

Turbidity (Haze) Analyzer

Complete Analytical System for Measuring Turbidity (NTU) and/or Haze

Turbidity can be used to indicate solid breakthrough in a process. This can be used as an alarm and to invalidate other optical measurements until the problem can be corrected. The Guided Wave Turbidity Analyzer measures the level of suspended solids or non-miscible liquids in a solution via light scattering at 90 degrees. Turbidity values can be found in several different units depending on the application. Two common measurement standards are ASTM Method D4176 (HAZE), and EPA method 180.1 (NTU).

The ASTM method is a visual standard for measuring turbidity (caused by immiscible water in fuels) by viewing cards with black lines of various thicknesses through a 100mm diameter glass jar of solution. The result is a value (called Haze) between 1 and 6, with 1 being the clearest. Haze is typically measured in the refining sector and arises from water beyond the solubility limit. Alarming on this solubility issue allows the refiner to have better control of the fuel quality.

EPA 180.1 measures light scatter at 90 degrees in nephelometric turbidity units (NTU). In this method standards of formazin are available at different NTU levels to be used for calibration.

Both of these methods can be easily replicated with the Guided Wave Turbidity Analyzer.

System Configuration

The Guided Wave Turbidity Analyzer system is a complete solution. The “ready-to-go” analytical system includes:

- Analyzer - ClearView® db filter photometer technology
- Fiber optic cables
- Sample interface - turbidity insertion probe or flow cell
- Control software and Turbidity application calibration

Accurate, Real-time Reliable Results

The Turbidity Analyzer system utilizes a Guided Wave multi-wavelength ClearView db filter photometer analyzer platform. It may be configured for either one (1) or two (2) independent sample monitoring points. Turbidity can be measured on one channel only, leaving the second channel available for any other measurements such as color. The analyzer employs a dual-beam design – meaning; the system has an continual internal optical reference check that allows it to self-compensate for signal variation due to non-sample conditions. This ultimately provides the system with long term stability. The final product is a total Turbidity System that measures the turbidity variation without interference from other factors.

Turbidity can be easily combined to be part of a measurement system that also measures a color value such as Saybolt color. It also can be an add-on to an existing Guided Wave ClearView db chemical measurement application.

Complete Turbidity Analyzer System

- Unique dual beam optics - for long term, stable operation
- One turbidity channel plus up to two independent measurement points - for added analytical flexibility at reduced cost per point
- High efficiency yet rugged fiber optics - analyzer electronics can be located away from a hazardous sample point
- In-door touch screen or Ethernet (Modbus TCP) - easy local or remote analyzer operation and control
- Analytical calculations are all encoded in the software - answers and alarms are clearly reported

The Smart Choice

Guided Wave’s Turbidity Analyzer system delivers accurate, real-time process measurement results. Its linearity and repeatability, as well as its low maintenance requirements make it a cost effective, smart choice to help optimize production, improve yields, ensure consistent product quality and enhance profitability.

Why Choose Guided Wave

- Over 33 years of online process experience with analyzers installed worldwide.
- A total solution with optically matched components and a well-planned calibration approach leading to your long-term success and overall cost savings.
- Expert technical support and responsive global service for the lifetime of the system.
- For a company you can depend on - for control you can measure!

Turbidity (Haze) Analyzer Enclosure Options



Z-Purge Unit
Class I, Division 2

X-Proof Unit
Class I, Division 1,
IECEX, ATEX

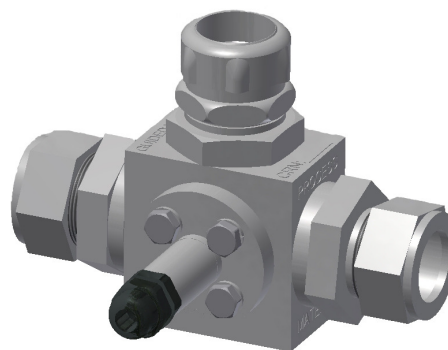
General
Purpose Unit

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Sample Interface

Guided Wave's Turbidity Probe and Multi-Purpose Flow Cell (MPFC) with an additional third port can be used for Haze or Turbidity (NTU) measurements along with the Turbidity Analyzer. The 20mm pathlength is appropriate, for example, when monitoring Saybolt color. For more information review product data sheets #1065 and #1051.



Turbidity Analyzer System Specifications

Analyzer Technology	Fiber optic dual-beam ClearView db photometer (see also document #1033)
Fiber Connectors	SMA 905
Light Source	Tungsten-Halogen, >4000 hours typical
Photometric Noise	<50 μ AU 450-2100 nm 1 minute rms
Photometric Drift	<500 μ AU rms/ $^{\circ}$ C
Response Time	1 second, minimum. User settable
Measurement Range	Haze 1 to 6, NTU 0-1000
Measurement Accuracy	Complies with ASTM methods D4176 and EPA method 180.1
Power	24 VDC, 3 A; 72 watts
Environmental	0 – 45 $^{\circ}$ C, 0 – 90%, sun and rain sheltered

Options for a Custom Solution

Another advantage of the Turbidity Analyzer system is that it can be customized in many ways. For more information about specifications and analyzer operations request ClearView db document #1033 or call Guided Wave.

No. of Channels	Turbidity monitoring plus up to 2 (two) sample channels
Outputs (analog)	Up to 6 for a one channel unit Up to 4 per channel for a two channel unit 4 – 20 mA, customer powered
Outputs (discreet)	Up to 6 for a 1 channel unit Up to 4 per channel for a 2 channel unit contact closures
Inputs (analog)	4 (optional) 4 – 20 mA, isolated grounds
Local Display	LCD touch screen, color QVGA
Communications	Ethernet (TCP Modbus) standard
Enclosures	General Purpose NEMA 4 unclassified Z-Purge, NEMA 4x, CI D2 X-Proof, ICEEx, ATEX, CI D1



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