



Applications

- Raw water turbidity
- Flocculation monitoring and flocculant dosing
- Filtration monitoring and control
- Monitoring of reservoirs and supply to networks

In water treatment processes for drinking water and for industrial applications

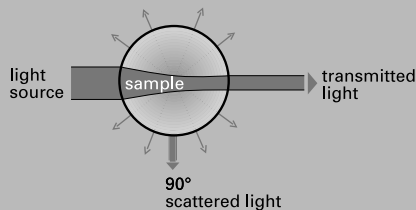
Features

- Contactless: measurement in a free-falling water stream
- Complies with standards EN 27027/ISO 7027
- Measuring span 0 ... 500 FNU
- Automatic adjustment using a fixed internal solid reference
- Full optical color compensation
- Integral sample deaeration

ON-LINE TURBIDIMETER WTM500

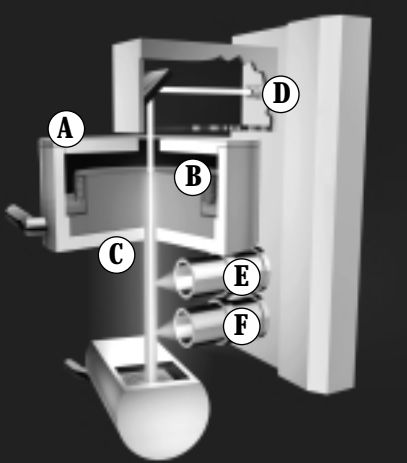
ON-LINE TURBIDIMETER WTM500

Turbidity measurement for process control



Scattered light measurement in a free-falling water stream

Measuring method



Calibration and automatic adjustment

Turbidity is created in liquids by solid particles. When a light beam is passed through the sample, these particles scatter it. Measurement of the scattered light intensity and determination of the turbidity level therefore provide reliable information about the concentration of solid particles in the liquid.

Turbidity is an important measured variable for ensuring water purity, particularly in waterworks, and for controlling various process steps (e.g. filtration, flocculation).

For many years SIGRIST has been producing instruments for measuring turbidity in a free-falling water stream. The main advantage is that contactless measurement eliminates problems of window fouling as a result of solids or chemical deposits. The need for servicing is minimized as a result. And because stray light is sharply reduced, it becomes possible to measure extremely low turbidity levels of 0.01 FNU or lower precisely. The WTM500 is the first instrument to measure 90° scattered light to ISO 7027 with such high accuracy in a free-falling stream.

The sample is supplied to the instrument and passes through the fluidically optimized feed vessel (A). Because the overflow lip (B) ensures unchanging inlet pressure, the water flows out of nozzle (C) in a perfectly constant stream. At the same time, any air bubbles in the water can escape upward, which eliminates a possible source of reading falsification.

The modulated beam of an infrared light source (D) penetrates through the surface of the sample in the feed vessel and illuminates the water stream over its entire length. Two photodetectors (E) and (F) measure the intensity of the 90° scattered light at different levels. This configuration compensates the effect of any coloration of the water.

Possible fluctuations or aging of the light source are monitored by a third photodetector, which continuously readjusts the intensity of the light source.

The SIGRIST WTM500 is calibrated at the factory with formazine in FNU units. This calibration is checked automatically at freely adjustable intervals or upon manual initiation. For checking, the entire optics pivots to a built-in solid reference and checks the calibration against it. Thus SIGRIST's traditional accuracy and long-term stability is ensured, and correction to fulfill QA requirements is made possible at any time without interrupting the process.

Operation and Communication

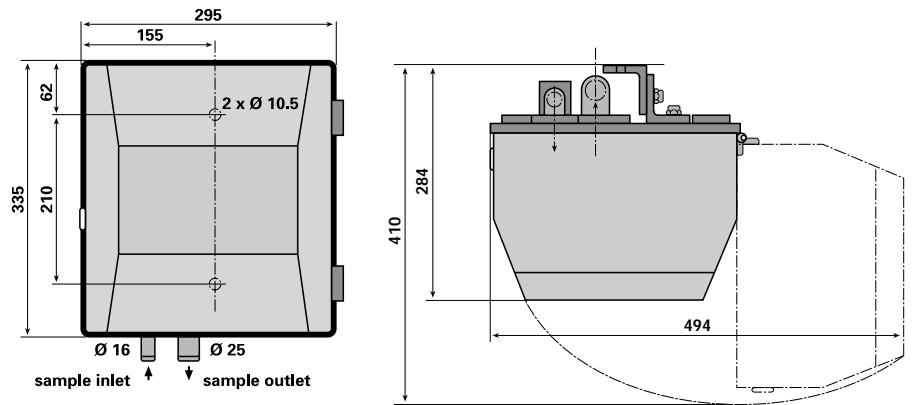
The WTM500 is operated with the SIREL control unit. With its two-line LC display and plain-text-guided operating structure, the SIREL affords simple access for instrument operation, configuration and servicing. The SIREL has a 0/4..20 mA current output and two independently configurable relay contacts for use as either limit or alarm contacts.

