

Technical and functional specifications form for underwater chlorophyll fluorometer (DIVING-PAM)

For measuring photosynthetic activity of macroalgae

Bioforsk Nord Bodø has cultivation of macroalgae and industrial applications as main focus. This document describes our need for a portable PAM chlorophyll fluorometer with optoelectronics, software and additional equipment.

1. Basic system

The instrument will be used for *in situ* measurement of the photosynthetic activity of macroalgae/seaweeds. As it will be exposed to seawater and salted humidity to a great extent, a **diving-PAM** for underwater analysis is required. The instrument will feature the following technical specifications:

Specifications	YES/NO	Comment/reference to appendix where more information is included
– Submersible housing resisting seawater.		
– Measuring light source: red LED, variable intensity settings.		
– Temperature sensor.		
– Fiber quantum sensor for PAR measurement.		
– Data output: data transfer via USB using Windows compatible software.		
– Display: LCD.		

– User interface: sensor keypad.		
– Power supply: rechargeable internal built-in battery.		
– Transport case.		

2. Additional features

Sample holders:

- Universal sample holder for single hand sample handling featuring adapters suited to all types of macroalgae samples.
- Magnet sample holders (x3) for leaf-like samples and dark-adaptation.
- Dark leaf clips (x3) for use with macroalgae: with sliding shutter for dark-adaptation.

Accessories:

- Suspension cuvette: featuring stainless steel sample compartment, fiberoptics window-adapter, injection port for syringes, nozzles for connecting an external flow-through water-bath (temperature control), 3 pieces magnetic stir bars.
- Magnetic stirrer with fiberoptics holder: featuring centering ring for suspension cuvette, base-plate with stand bar for mounting fiberoptics on top of cuvette.