

# Turbidity & Temperature

## A Power Couple

With an increasing effect of global warming, drinking water suppliers are confronted with hotter water at abstraction points (e.g., surface water from rivers, lakes, wells) as well as in the distribution network when transported to the tap. In certain areas water is stored in elevated reservoirs where especially hot temperatures during summer warm up the water before it is supplied to the end customer. But what effect does increased water temperature have?

The maximal cold water tap temperature cannot exceed 25°C (DIN EN 806-2:2005). While this value is not mandatory by drinking water regulators it is a typical value for cold water applications when hygienic tests are performed (e.g., KTW, WRAS). Microbial growth increases exponentially with temperature. The solubility of dissolved gases decreases with increasing temperature. Therefore, water temperature provides important qualitative information about water quality.

### The Solution

For this reason, Sigrist has upgraded the AquaScat S and introduced a temperature sensor embedded in the sensor head. With this feature Sigrist offers the customer an additional measurement parameter which can be used for qualitative statements about the water quality as mentioned above. Together with the high precision turbidity measurement one instrument gives the operator the possibility to map out the water quality in a semi-quantitative manner without expensive analysis equipment. The high accuracy of the Sigrist instrumentation can detect smallest changes in the water turbidity.

### Customer Benefits

A crucial benefit is the measurement of turbidity with zero water loss across the entire drinking water treatment process.

- Ré-étalonnage facile sur le terrain sans utiliser de formazine.
- Maintenance simple et intuitive, ce qui permet de réduire les coûts d'exploitation.

### Further Benefits

- Two in one: turbidity and temperature integrated in one instrument.
- Probe with hygienic design for direct use in drinking water.
- Precise measurement with zero water loss.



AquaScat S



- A large variety of installation and interface possibilities address specific customer needs.
- Easy re-calibration in the field without the use of toxic Formazine.
- Easy and intuitive maintenance resulting in low operation costs.

### Technical Data

Turbidity:	0 ... 4000 FNU/NTU
Temperature:	0 ... 60 °C
Limit of detection turbidity:	0.006 ... 0.008 FNU (physical limit of pure water)
Resolution:	0.001 FNU
Power supply:	24 VDC ± 10 %
Power consumption:	max. 2 W @ 20 °C
Dimensions:	Ø 40 x 200

### Typical Application

The AquaScat S measures turbidity according to ISO7027. This is either achieved by submersing the probe directly into a catchment or by installing it in a pipe. Customers appreciate the high precision and the variety of installation and interface options for:

- Monitoring turbidity and temperature during raw water extraction
- Measuring turbidity before/after ultrafiltration

For example, the AquaScat S can be used to monitor the sterilisation step in water treatment. After disinfection (e.g. ultrafiltration or UV irradiation), the turbidity must be lower. This step typically takes place

before the water is distributed to the end customer. This allows temperature changes in the water to be directly linked to the distribution network.

### Did you know?

Water temperature has a direct effect on microbial growth rates. In population dynamics the growth phase is governed by an exponential increase followed by a linear one. As a simple rule of thumb, a water temperature of 10 °C more results in 2–3 times faster microbial growth.

The amount of dissolved gas decreases with increasing water temperature. Dissolved Oxygen for example, has a saturation concentration of 14.6 mg/L at 0 °C while it is merely 9.1 mg/L at 20 °C. If at any given temperature the amount of dissolved Oxygen is much lower than this values, it can be an indication for the presence of organisms (bacteria, algae). They consume Oxygen for metabolization reasons.

Therefore, the combination of an elevated water temperature together with an abnormally high turbidity can be used as an indicator for microbial contaminations of water.