Available optionally is a BUS coupler for connection to PROFIBUS DP, PROFIBUS FMS, INTERBUS and CAN OPEN. It permits direct transmission of readings and control of process equipment via the digital interface.

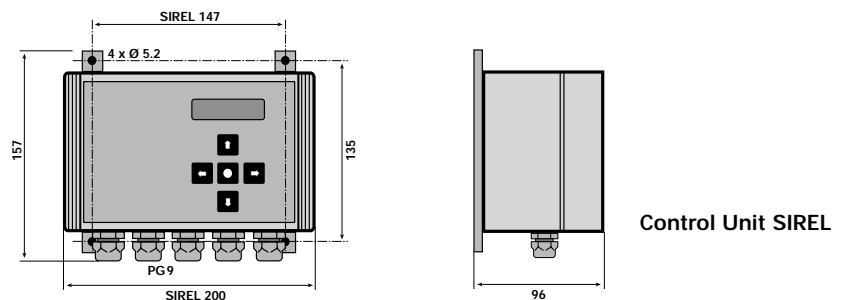
Installation / mounting

The WTM500 is mounted vertically on a wall or bracket as close as possible to the sampletaking point. Hoses are used for sample supply and return. A control valve must be provided for adjusting the sample flow rate between 3.2 l/min and 4 l/min. An additional deaeration tank WTRE is recommended in the event of pressure fluctuations or highly gaseous media.

Dimensions

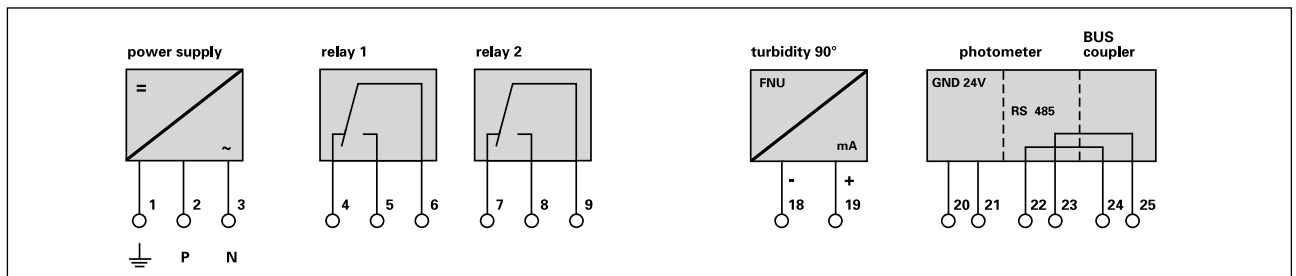


Dimensions and mounting WTM500



Control Unit SIREL

Wiring diagram



SPECIFICATIONS

Turbidity
measurement

Measuring principle:	90° scattered light measurement
Measuring span:	0 ... 500 FNU
Measuring ranges:	8 ranges between 0...0,1 and 0...500 FNU freely configurable
Standard setting:	0..0,1 / 0..0,3 / 0..1 / 0..3 / 0..10 / 0..30 / 0..100 / 0..500 FNU
Resolution:	0,001 FNU
Measurement wavelength:	880 nm

Photometer
WTM500

Installation:	On-line measurement; outlet pressureless
Sample supply/return:	Hoses, inside diameter 16 mm / 25 mm
Sample flow:	3,2 ... 4 l/min
Sample temperature:	0 °C ... +40 °C
Ambient temperature:	0 °C ... +40 °C
Electronics protection	
Type:	IP 54
Weight:	14 kg

Control Unit
SIREL

Power supply:	85 ... 264 V / 47 ... 440 Hz or 24 V DC
Power input:	23 W
Display:	LC display with plain-text information
Current output:	0/4...20 mA; max. burden 600 Ω
Limits:	2 separately configurable relay contacts 250 V AC, 4 A
Protection type:	IP 65
Weight:	1,5 kg
Connection to photometer:	4-core cable, up to 100 m

Order numbers
Accessories

901310	WTM500 Turbidimeter 85..264 V AC
901240	WTM500 Turbidimeter 24 V DC Control unit included in scope of supply
901314	Flowmeter
901316	Flow regulator
900985	Deaeration tank WTRE

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