



# PSI, spol. s r.o. – Photon Systems Instruments

Professional Instruments for Plant Science, Biotechnology, and Agriculture  
Czech Republic, [www.psi.cz](http://www.psi.cz)



## AquaPen-C AP-C 100

AquaPen-C is a new cuvette version of the FluorPen fluorometer. It has blue and red measuring lights that enable measuring photosynthetic parameters both in algal and cyanobacterial suspensions.

Due to its ultra-high sensitivity - up to 10 ng Chl/l, the AquaPen-C can measure natural water samples containing low concentrations of phytoplankton.

Incorporated Bluetooth/USB/serial communication technology and the FluorPen 1.0 software provide visualization and data transfer routines to a PC.



### APPLICATIONS

- Photosynthesis research
- Photosynthesis education
- Phycology
- Limnology
- Oceanography
- Biotechnology

### AQUAPEN-C MEASURES

- **F<sub>T</sub> – Instantaneous Chlorophyll Fluorescence.** F<sub>T</sub> is equivalent to F<sub>o</sub> if the sample is dark-adapted
- **QY – Quantum Yield.** QY is a measure of the Photosystem II efficiency. QY is equivalent to F<sub>v</sub>/F<sub>M</sub> in dark-adapted samples and to F<sub>v</sub>'/F<sub>M</sub>' in light-adapted samples
- **OJIP – Chlorophyll Fluorescence Transient.** OJIP measurement is used as an important biophysical signal that reflects the time course of photosynthesis
- **NPQ – Non-Photochemical Quenching.** NPQ indicates thermal dissipation of absorbed light energy during photosynthesis
- **LC – Light Curve.** Photosystem II Quantum Yield estimated from fluorescence that is measured sequentially in several different light levels
- **OD – Optical Density** at 680 nm and 720 nm







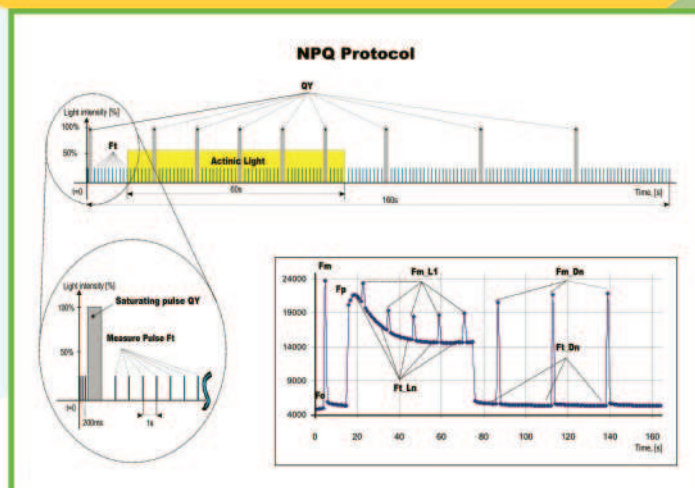
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## AquaPen-C AP-C 100

### NPQ PROTOCOL

- Provided are two predefined NPQ protocols differing in the duration of light exposure and dark recovery phase as well as in the number of intervals between the pulses
- Typically used for quantification of photochemical and non-photochemical quenching in dark-adapted samples
- NPQ 1 protocol: light duration 60 s, 5 pulses; dark recovery duration 88 s, 3 pulses
- NPQ 2 protocol: light duration 200 s, 10 pulses; dark recovery duration 390 s, 7 pulses



### SOFTWARE

- FluorPen 1.0 software (Windows 2000, XP, or higher compatible)
- Bluetooth, USB or serial communication
- Real-time and remote control functions
- Export to Microsoft Excel
- GPS mapping plug-in

### TECHNICAL SPECIFICATION

- **Measured/Calculated Parameters:**  $F_0$ ;  $F_T$ ;  $F_M$ ;  $F_{M'}$ ; QY; OJIP; NPQ 1,2; LC 1,2,3; OD 680, OD 720
- **Saturating Light:** Adjustable from 0 to 100 % (up to 3,000  $\mu\text{mol}(\text{photon})\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ )
- **Actinic Light:** Adjustable from 0 to 100 % (up to 1,000  $\mu\text{mol}(\text{photon})\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ )
- **Measuring Light:** Adjustable from 0 to 100 % (up to 3,000  $\mu\text{mol}(\text{photon})\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ )
- **Detector Wavelength Range:** PIN photodiode with 667 to 750 nm bandpass filters
- **FluorPen 1.0 Software:** Windows 2000, XP, or higher
- **Memory Capacity:** Up to 4 Mb
- **Internal Data Logging:** Up to 100,000 data points
- **Display:** 2 x 8 characters LC display
- **Keypad:** Sealed, 2-key tactile response
- **Keypad Escape Time:** Turns off after 3 minutes of no use
- **Power Supply:** 4 AAA alkaline or rechargeable batteries
- **Battery Life:** 48 hours typical with full operation
- **Low Battery Detection:** Low battery indication displayed
- **Size:** 140 x 55 x 50 mm; 5.5" x 2.2" x 2.0"
- **Weight:** 300 g, 10.6 oz
- **Sample Holder:** 4 ml cuvette
- **Operating Conditions:** Temperature: 0 to 55 °C; 32 to 130 °F. Relative humidity: 0 to 95 % (non-condensing)
- **Storage Conditions:** Temperature: -10 to +60 °C; 14 to +140 °F. Relative humidity: 0 to 95 % (non-condensing)
- **Warranty:** 1 year parts and labor

