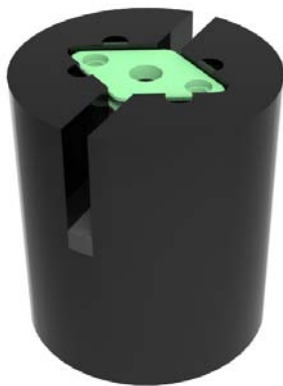


MultiSense TuX - High-Range Turbidity *with Intelligent Anti-fouling*

The MultiSense TuX High-Range Turbidity sensor is an optical device that measures turbidity over an extremely wide range. The sensor is built around a reliable, low-power bio-fouling prevention system that enables unattended operation for long periods of time in all conditions.

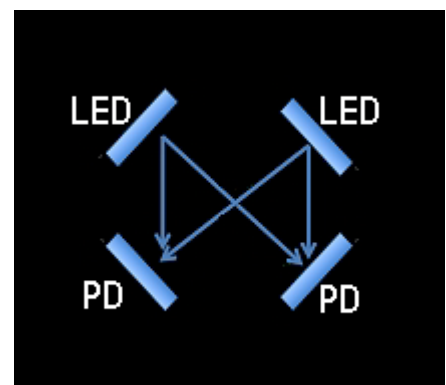


The TuX sensor features a unique multi-beam system that permits accurate measurement of turbidity up to **50,000** NTU. The innovative sensor architecture automatically compensates for any fouling of the optical windows, making this a truly adaptive and low maintenance sensor.

An intelligent bio-fouling prevention system monitors the fouling of the optical windows at every measurement and only cleans when necessary, thereby consuming only a fraction of the power of standard wiping systems.

Turbidity sensor principle of operation:

Two LEDs and two photodiodes are arranged such that each LED directly illuminates both photodiodes, one of which is nearer to the active LED than the other (as shown at right). As the LEDs are driven alternately, each photodiode alternately receives a short and long path length signal. After a cycle in which each LED has been driven, the two short path length signals and two long path length signals are processed in a ratio-metric fashion. This yields a value that is proportional to turbidity levels or suspended solids concentrations, with a linear response extending to levels above **50,000 NTU, or ~100 g/l** suspended solids! The ratio-metric processing nullifies the effects of component temperature coefficients and moderate window fouling, allowing for a sensor that is inherently very stable.





Preliminary specification sheet

Bio-fouling prevention

The TuX turbidity sensor features an intelligent bio-fouling prevention system that includes a mechanical linear wiper that sits at the center between the four sensor heads and rests inside the housing of the instrument (improves robustness and protection against bio-fouling of the wiper itself). The system continuously monitors the state of fouling of the optical windows and initiates a wipe only when such fouling exceeds the threshold set by the user. This optimizes power consumption over the deployment period. Alternatively the wiping interval may be set to a constant value.

The linear motor and wiper is mechanically very simple and is seawater and pressure tolerant, which allows for reliable operation in a very wide range of deployment environments.

Common Specifications	
Housing material:	Rigid polyurethane and epoxy (6,000m depth rating)
Connector:	30cm pigtail
Supply:	5 – 18Vdc - External supply
Energy consumption:	50mW (without wiper)
Data output:	Digital via RS-232 – ASCII data stream; Automatic data streaming on power-up, or polling by command
Streaming sample rate:	User programmable from 10Hz to 1 sample per day
Differential Turbidity Sensor Specifications	
Overall Range:	0 – 50,000NTU
Accuracy:	0 - 4000NTU <2% of reading 4000 - 50,000NTU <5% of reading
Sensitivity:	0.05 NTU
Light Source:	Infrared LED, (880nm)
Method:	Differential
Wiper Specification	
Energy Consumption:	<300mW during operation
Interval:	User-selectable: intelligent clean or interval