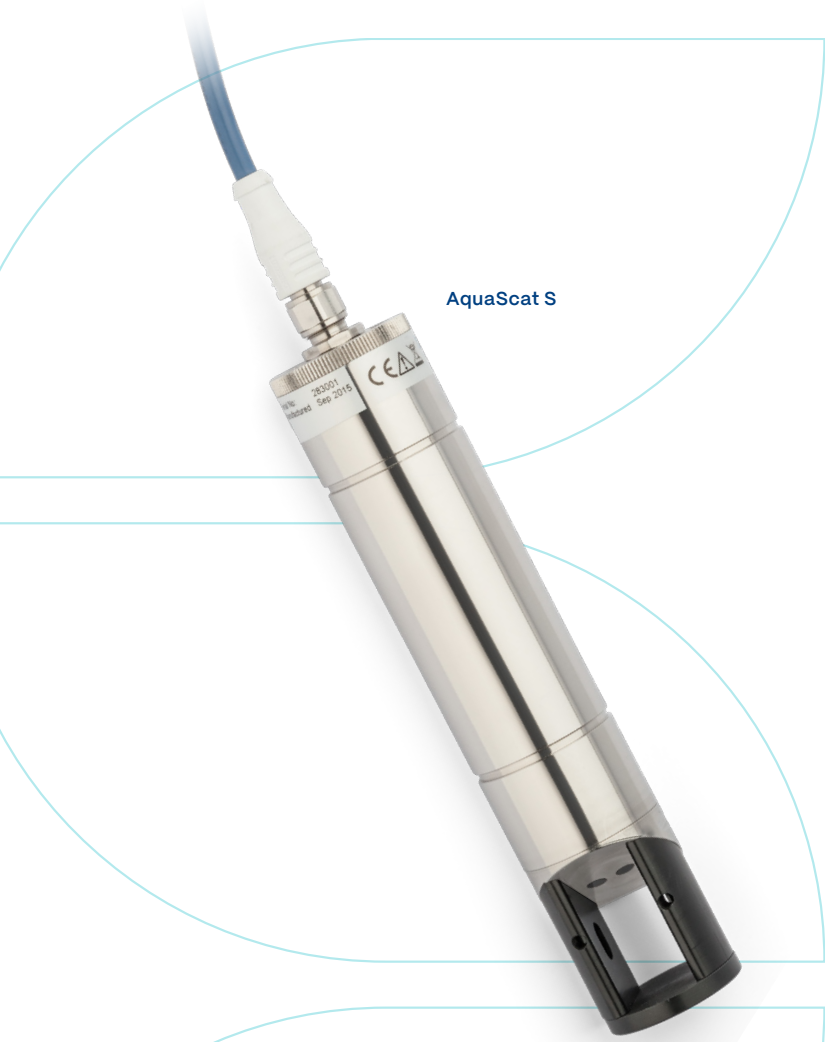
sigrist photometer

APPLICATION NOTE

Turbidity & Temperature

A Power Couple

With an increasing effect of global warming, drinking water suppliers are confronted with warmer 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?

