Turbidimeter

Introduction

Turbidity, referred to as the cloudiness of a fluid medium, is quantified by the intensity of light scattered by particles suspended in the medium. Turbidity measurements are important indicators in many industries and applications as they not only influence the yield of the industrial process, but also detect factors which are detrimental to a system. CST's PX2+, when used in conjuction with a flow cell or transmission probe, eliminates the need for laboratory measurements and displays the turbidity on the unit's touch screen display. Monitoring the presence or absence of scattering particles in a process assists plant managers, operators, and technicians in reducing plant upsets, shutdowns, and loss of product. CST offers both in situ probes and extractive flow cells designed for continuous, real-time turbidity monitoring.

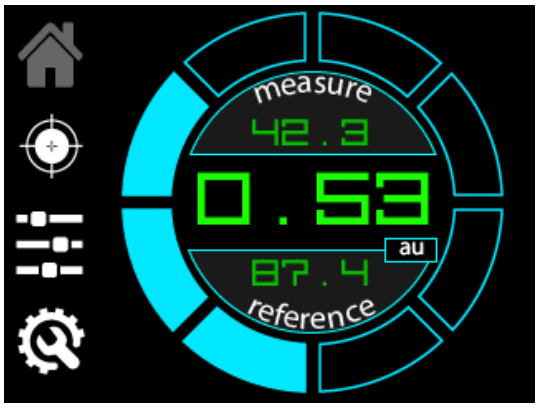
Features

- ◊ Continuously and accurately measures turbidity using NIR spectroscopy.
- ◊ The all-inclusive Turbidimeter comes preassembled in a waterproof NEMA4X enclosure with a dedicated sample flow cell or transmission probe outside of the enclosure.
- ◊ Easy to use software with a digital touch display allows users to view data and calibrate.
- ◊ High reliability with a typical light source lifetime of at least 5 years.
- ◊ Standard data outputs include MODBUS, 4-20mA, and USB to CST Software.
- ◊ Low cost of ownership with no routine maintenance.
- ◊ Saves time spent sampling and measuring in a lab while preventing contamination and loss of product.

Applications

- ◊ Cell Quantification
- ◊ Polymer Feed
- ◊ Water in Oil
- ◊ Biomass Growth
- ◊ Filter Efficiency
- ◊ Phase Separation
- ◊ Fermentation
- ◊ Pharmaceuticals
- ◊ Food & Beverage
- ◊ Wastewater

CST's Turbidimeter includes a PX2+ with (2) fiber optic cables and either a flow cell with (2) optical interface couplers (pictured above) or a transmission probe.



PX2+ Capacitive Touch LCD

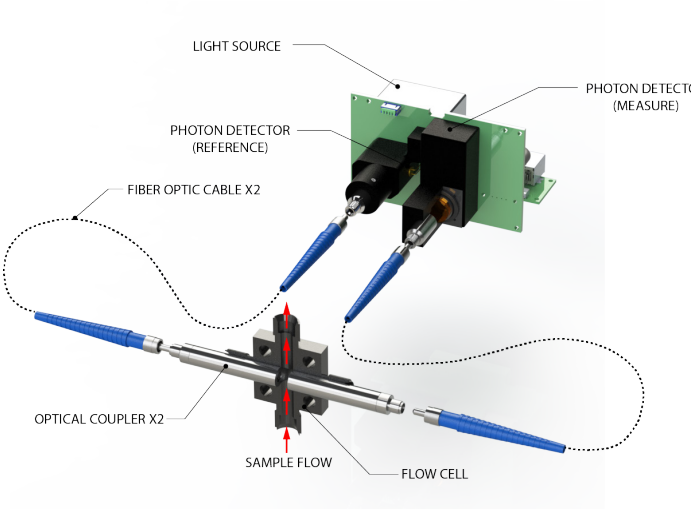
Custom Sensors & Technology
531 Axminister Dr.
Fenton, MO 63026

Phone: (636) 305-0666
Sales@customsensors.com
www.customsensors.com

Theory of Operation

The use of NIR spectroscopy is certainly the best method of monitoring turbidity. CST's Turbidimeter contains a PX2+ photometer that utilizes Beer's Law, the attenuation of light as it passes through a substance, to monitor changes in properties of an analyte in process. It sends optical radiation from a NIR LED within the instrument out to a flow cell or transmission probe and returns the signal to the instrument via fiber optic cables. The raw output of the PX2+ is a mA signal that is scaled from 0 to 3 AU and can be directly correlated to NTUs.

Several scattering techniques can be employed by the Turbidimeter depending on the specific size and concentration of particles that are being measured. The extractive flow cell can measure particles in a forward, side or ratio technique, while the in situ transmission probe measures with a forward-scatter technique. With CST's wide range of options, we have the perfect solution for your turbidity monitoring needs.



Transmission Probe

Technical Specifications

General	
Range	0-2000 NTUs (0-3 AU)
Accuracy	± 1% of Full Scale
Repeatability	± 0.5% of Full Scale
Measurement Principle	NIR Absorbance
Light Source	NIR LED
Detector	Silicon Photodiode
Fiber Optic Cables	(2) 2 meter, 600 micron core
Sample Introduction	316SS Flow Cell or In Situ Transmission Probe
Process Pressure	2000 psi max
Minimum Flow Rate	100 ml/min
Calibration	Analyzer is calibrated with customer sample; measurement normalized by zeroing every 1-2 months or as needed.
Response Time	1 second
Power Requirement	24VDC nominal (12-48VDC), 8.5 watts max
Dimensions of Photometer	5" H x 5.8" W x 2.8" D
Weight of Photometer	3.5 lbs. (1.6 kg)
Enclosure	NEMA4X anodized aluminum

PX2+ Operating Conditions	
Process Temperature	204°C
Operating Temperature	5°C to 50°C
Storage Temperature	-20°C to 50°C

Communications	
Outputs	4-20mA, RS-485 (MODBUS), or USB
Alarms	Contact closure (60VDC, 0.75 A max)
Display	3.2" capacitive touch LCD

*All information provided in this datasheet is subject to further application engineering based on customer sample.

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Phone: (636) 305-0666
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