

# Quick, simple and reliable water quality measurements of surface waters with

# WISP-3



Water Insight BV introduces the WISP-3: an easy to operate hand-held instrument for water quality measurements of surface waters. A fixed mounted system is also available for continuous monitoring. WISP-3 measures in situ and in real time, without the need for laboratory analysis. WISP-3 is fast and up to 50% more cost-effective in comparison with traditional lab analysis. Furthermore, instant availability and extensive analysis of the measurement results are available using the WISP-3 web portal.



WISP-3 uses the spectral information of upwelling light from the water body. Based on 20 years of sound university research at the Institute of Environmental Studies (VU University Amsterdam) and others, know-how and techniques have been developed to determine the concentrations of water quality parameters from this spectral information with accuracies comparable to laboratory analyses.

The WISP-3 determines the following parameters:

- concentration of Chlorophyll in the water as proxy for algal biomass;
- concentration of Phycocyanin in the water as proxy for cyanobacterial biomass;
- concentration of suspended sediments (TSM);
- concentration of Coloured Dissolved Organic Matter (CDOM) (after additional processing via portal);
- water transparency, not only over PAR but also for separate spectral bands;
- Secchi Disk depth (after additional processing via portal);
- occurrence of floating layers of cyanobacteria.

The WISP-3 is designed for:

- Monitoring of water supply reservoirs;
- Monitoring water quality at swimming water locations;
- Intensive monitoring during periods of expected algal blooms;
- Flexible and fast monitoring of ecological restoration projects.

Due to its speed, flexibility and instantaneous data availability, usage of the WISP-3 and its web portal enables day to day decision support systems of water management organizations where algal blooms affect:

- drinking water safety;
- swimming water safety;
- ecological status / environmental protection.





**Technical specifications:**

WISP-3 stands for Water Insight SPectrometer with simultaneous measurement of downwelling irradiance, upwelling radiance and downwelling radiance. Instantaneous calculation of the water leaving radiance using a pre-calibrated optical model is performed inside the instrument.

**Calibrated concentration ranges:**

- Chlorophyll-a: 0 - 120  $\mu\text{g l}^{-1}$ ;
- TSM: 0 - 100  $\text{mg l}^{-1}$ ;
- CDOM: 0 - 4.5  $\text{m}^{-1}$  (expressed as g440);
- Phycocyanin 0 - 1200  $\text{mg m}^{-3}$ .

Kd (transparency) and SD (Secchi disk depth) measurements are currently being validated.

**Operating Specifications**

The WISP-3 measurement is an above surface measurement, which prevents bio-fouling from accumulation of dirt around the sensor. It is however not possible to measure depth profiles as the WISP-3 will only receive information about the first meter (s) from the surface depending on transparency.

The WISP-3 can be used under sunny and overcast conditions anywhere in the world.

**Physical specifications**

- Size 24,7 cm x 20,7 cm x 15,5 cm;
- Weight 2,2 kg;
- Wavelength range 380-780 nm;
- Spectral resolution 4 nm;
- Aperture 3° FOV;
- Measurement time 30 – 90 s;
- Storage on SD memory card;
- LAN network connection (fixed mount).

Water Insight also offers extensive WISP web services allowing real time data access, quality control, enhanced algorithms, additional parameters such as CDOM and SD and automatic updates.

The WISP-3 is available as a hand-held instrument and as a fixed mounted system (e.g. on a pole). A fixed mounting is suitable for prolonged continuous monitoring. The hand-held scanner can be used very flexible at different locations.



Photo: WISP-3 display showing chlorophyll concentration

**Company information:**

Water Insight BV is a company that offers innovative products and services in the field of geoinformation and surface water quality monitoring. State-of-art remote sensing technologies are used from different platforms including boats, airplanes and satellites for our products and services.

Water Insight was founded in 2005 by dr. Steef Peters and dr. Marnix Laanen. We provide water remote sensing products and services for in situ measurements and satellite data. We participate in leading international research projects.

Customers are national and regional water management authorities and national and international commercial companies.

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