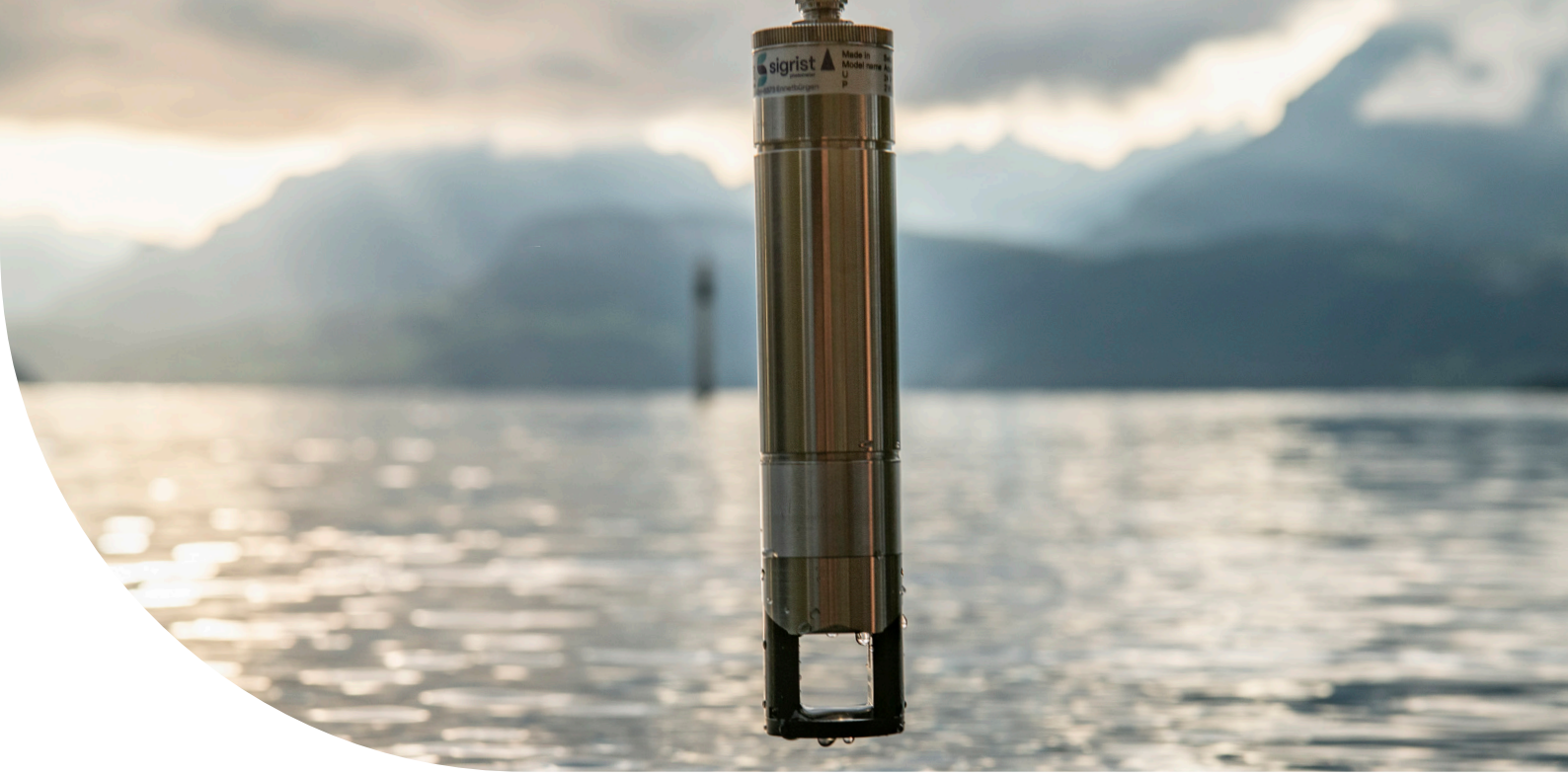


AquaScat S

According to DIN EN 806-2:2005, the temperature of cold water from the tap should not exceed 25 °C. Even if this limit value is not mandatory, it is a recognised guideline value – particularly in the context of hygiene test procedures such as KTW or WRAS. Temperature is a critical factor for bacterial growth. It increases exponentially as the temperature rises. This effect is further exacerbated by stagnant water in the pipe system: the lack of flow not only promotes the proliferation of germs, but also leads to a further increase in temperature, for example by absorbing the ambient temperature. An increased water temperature also changes the solubility of gases: It decreases with increasing temperature. Temperature is therefore not only a technical parameter, but also a key indicator of potential hygiene risks in drinking water installations. Regular monitoring provides valuable information on system quality and enables deviations or stagnation problems to be recognised at an early stage.

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.

Further Benefits

- Turbidity and temperature integrated in one device.
- Probe with hygienic design for direct use in the drinking water pipe.
- Precise measurement without water loss.
- A variety of installation and interface options for specific customer requirements.
- Easy re-calibration in the field without the use of formazin.
- Simple and intuitive maintenance, resulting in low operating 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 in accordance with ISO7027. This is done either by immersing the probe directly into a catchment area or by installing it in a pipe. Customers appreciate the high precision and the variety of installation and interface options.

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.

Dok.-Nr. 16553E/2

Sigrist-Photometer AG
Hofurlistrasse 1 · CH-6373 Ennetbürgen
+41 41 624 54 54
info@sigrist.com