



## List of tested parameters detectable by the sensor (Spectromarine One - 2025 model)

Some of these require specific setups on-site to be possible; please consider the detailed descriptions. The current list applies to the Spectromarine One prototype. A parameter's presence on the table does not mean it will be 100% guaranteed to measure at your site, consult us first. The list is not exhaustive; Contact us to receive more details attaching a list of parameters of interest to you and Spectromarine team will look into the possibilities of measuring this signal.

Parameter	Detected	Tested	Measurable in all scenarios	Description	State	Range	Calibration/Comments	Realistic calibration ETA (can be sooner)
Chlorophyll (CHL) $\alpha$	Y	Y	Y	Photopigment found in most photosynthetic organisms, can signify the growth rate of photosynthetic organisms	-Lab tested -Field tested -Tested in industrial environments Measurements are fluorescence and absorbance-based, so the size of the organism is not important	Tested range so far: 0.00281 - 0.0286 mg/L $\pm 2.8\%$ for total Chl; $\alpha$ and $\beta$ separation determined by ratios with some math dependent on the signal	Virtually unlimited maximum range, limited by how far excitation light can penetrate - basically limited by whether the water is too turbid to see through in the UV+NIR range. Listed minimum detection is also not final, it's the lowest concentration that was tested in lab, but it still had a good sensor signal, so it can go lower than this. Chl a and b have been also calibrated separately	Calibrated
Chlorophyll $\beta$	Y	Y	Y	Photopigment found in most photosynthetic organisms, can signify the death rate of photosynthetic organisms	Same as CHL $\alpha$			Calibrated
Phycocyanin (and its supporting pigment groups)	Y	Y	Y	Photopigment found in cyanobacteria which signals their presence in the water	Same as CHL $\alpha$ , except in industrial environments	Tested range so far: 0.0174 - 0.1566 mg/L $\pm 2.7\%$	Same as CHL $\alpha$	Calibrated
Total organic carbon (TOC)	Y	Y	Y	Parameter showing the presence of organic carbon	-Lab tested (sugar, river water)	Relative, no identified range	The signal is detectable and fits the expected signal from literature data. Lab calibration required. Some calibration was already done with total carotenoid signals (total carotenoids mg/L).	Q3 2026
Hydrocarbons	Y	N	N	Petroleum products, oils, solvents, and polymers, etc.	Requires lab testing, sample collection	Many different signals at different ranges. Sample collection and hydrocarbon identification required at first, then relative values can be measured until calibrated for absolute values.	Consists of multiple signals and is extremely hard to calibrate due to the nature of this signal (overlapping with different signals, dependant on what hydrocarbons are present). Requires on-site collection and lab testing of samples to obtain precise absolute values periodically.	Not applicable
Dissolved organic	Y	Y	Y	Dead microorganisms, fecal matter, organic salts, organic	-Lab tested -Field tested	No identified range, multiple components.	Same as hydrocarbons, but the total DOM signal is measurable	Not applicable

matter/turbidity (DOM / TDS)				material smaller than microscales. The organic part of total dissolved solids (TDS), and also a measure of water optical turbidity.	-Tested in industrial environments		relatively without sample collection. Calibration requires sample collection on-site to calculate absolute values.	
Water temperature	Y	Y	Y	The temperature of the water in which the device is present	-Lab tested -Field tested -Tested in industrial environments	0 to 80 °C, currently limited by the internal electronics withstanding only this temperature range	2 different probes with accuracies up to ±0.01 °C, commercially tested sensors. Externally routed probes isolated from the sensor body can perform measurements in the range of -20 to 600 °C	Calibrated
Position/wave propagation/GNSS	Y	Y	N	The surrounding flow of water currents moving the sensor (i.e. on a buoy), and the position of the sensor	-Lab tested -Field tested	Depending on satellite presence and GNSS availability	Commercial devices, optional add-ons to the device	Not applicable
Salinity/Conductivity	Y	Y	N	Water salinity measures the presence of dissolved salts, turbidity of the water, etc. Part of the TDS signal, could be used to reconstruct total TDS together with DOM data.	Early stage of lab testing, tested on table salt and sea salt	Currently expected range is 1-100 mS/cm, which can be hardware adjusted due to end-user needs	Requires further lab testing and calibration. Currently an optional addon.	Q4 2026
Presence of surface oil	Y	Y	N	If the sensor is positioned close to the water surface and facing it at a relatively unchanged distance (think buoy), the presence of any surface oil is measurable	-Lab tested -Field tested	Binary (yes/no)	present/not present condition, requires setup with a fixed distance to the surface	Not applicable

Any values listed as relative units are measured on the sensor, no matter what, and can be adjusted to absolute units historically on all data when calibrated (requires online connection to update software), as all data is stored on a local database (in online scenarios, data is also stored on our remote server periodically).