

Multiparameter Portable Fluorometer

The portable fluorometer provides a cost-effective solution to monitor the effects of organic pollution, identify potentially harmful cyanobacteria and turbidity. AlgaeChek Ultra can be configured to detect up to three parameters.

Chlorophyll-a provides an indication of the algal biomass and is often used as an indicator water quality and nutrient pollutants. Phycoerythrin and phycocyanin are pigments found in marine and freshwater cyanobacteria. Many species of cyanobacteria produce toxins that can be harmful to human health or have significant environmental impact.

AlgaeChek Ultra operates in a different fashion to a single wavelength fluorometer, providing information about the proportion of different light harvesting pigments in the algal sample being analysed. AlgaeChek Ultra uses the principle that energy absorbed by the light-harvesting pigments is rapidly transferred to Chlorophyll-a, where it is used to initiate a cycle of photosynthesis. A proportion of the energy absorbed, however, is re-emitted as Chlorophyll a fluorescence with a peak at 682nm. All versions of AlgaeChek Ultra come with a Chlorophyll-a channel as standard, two other channels can then be selected between turbidity and phycoerythrin and phycocyanin-pigments that are prevalent in many cyanobacteria based algae.

The system can combine a sensor with a depth rating of 600m with either a wireless roamer and PDA or laptop connectivity. It provides a low-cost high-performance sensor for marine, freshwater or process applications. A Windows based interface is provided that allows the user to both plot and record time stamped data when operating the AlgaeChek directly from a PC.

- Miniature, low cost multiwavelength fluorometer
- Range of excitation wavelength configurations available
- Chlorophyll-a fluorescence detection at 685nm
- Digital output in engineering units
- Additional analogue output as standard
- User selectable sampling rate, 0.1Hz - 3Hz
- Internal referencing of excitation intensity
- Rejection of ambient daylight
- Low noise, high sensitivity



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SPECIFICATIONS

Dynamic range	- Calibrated for 0-100µg/L (chlorophyll a in acetone)
Limit of detection	Typically 0.1% of full range
Detection wavelength	685nm
Size	26.5mm dia x 105mm (140mm including connector)
Weight in air	100g
Pressure housing	Acetal C
Depth rating	600 metres
Connector	MCBH-6-MP-SS
Input Voltage	11 to 25V
Data Output	Digital RS232 and analogue 0 to 5Vdc (RS422 and SDI-12 options)
Power Requirements	<1Watt @ 12 volt

Applications

Algal class studies
 Chlorophyll-a monitoring
 Environmental monitoring
 Cell culture monitoring
 Particulate studies
 Moored, profiled, towed or ROV/ AUV platforms



Process explained

Fluorescence is the emission of light by a substance that has absorbed light. In most cases, the emitted light has a longer wavelength, and therefore lower energy, than the absorbed light. Fluorometry is the measurement of this fluorescence. Different molecules absorb and emit light at specific wavelengths. In order to effectively use fluorometry as a tool for environmental analysis the specific wavelengths of the absorbed and emitted light for the target molecules/compounds needs to be known. Modern Water fluorometers use LED light source to excite the molecules and then measure the emittance at the desired wavelength. The intensity of the emitted light provides the concentration of the target compound.

What does the AlgaeChek Ultra detect?

Excitation wavelengths	
Chlorophyll-a	470nm
Phycoerythrin	530nm
Phycocyanin	610nm
Turbidity	685nm
Available combinations	
Chlorophyll-a, Phycoerythrin, Phycocyanin	
Chlorophyll-a, Turbidity, Phycoerythrin	
Chlorophyll-a, Turbidity, Phycocyanin	



Note: Phycoerythrin and Phycocyanin data from AlgaeChek Ultra is related to the Chlorophyll-a fluorescence emission. Users who require Phycoerythrin and Phycocyanin concentration data may require the individual AlgaeChek fluorometers.



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