

# Wastewater Treatment Sensor Specifications

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# Overview

**Methods**

**Sensor Types**

**Sensor Specifications**

**Approximate Price Range**

**Reference**

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# Methods

## Two methods

- Required sensors are integrated into single module, available in the market.
- Integrating each identical sensors

# Integrated Module

- Proteus Water Quality Probe.
- Most sensors are integrated into the module.
- Sensors not present must be integrated separately.
- Simple to install.
- Low risk in the installation.
- Heavy Cost.
- Patent goes to the company.

## Parameters Included:

- BOD, COD, TOC, DOC, Dissolved Oxygen, Pressure, Chloride, pH, Temperature, Optical Brighteners, Nitrate, ORP / REDOX, Coliforms (faecal, E. coli, total), Tryptophan, Refined Oils, Ammonium, EC / Salinity / TDS, Turbidity, Crude Oils CDOM.

## Parameters Not Included:

- TSS, VS, Flow rate.

## Specifications

- Internal Power Battery Life: 1 to 24 month depending on sensors / logging rates
- External Power: 5-15 vdc
- Operating Temperature: 0 to 50°C, non-freezing
- Depth Rating: 200 m
- Communications: RS-232, SDI-12, RS-485, Modbus ® USB or Bluetooth
- Sample Rate: 1 Hz
- Data Memory: >1,000,000 logged readings
- Logging Rates: 1 second to 1 day
- Warranty: 2 years (All sensors excluding ISE's)

## General Specifications (Proteus 40)

- Diameter: 102 mm (4.00")
- Length - w/o Battery Pack: 483 mm (19")
- Weight - with IBP: 4.5 kg (10.0 lbs)
- Number of sensors: Up to 13
- Battery Pack: 8 "C" cells

## Price Range

- Waiting response from the company

## Reference

- <https://www.proteus-instruments.com/files/Proteus-Datasheet-updated-28-04-21-v1.4.pdf>



# Identical Sensors

- Sensors are integrated separately.
- Each sensors have identical specifications, must be purchased separately from the market.
- Developed by our own by integrating all the sensors.
- Low Cost.
- Difficult to install.
- Risk in installation is high.
- Availability dependence on different sellers.

# Ph Sensors: Specifications

- High performance: high accuracy, fast response, good repeatability
- Universal protocol: MODBUS RS-485 or 4~20mA current
- Wide-range power supply: 3.6V ~ 30V
- Robustness: suitable to be immersed in soil or water for a long time
- Maintenance-Free: advanced junction design, no clogging
- Durable: anti-corrosion, automatic temperature compensation
- User-friendly: Easy to install and integrate

## Price Range

- Approximately Rs 10000

## Reference:

- [https://files.seeedstudio.com/products/101990666/res/RS485%20&%204-20mA%20Current%20pH%20Sensor%20\(S-pH-01\)-Datasheet.pdf](https://files.seeedstudio.com/products/101990666/res/RS485%20&%204-20mA%20Current%20pH%20Sensor%20(S-pH-01)-Datasheet.pdf)

# Turbidity: Specifications

- Low power consumption
- Small size: 2.0cm x 4.0cm Grove module
- Only 3 pins needed, save I/O resources
- Easy to use: Grove connector, plug and play
- Output mode optional, support analog output and digital output
- Operating Voltage: 3.3V/5V DC
- Output Interface: Analog/Digital
- Connector: 1 Grove, 1 power interface
- LEDs: 1 power LED, 1 signal LED
- Switch: 1 A-D toggle switch
- Dimensions: 20x40 mm

## Price Range

- Approximately Rs 2000

## Reference:

- <https://files.seeedstudio.com/products/101020752/Turbidity%20Sensor%20specification.pdf>

# TDS (Total Dissolved Solids): Specifications

- High performance: high accuracy, fast response, good repeatability
- Universal protocol: MODBUS RS485, 0-2V
- Wide-range power supply: 3.9V ~ 30V
- Robustness: suitable to be immersed in water for a long time
- Durable: anti-corrosion, automatic temperature compensation
- User-friendly: Easy to install and integrate
- Output Interface: Analog Voltage 0-2V (Output resistance ~0ohm), RS485 Modbus-RTU
- Power Supply: 3.9-30V/DC
- Power Consumption (Idle): 40mA@24V DC
- Power Consumption (Max): 80mA@24V DC
- Start-up Time: < 2 seconds
- Temperature Measurement: Range: -40~80°C

## Price Range

- Approximately Rs 10000

## Reference:

- <https://files.seeedstudio.com/products/314990634/res/Liquid%20EC%20and%20TDS%20Sensor%20Datasheet%20v1.1.pdf>

## COD (Chemical Oxygen Demand) and BOD (Biochemical Oxygen Demand): Specifications

- Measurement Principle: Attenuation, Transmission
- Range: 0-2000 mg/L
- Measurement Technology: Light Source: 2 LED(254nm, 530nm)
- Detector: Photo diode + Filter
- Turbidity Compensation: at 530 nm
- Optical path : 1mm, 2mm, 5mm, 10mm, 50mm
- T100 Response Time: 4s
- System Compatibility: Modbus RTU
- Power Consumption: <- 1W
- Sample Temperature: 2 to 40 DegreeC | ~+36 DegreeF to +104 DegreeF



## Price Range

- Approximately Rs 500000

# Flow Rate Sensor: Specifications

- Feature: Compact, Easy to Install
- High Sealing Performance
- High Quality Hall Effect Sensor
- RoHS Compliant
- Transparent
- Mini. Working Voltage: DC 4.5V
- Max. Working Current: 15mA (DC 5V)
- Working Voltage: DC 5V~24V
- Flow Rate Range: 1~30L/min

- Flow Pulse:  $F(\text{Hz}) = (5.0 \times Q) \pm 3\%$   $Q = \text{L/Min}$
- Load Capacity:  $\leq 10\text{mA}$  (DC 5V)
- Operating Temperature: 80 celsius
- Liquid Temperature: 120 celsius
- Operating Humidity: 35%~90%RH
- Water Pressure: 1.75MPa
- Storage Temperature: -25~+ 80°C
- Storage Humidity: 25%~95%RH
- Weight G.W 22.5g
- Battery Exclude

## Price Range

- Approximately Rs 800

## Reference

- <https://files.seeedstudio.com/products/114991171/CE,RoHS%20Certification.zip>

## Parameters Not Included in the second approach

- TSS (Total Suspended Solids), VS and Coliforms.

There are little documents and details available about these sensors. Need some more information like the price range and detailed specification about these sensors.

THANKS