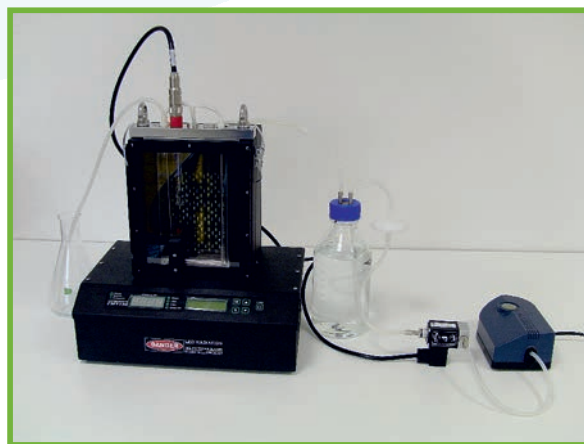




Photobioreactor FMT 150

Photobioreactor FMT 150 features a unique combination of the cultivator and computer controlled monitoring device. The Photobioreactor FMT150 combines a cultivation vessel with the built-in fluorometer and densitometer. It is primarily designed for high-content, precise phototrophic cultivation of algae, cyanobacteria and bacteria. Light power and spectral composition as well as temperature and aeration gas composition can be set with high accuracy. Cultivation conditions can be dynamically varied according to user-defined protocol and continuously online monitored. Programmable light, temperature, gas, and medium regime can oscillate with various amplitudes and frequencies according to user-defined time steps from milliseconds to hours. Continuous-flow turbidostatic cultivation can be used for stabilization of suspensions and optical density control. In addition, up to 8 peristaltic pumps for different chemostat or pH-stat cultivation control can be linked to the Photobioreactor for highly precise control of cultivation conditions.

The growth of the cultures is monitored by the integrated densitometer (OD 735, OD 680). Chlorophyll content of the culture can also be monitored continuously by the difference of optical densities at 680 and 735 nm. The instantaneous physiological state of the culture is measured by the Photosystem II quantum yield Fv/Fm.





Photon Systems Instruments

Professional Instruments for Plant Science, Biotechnology, and Agriculture

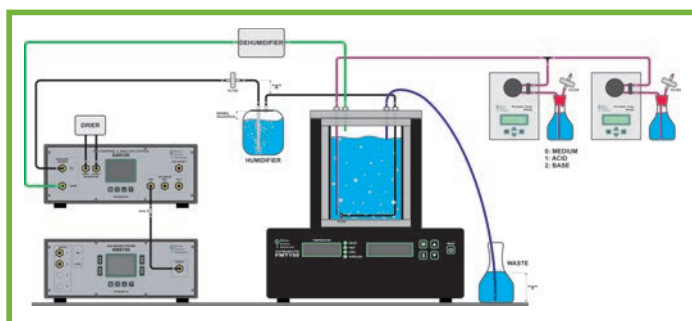
Photobioreactor FMT 150

CULTIVATION

- Flat cultivation vessel: 400 ml or 1000 ml
- Programmable light, temperature, gas, and medium regime. Time steps from milliseconds to hours
- Both static and changeable temperature in the range of 18 - 50 °C (standard) or in the range of 5 - 70 °C (optional)
- Controlled flow and composition of the sparging gas
- Magnetic stirring
- Bubble humidifier for stable culture volume
- Up to 8 peristaltic pumps for different chemostat or pHstat cultivation control
- Turbidostat cultivation - stabilization of the suspensions via optical density control

LED ILLUMINATION

- White-Red or Red-Blue LED panel with separately controllable colors
- Homogeneous illumination over the whole flat vessel
- Light intensity control from 0-100 %
- Both static and fluctuating light regime
- Day/Night cycles
- Additional panel for higher intensity or different light color



MONITORING

- Integrated Double-Modulation Fluorometer with online measurement and recording of fluorescence parameters, such as F_{O_2} , F_T , F_M , $F_{M'}$, $(F_M - F_T)/F_M$
- Continuous temperature control
- Integrated online optical density measurement
- O_2 electrode to measure concentration of dissolved O_2
- CO_2 electrode to determine dissolved CO_2 concentration
- Continuous pH monitoring
- High-precision gas mixing

CONTROL SOFTWARE

- User-defined protocol writing
- Data collection in real time
- Data upload even when the experiment is running
- Data visualization in graphs
- Further processing of data sheets in Excel accessible format
- Remote control of the experiment via internet

