

ORAKEL

SYSTEM

TURBIDITY & SUSPENDED SOLIDS SENSOR

The ORAKEL Turbidity & Suspended Solids Sensor automatically varies the light output so that the turbidity can be measured independently of background light and electronic drift. It is ISO 7027 compliant and covers a range of 0.01-1000 NTU (0.01-2000mg/l depending on the sample).



HOW IT WORKS

The ORAKEL System determines true turbidity and/or suspended solids in water, using a nephelometric measurement of scattered light in accordance with ISO 7027. The sensor uses lifetime-based optical technology to provide an extremely stable, accurate, low maintenance sensor with no moving parts and no consumables.

KEY FEATURES

The ORAKEL Turbidity & Suspended Solids Sensor offers great stability, reliability and ease coupled with great resolution and limits of detection.

- Extremely low total cost of ownership
- Single point calibration (patented) - no 'zero' required
- Autoclean solid state optical sensor - no moving parts
- Suitable for all potable, waste and most process waters
- 'Maintenance free' with up to 3 months between calibration
- From 0.01-1000 NTU (0.01-2000 mg/l, application dependent)
- Stable and reliable - excellent process control
- Automatic debubbling

APPLICATIONS

Anywhere where the measurement range is 0.01-1000 NTU (approximately 0-2000 mg/l, application dependent) is a suitable application for this sensor.

This includes traditional monitoring applications such as those listed here.

- Raw water inlet
- Settled water turbidity
- Final water turbidity
- Wastewater effluent turbidity
- Fire hydrant monitoring
- Swimming pool clarity monitoring

CONSTRUCTION

Each probe is equipped with a light source, a side detector for the measurement of scattered light from the sample and a reference detector for monitoring the light output. The light source is a long-life IR LED emitter.

This configuration allows accurate and reliable measurements of turbidity and suspended solids to be made.

Reliable calibration can be carried out using a single calibration with no need for a 'zero'.

The probes are constructed of stainless steel and sapphire so can withstand demanding operating environments. An autoclean system can be included to keep the optical surfaces clean, thereby reducing maintenance to a potential 'maintenance free'.

MOUNTING

The **ORAKEL Turbidity and Suspended Solids Sensor** can be mounted on the end of a pole for dip mounting in a channel or tank, or in a debubbling flow cell.



There are some advantages of flow cell mounting, including:

- Made from black polypropylene plastic - eliminating stray light
- Covered - eliminates ambient light
- Baffles - remove bubbles
- Automatic nucleating bubbles

BUBBLES

As with all turbidity instruments, bubbles can interfere.

We have several solutions available to aid the removal of bubbles including using the autoclean function and a debubbling flow cell.

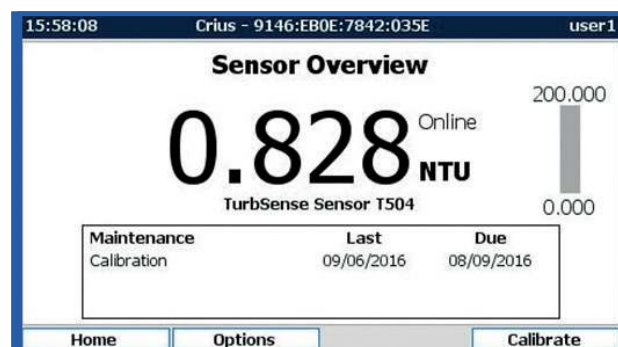
Whatever the source of bubbles, the **ORAKEL System** can come equipped to handle them.

CALIBRATION

Calibration of the **ORAKEL System** really couldn't be easier! Either take a reading of the water with another method and enter the value into the analyser or put the sensor into our black polyethylene calibration pot filled with 0.5 litre of standard (typically 20 NTU).

The analyser calibrates the sensor by a procedure that reduces the light output through four stages, taking measurements at each.

This process provides a very accurate and reliable zero and span without the requirement to use a '0' NTU sample.



CLEANING

To keep the **Turbidity Sensor** clean it is fitted with cleaning nozzles.

These can be used to clean the optical windows with a jet of water.

This cleaning procedure can be automated to carry out the cleaning at predefined intervals.

TECHNICAL SPECIFICATION

Range

Selectable within 0.01-1000 NTU, 0.01-2000 mg/l (application dependent).

Typical Ranges

0.01-20 NTU, 0.01-100 NTU, 0.01-1000 NTU.

Linearity

$r^2 > 0.99$.

Response Times

T90 \geq 10s (adjustable based on averaging).

Accuracy

< 1% of measured value or 0.01 NTU (whichever is greater).

Repeatability

< 0.3% of measured value or 0.005 NTU (whichever is the greater) (Ref: ISO 15839).

Unit of Detection

0.01 NTU (0-10 NTU, Ref: ISO 15839).

Temperature

-20 to +85°C.

Pressure

0-10 bar.

Averaging

10 seconds - 10 minutes.

Lamp Source

IR LED, 860nm.

Cleaning Cycles

User settable cleaning cycle time and cleaning time.

Cleaning

Autoclean water jet.

Enclosure Rating

IP65.

Sensor Environmental Protection

IP68.

Display

Value, alarms and graphs at the same time.

Resolution

0.001 NTU (0-10), 0.01 NTU (10-100), 0.1 NTU (>100).

Calibration

One point (zero not required).

Diameter

38mm (1.5 inch).

Length

278mm (11 inch).

THE ORAKEL SYSTEM



The **ORAKEL System** is the ultimate fluid measurement product range.

Created as a modular system with a wide range of sensors that can be added to measure various characteristics for a truly bespoke and cost effective solution.

- Two types of high specification control units available
- On-screen graphing
- 9 buttons for easy navigation
- Secure website viewing option available
- 4-20mA and Modbus outputs available
- Multilingual options
- Connects up to 2 sensors as standard; expandable up to 16 sensors

THE ULTIMATE FLOW AND QUALITY MEASUREMENT SYSTEM



The ORAKEL System

FLOW MEASUREMENT

Open Channel/Pipe:

- Non-contact Flow Sensor
- Submerged AV Sensor

Full Pipe:

- Ultrasonic Time of Flight Sensor

QUALITY MEASUREMENT

- Biofilm Sensor
- Chlorine Sensor
- COD/TOC Sensor
- ORP Sensor
- pH Sensor
- Oil on Water Sensor
- Turbidity & Suspended Solids Sensor
- Dissolved Oxygen Sensor
- Conductivity Sensor

To learn more about the Detectronic ORAKEL System and how it can help your business, get in touch:

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