

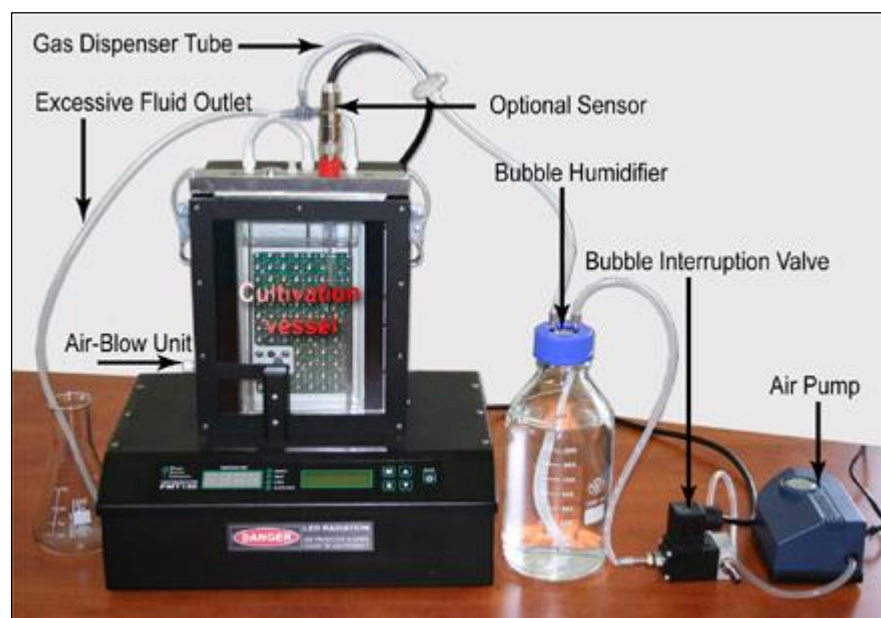


PSI (Photon Systems Instruments), spol. s r.o.
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Photobioreactor FMT 150 With Integrated Fluorometer and Densitometer

KEY FEATURES - CULTIVATION:

- Cultivation vessel capacity:
400 ml (in FMT 150)
1000 ml (in FMT 150/1000)
- Large customized systems: 25L tank, 100L tank
- 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 0 - 70 °C (optional).
- Controlled flow and composition of the bubbling air (optional).
- Magnetic stirring (optional).
- Bubble interruption during measurements - bubble interruption valve (optional).
- Bubble humidifier to keep the volume in the vessel stable (optional).
- Up to 8 peristaltic pumps for different chemostat or pHstat cultivation control (optional).
- Turbidostat cultivation - stabilization of the suspensions, optical density control (optional).
- NEW software for user-defined protocol writing and instant data visualization (optional).



KEY FEATURES - LED LIGHTING:

- Standard color versions:
 - White
 - Red-blue (630 nm, 450 nm)
 - White-red (630 nm).
- Other colors or color combinations as an option.
- Both static and fluctuating light regime. Day/night cycles.
- Actinic light up to $600 \mu\text{mol}(\text{photon})/\text{m}^2.\text{s}$ (standard).
- Light intensity upgrade from 1,800 - 2,500 $\mu\text{mol}(\text{photon})/\text{m}^2.\text{s}$; according to LED type and color (optional).
- Additional light source to accommodate specific needs of different organisms. For instance, Infra Red (850 nm) light source for purple sulfur photosynthetic bacteria (optional; various wavelengths available).



KEY FEATURES - MONITORING:

- Integrated Double-Modulation Fluorometer with online measurement and recording of fluorescence parameters, such as F_0 , F_t , F_m , F_m' , $(F_m' - F_t)/F_m'$, and others.
- Continuous temperature control (standard).
- Integrated online optical density measurement.
- O_2 electrode to measure concentration of dissolved O_2 (optional).
- CO_2 electrode to determine dissolved CO_2 concentration (optional).
- Continuous pH monitoring (optional).
- Gas Analyzing System for CO_2 and O_2 - gas output measurement (optional).
- High-precision Gas Mixing System (optional).



OTHER FEATURES:

- User-friendly operation.
- Robust construction, thermal stability, long-life light source.
- PC interface.
- Remote control.

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.



TECHNICAL SPECIFICATION:

- Fluorescence Parameters:
Fo, Ft, Fm, Fm', Fv/Fm. Other parameters can be calculated.
- Vessel Capacity / Weight:
400 ml / 3 kg.
- Precision Controlled Temperature:
5 °C - 60 °C.
- Temperature Sensor:
Platinum Pt 1,000 in thermo-well.
- Cooling and Heating System:
Two 200 W Peltier elements.
- Two Displays:
For system control and actual temperature.
- Actinic and Saturating Light:
Two standard versions: one with blue and red LEDs (450 nm, 630 nm); the other with white LEDs. Light intensity is adjustable from 0 to 2,500 $\mu\text{mol}(\text{photon})/\text{m}^2.\text{s}$. Other LED colors available as an option.
- Light Regime:
Static or dynamic (sinus form).
- OD - Optical Density Measurement:
Real time measurement of OD by two IR LEDs (735 nm, 680 nm).
- Detector Wavelength Range:
PIN photodiode with 697 nm-750 nm bandpass filters.

- **Controlled Flow and Composition of the Bubbling Air:**
Optional.
- **Pumps:**
Up to 8 peristaltic pumps (optional).
- **Ph Probe:**
Optional.
- **Bios:**
Upgradeable firmware.
- **Communication Port:**
Serial - RS232.
- **Material:**
Glass, stainless steel, silicon gasket.
- **Dimension / Weight:**
50 x 25 x 35 cm / 15.5 kg
- **Electrical:**
90-240 V

