2 BLUE : SDI-12 |
| 3 BLACK : PWEIGHT | 3 BLACK : WEIGHT |
| 4 GREEN : B " RS-485 " | 4 GREEN : B " RS-485 " |
| 5 WHITE : A " RS-485 " | 5 WHITE : A " RS-485 " |
| 6 GREEN / YELLOW : CABLE SHIELD | 6 GREEN / YELLOW : CABLE SHIELD |

**CONNECT WIRES 3 AND 6 TOGETHER**

- **Never exceed a voltage of 10VDC (absolute maximum rating) on communication lines RS485, A or B, under penalty of irreversible destruction of the transceiver component RS 485.**
- **SDI-12: respect the voltage value described in the associated standard (nominal: 5 VDC)**
- **Always connect ground + shield first.**
- **Always connect the mass of the sensor to the ground (GND) of the Modbus master and to the ground (GND/0V) of the power supply, under penalty of irreversible destruction of the sensor (RS485 standard)**

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