



WATER-PAM: Chlorophyll Fluorometers for Dilute Samples

DESCRIPTION

- The WATER-PAM is the PAM fluorometer of choice when very low chlorophyll contents of samples require outstandingly sensitive fluorescence detection. The three different types of the WATER-PAM are designed to analyze suspension samples, surfaces, or a continuous water flow, respectively.
- The parameters measured are chlorophyll content and photosynthetic activity. All WATER-PAM chlorophyll fluorometers can be operated in the stand-alone mode which facilitates measurements in the field.



WATER-PAM

General Features

The WATER-PAM chlorophyll fluorometers achieve outstanding sensitivity by fluorescence detection with a particularly red-sensitive photomultiplier combined with special preamplifier electronics. In this way, detection limits for suspensions down to 0.1 µg chlorophyll/liter are achieved.

Damage to the susceptible photomultiplier tube by external radiation is averted by an automatic switch-off circuit. Consequently, the photomultiplier tube is shielded from external light during measurements.

A further feature of WATER-PAM chlorophyll fluorometers is that they can be operated independently from line connection and computer by the battery-powered PAM-CONTROL unit.

The same PAM-CONTROL unit functions as a physical interface between measuring unit and computer for operation of the WATER-PAM by the WinControl software.

WATER-PAM

ACCESSORIES

CUVETTE Version

- **Stirring Device WATER-S**
- **Spherical Micro Quantum Sensor US-SQS/WB**

FIBER Version

- **Mini Quantum Sensor US-MQS/WB**

FLOW THROUGH Version

- **Spherical Micro Quantum Sensor US-SQS/WB**
- **Benchtop Adapter WATER-FT/SK**

CUVETTE Version

- The emitter-detector unit, of the CUVETTE version features a cylindrical holder for a 15 mm diameter quartz glass cuvette (WATER-K). The cuvette is surrounded by light-emitting diodes (LED) delivering PAM measuring light and actinic illumination to the sample.
- Detection of fluorescence at wavelengths longer than 710 nm occurs at the bottom of the cuvette. Best results are achieved using sample volumes between 2 and 3 ml.
- The emitter detector unit is available with two different LED colors. The blue LED version (WATER-ED/B) exhibits lowest stray light interference. This WATER-ED/B has additional far-red LEDs light source for fast PS I-driven opening of PS II reaction centers required for evaluations of Fo' fluorescence levels.
- The red LED version (WATER-ED) is frequently used to analyze cyanobacteria which tend to absorb inefficiently in the blue: this version is available with far-red or blue photosystem I light.

FIBER Version

- The FIBER version probes surfaces of solid objects by using an optical fiber. Typically the FIBER version is employed to examine photosynthetic layers on various submerged surfaces (periphyton, microphytobenthos) and soil crusts but also to screen samples on microwell plates.

FLOW THROUGH Version

- The FLOW THROUGH version of the WATER-PAM has a water-proof emitter-detector unit exhibiting a transparent window through which measuring and actinic light is emitted.

Contact info



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PAM-CONTROL: Universal Control Unit

- The PAM-CONTROL unit can conduct independently PAM fluorescence measurements but it can also act as physical interface between fluorometer and computer using WinControl-3 software.
- The PAM-CONTROL unit is specialized to operate various extremely sensitive setups for chlorophyll fluorescence measurements: the MICROSCOPY-PAM, the MICROFIBER-PAM and the WATER-PAM.
- Common to these three setups is the use of the same light-emitting-diodes (LED) as sources of measuring and actinic light, as well as for saturation pulses. Also, all setups use ultrasensitive photomultipliers: as a consequence.
- The capacity of data storage comprises 4000 data sets. An extensive menu provides full control of instrumental settings and a variety of measuring protocols.

This Instrument is manufactured by our principle company

WALZ - Germany