

Shuttered Turbidity



Measuring Turbidity with the Hydrolab DataSonde 4a Water Quality Multiprobe

In response to growing market demand for non-fouling turbidity measurement, Hydrolab has developed an advanced, dependable, accurate, state-of-the-art turbidity sensor for exacting water quality studies. Hydrolab's turbidity sensor follows the ISO 7027 specification for determination of turbidity and is well suited for field use. Hydrolab has equipped this unique turbidity sensor with patent-pending shutter technology, ambient light rejection, and scratch resistant optical surfaces.

Wiper Technology Disadvantages

Hydrolab's shutter technology utilises a different concept than wiper technologies already on the market. Wiper technologies allow fouling



of the optical surfaces between samples and attempt to wipe the sensor clean with one or more strokes, similar to a wiper on a dirty windshield. Unfortunately, wipers stick during operation and streaks develop on the optical surfaces. Further damage occurs when sand and grit scratch the optical surfaces on a wiping cycle. Streaked and

scratched optical surfaces do not provide quality turbidity measurements.

Shutter Technology Operation

Hydrolab's patent-pending shutter technology uses a different approach. The shutter covers the optical surfaces between samples and opens only during measurements. Hydrolab's shutter technology avoids fouling the optical surfaces between measurements, which, for most applications, far exceeds the measurement time.



Hydrolab's shuttered turbidity sensor employs synchronous modulation of an infrared LED to provide accurate turbidity measurements in all sunlight conditions at any depth. Synchronous modulation allows the turbidity sensors to operate at very low power levels, thus maintaining long battery life.

Superior Optical Surfaces

The optical surfaces of most field turbidity sensors employ plastic materials. Plastic materials are easily scratched during use and, while scratches are easily removed from plastic, aberrations can develop changing the sensor accuracy. Hydrolab's shuttered turbidity sensor's optical surfaces are fused silica glass (quartz glass). Quartz glass is extremely transparent to infrared and is significantly harder than plastic optical materials. Quartz glass resists scratching and provides accurate measurements longer with lower maintenance costs.



Two Year Warranty

Hydrolab is so confident in this sensor that it offers a complete two-year warranty. The shuttered turbidity sensor can only be purchased on the Hydrolab DataSonde 4a Multiprobe. Owners of DataSonde 4 Multiprobes can upgrade to the shuttered turbidity sensor. Please contact Campbell Scientific (Canada) Corp. at (780) 454-2505 to inquire about upgrade pricing.

For more information on this or any Hydrolab application please contact Campbell Scientific (Canada) Corp. at (780) 454-2505.

Hydrolab Shuttered Turbidity Specifications

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|-----------------------|--|
| Sensor | ISO 7027 nephelometer with 880nm LED and fouling resistant shutter (patent pending) |
| Range | User Selectable: 0 to 100 NTU <i>or</i> 0 to 1000 NTU (maximum immersion depth = 100 meters) |
| Accuracy | ± 2.6% of range ¹ |
| Resolution | 0.1 on 100 NTU range 1 on 1000 NTU range |
| Compensation | ambient light rejection |
| Calibration | dilutions of Formazin or AEPA-1 polymer beads |
| Response Time | < 10 seconds ² |
| Stability | one month |
| Output Options | NTU or mV |

¹ When operated at temperature of calibration and calibrated with turbid-free water and a Formazin standard of 75% of range. Typical temperature coefficient is -0.25 NTU/°C.

² Response time is less than ten seconds with averaging disabled, but requires thirty seconds after power-up. The maximum moving average time is 60 seconds for a worst case response time of 90 seconds from power-up.