Print version

PHYTO-PAM-II

Multiple Excitation Wavelength Phytoplankton & Photosynthesis Analyzer

High Quality Instrumentation for Plant Sciences

WALZ

PHYTO-PAM-II COMPACT Version

In the COMPACT version of the PHYTO-PAM-II all components including the measurement chamber are enclosed in a single compact housing. Thus, during normal operation, the only cable that needs to be connected is the USB cable for communication with the PC. It makes this device particularly suitable for use on deck and in the field.

In addition to fluorescence-based determination of chlorophyll content, the PHYTO-PAM-II provides comprehensive PAM saturation pulse analysis for differential assessment of photosynthetic performance of four algal groups within one sample. Also, a fast kinetic mode for the determination of the wavelength-dependent absorption cross section of PS II, $\sigma_{II(\lambda)}$ is provided for analysis of the samples (non-devonvoluted).

The compact unit can be equipped with the Flow-Through Cuvette PHYTO-II/FT. Together with the 0-10 V Universal Pump Control PHYTO-II/FT/I, common laboratory peristaltic pumps can be used for software controlled automated sampling.

The COMPACT version of the PHYTO-PAM-II features a 15 mm (outer Φ) round cuvette, which is illuminated from the bottom, with fluorescence being detected at a right angle. In this way, the entire sample is illuminated homogeneously, and a representative part of the sample is monitored.

In PHYTO-PAM-II instruments, reference spectra measured with dilute suspensions of pure cultures, corresponding to 5-point fluorescence excitation spectra, are used for automated online deconvolution of up to 4 classes of phytoplankton having different types of pigment in their antennae (green algae, diatoms/dinoflagellates, cyanobacteria and phycoerythrin containing organisms, like cryptophytes). All data can be recalculated at any later time with other references.

Accessories for PHYTO-PAM-II - Compact Version

Flow-Through Cuvette PHYTO-II/FT

Cuvette holder made of black polyoxymethylene polymer (POM) with in-/out water tubing connectors. The cuvette can be mounted on PHYTO-PAM-II Compact version instruments with two knurled screws.

Universal Pump Control PHYTO-II/FT/I

Computer USB Interface box with an USB-analog
0-10 V converter for PhytoWin-3 controlled operation of a peristaltic pump.

Stirring Device WATER-S

Miniature stirring device (battery powered) that can be mounted on top of the PHYTO-PAM-II COMPACT version. It is equipped with disposable perspex stirring paddles. A potentiometer allows the adjustment of the stirring rate. The part is shipped with a set of ten Stirring Paddles WATER-R.

Stirring Paddles WATER-R

Spare stirring paddles (10 pieces) for the Miniature Stirring Device WATER-S. Already included in the WATER-S scope of delivery.

Quartz Glass Cuvette WATER-K

15 mm diameter round quartz glass cuvette for the PHYTO-PAM-II COMPACT version.

K5SET

Set of 5 standard glass cuvettes with low background noise for measurements of samples with medium algae concentrations. Not compatible with Flow-Through Cuvette PHYTO-II/FT.

PHYTO-PAM - Specifications

COMPACT Version

PHYTO-PAM-II/ED
General design: Metal housing for PHYTO-PAM-II Power-and-Control-Unit including all opto-electronic components as well as the measuring chamber for 15 mm Ø quartz cuvette WATER-K.
Chip-on-board multi-wavelength measuring light LED emitter: 440, 480, 540, 590, and 625 nm for pulse-modulated measuring light; 2 intensity settings; 8 settings of pulse frequency and 3 settings of auto MF-high pulse frequency
Chip-on-board multi-wavelength actinic LED array: 440, 480, 540, 590, 625 and 420-640 nm (white) for continuous actinic illumination, up to 1500 µmol m^{-2} s^{-1} PAR; fast kinetic flashes up to 7000 µmol m^{-2} s^{-1} PAR; saturation pulse up to 5000 µmol m^{-2} s^{-1} PAR,
Far-Red LED: peak wavelength 725 nm
Signal detection: Photomultiplier detector based on Photosensor Module H-10720 (Hamamatsu)
Standard detector filter: long-pass filter > 650 nm
Sockets: charge socket for Battery Charger MINI-PAM/L, input socket for US-SQS/WB Spherical Micro Quantum Sensor, USB socket
Communication: USB 1.1, USB 2.0 and USB 3.0 compatible
User interface: Windows computer with PhytoWin-3 software

Power supply: Rechargeable sealed lead-acid battery 12 V/2 Ah; Battery Charger MINI-PAM/L (100 to 240 V AC)

Dimensions: 29 cm x 30 cm x 20.5 cm (l x w x h), aluminum housing with carrying handle and cuvette cover

Power consumption: Basic operation 1.5 W, ML +AL at maximum output 4.5 W. Saturation Pulse at maximum intensity, 7 W

Weight: 4.8 kg (including battery)

Operating temperature: -5 to +40 °C

Battery Charger MINI-PAM/L

Input: 90 to 264 V AC, 47 to 63 Hz

Output: 19 V DC, 3.7 A

Operating temperature: 0 to 40 °C

Dimensions: 15 cm x 6 cm x 3 cm (l x w x h)

Weight: 300 g

Spherical Micro Quantum Sensor US-SQS/WB

Design: 3.7 mm diffusing Plexiglas sphere coupled to integrated PAR-sensor via 2 mm fiber, compact amplifier unit and special holder for mounting on sample cuvette;

Connects to: PHYTO-PAM-II LIGHT SENSOR connector

Cable length: 3 m + 0.5 m

Size: Sensor: diameter 1 cm, length: 11 cm; 15.2 mm spacer ring for light sensor positioning; Hood: 3.4 cm diameter, 3.2 cm height; Amplifier: 5 cm x 5 cm x 5 cm (w x l x h)

Weight: 175 g

Transport Box PHYTO-T

Design: Aluminum box with custom foam packing for PHYTO-PAM-II and accessories

Dimensions: 60 cm x 40 cm x 34 cm (l x w x h)

Weight: 5 kg

Accessories

Stirring Device WATER-S

Design: Miniature stirring motor in plastic housing with adapter to mount on top of the PHYTO-PAM-II/ED cuvette; equipped with disposable Perspex stirring paddle; self-contained unit featuring long-life 3 V Lithium Battery; potentiometer for adjustment of stirring rate

Dimensions: 50 mm x 80 mm x 30 mm (w x l x h)

Weight: 95 g (incl. battery)

PHYTO-II/FT Flow-Through Cuvette

Design: Cuvette holder from black polyoxymethylene plastic (POM) with in-/out water tubing connectors (4 mm inner Ø and M 5 screw), to be mounted with two knurled-head screws to PHYTO-PAM-II compact version instruments. Delivery package includes a POM mounting device for light sensor US-SQS/WB.

Dimensions: Ø 49 mm, with connectors and cuvette 64 mm x 74 mm

Weight: 150 g

PHYTO-II/FT/I 0-10 V Universal Pump Control

Design: Pump interface box. USB- analog 0-10 V converter for PhytoWin-3 controlled operation of a peristaltic pump.

Dimensions: metal housing: 8 cm x 4 cm x 2 cm, cable 100 cm 0- 10V out, USB-device cable: 1.5 m

Weight: 380 g