



#### 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

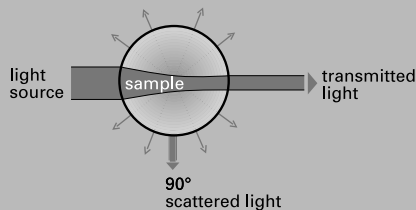
- Contactless: measurement in a free-falling water stream
- Complies with standards EN 27027/ISO 7027
- Measuring span 0 ... 500 FNU
- Automatic adjustment using a fixed internal solid reference
- Full optical color compensation
- Integral sample deaeration

# ON-LINE TURBIDIMETER WTM500

**SIGRIST**  
PROCESS-PHOTOMETER

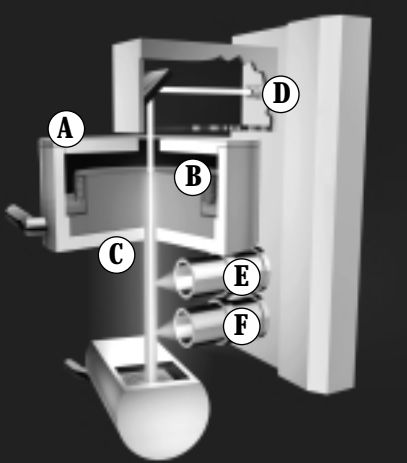
# ON-LINE TURBIDIMETER WTM500

## 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

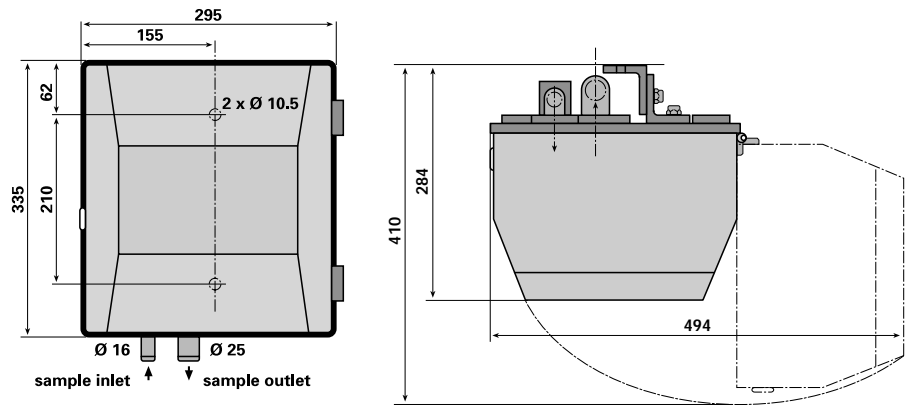
The WTM500 is operated with the SIREL control unit. With its two-line LC display and plain-text-guided operating structure, the SIREL affords simple access for instrument operation, configuration and servicing. The SIREL has a 0/4..20 mA current output and two independently configurable relay contacts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

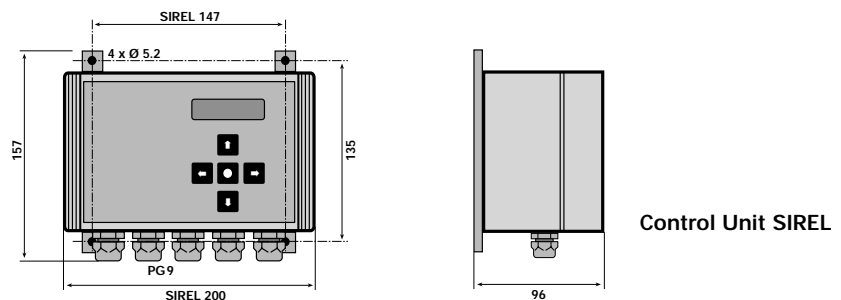
## Installation / mounting

The WTM500 is mounted vertically on a wall or bracket as close as possible to the samplertaking 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

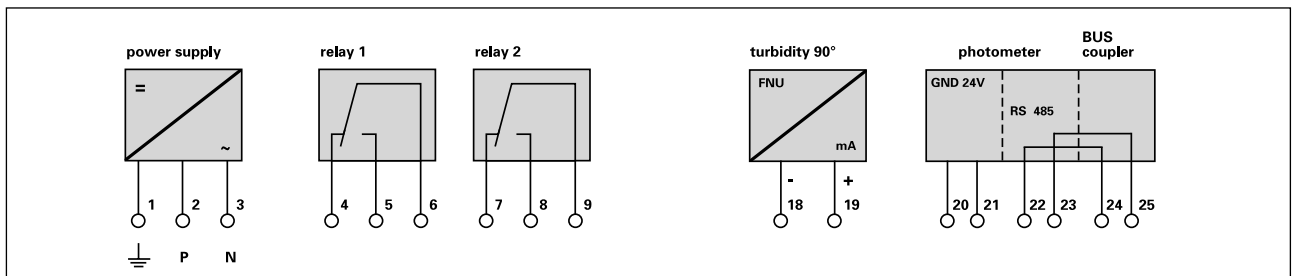


Dimensions and mounting WTM500



Control Unit SIREL

## Wiring diagram



# SPECIFICATIONS

Turbidity  
measurement

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

Photometer  
WTM500

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

Control Unit  
SIREL

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

Order numbers  
Accessories

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

Represented by:

  
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