



# BIOSTAT® PBR 2S



## Hardware Description

The BIOSTAT® PBR 2S is a small scale photo bioreactor for photosynthetic applications, for up to 3 L culture volume.

The Control system presents an "easy-to-use" touch screen control system with integrated measurement and control hardware, pumps, temperature and four-gas mixing system for excellent process control. Incorporated in a single "tower" housing this design concept saves valuable laboratory bench space.

The powerful peristaltic recirculation pump provides high flow rates and is low shear. The pump is connected and controlled via the control system.

The photosynthesis module has been designed utilizing helix based geometry to produce optimum illumination efficiency per unit surface area. The recirculation vessel is provided with a range of measuring probes as temperature, pH, DO and turbidity probe and serves as a base unit for additional functions such as gassing | degassing and media conditioning. Both components are designed for high recirculation rates in order to prevent fouling.

## Applications

The BIOSTAT PBR 2S incorporates a number of features enabling even the most shear sensitive cell types to be cultivated under optimum conditions. Easy to use and applicable for micro algae, moss, bacteria and plant cells, it is the ideal platform for academic and industrial research.

## Illumination control

Optimum illumination levels utilizing fluorescent lamps can be manually or automatically controlled via cell density turbidity measurement device.

## MFCS/DA

For further enhancement of system performance a powerful supervisory process control software MFCS/DA for extended visualization, data acquisition and trend display is included.

## Technical Specifications

|   | Dimensions                         |
|---|------------------------------------|
| Basic housing W × H × D   | 320 × 735 × 565 mm                 |
| Photosynthesis device<br>∅ × H  | 390 × 500 mm                       |
| Recirculation pump<br>W × H × D   | 169 × 138 × 256 mm                 |
| Space requirement<br>autoclave ∅ × H (mm)                                 | 390 × 500   *340 mm                |
| Total volume  | 3.7 L                              |
| Working volume  | 3 L                                |
| Length photosynthesis<br>module   | 6 m                                |
| Illuminated area  | 5350 cm <sup>2</sup>               |
| Fluorescent lamp<br>Quantity   Wattage                                    | 8   18 W                           |
| Luminous flux per lamp  | 1200 lm                            |
| Light impact<br>Photosynthetic active<br>radiation<br>(PHAR) @ 400–700 nm | 5–480 µE/m <sup>2</sup> s          |
| Recirculation flow rate   | 50–5000 mL/min                     |
| Flow velocity<br>photosynthesis module                                    | 16 m/min                           |
| Rotameter gas flow<br>range "Sparger"                                     | 16–166 mL/min                      |
| Rotameter gas flow<br>range "Overlay"                                     | 16–166 mL/min                      |
| Temperature   | 8 °C above cooling<br>water –80 °C |
| pH  | 2–12                               |
| pO <sub>2</sub>   | 0–100%, Air saturation             |
| Turbidity   | 0–6 AU                             |

## Utility Requirements

|              |   |
|--------------|---|
| Power supply | 120 VAC or 230 VAC                                  |
| Gasses       | Controlled @ 1.5 barg<br>dry, particle and oil free |
| Water        | Controlled @ 2 barg                                 |
| Drain        | gravity drain with zero<br>backpressure required    |

\* with optional flexible adaptor for the exhaust cooler  
(8844593)

## Ordering Information

| Description      | BIOSTAT® PBR 2S |
|------------------|-----------------|
| Cat. No. 120 VAC | RPBRP02LECR-H1  |
| Cat. No. 230 VAC | RPBRP02LECR-H2  |
| Sterilization    | autoclave       |

### Basic unit

|   |                 |
|---|-----------------|
| Digital controller color display with touch screen                  | •               |
| Control capabilities  |                 |
| Temperature, pH, DO   | •               |
| Recirculation rate  | •               |
| Illumination  | •               |
| Illumination via Turbidity  | •               |
| Substrate (Note: configurable via unused integrated pump)           | •               |
| Turbidity measurement   | •               |
| Gasmixing   | Exclusive Flow  |
| Gasmixing of Air, O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> | •               |
| Rotameter Sparger   | •               |
| Rotameter for Overlay   | •               |
| Peristaltic pumps (integrated)                                      | 2 (Acid   Base) |
| Thermostat system (integrated)                                      | •               |

### Recirculation Pump

|                  |   |
|------------------|---|
| Peristaltic pump | • |
|------------------|---|

### Photosynthesis device

|                        |   |
|------------------------|---|
| Illumination unit      | • |
| Single wall glass pipe | • |
| Helix design           | • |

### Recirculation Vessel Includes

|                              |   |
|------------------------------|---|
| Stainless steel head plate   | • |
| Jacketed glass vessel        | • |
| Recirculation fitting        | • |
| Air Inlet and Exhaust filter | • |
| Aeration tube with µ-sparger | • |
| Exhaust Cooler               | • |
| 4-Way addition fitting       | • |
| Sample-   Harvest pipe       | • |
| Manual sampler               | • |
| pH Electrode, cable          | • |
| DO Electrode, cable          | • |
| Turbidity Electrode, cable   | • |
| Temperature sensor Pt 100    | • |
| Tubing, O-Ring spare set     | • |

### Options

|                            |   |                             |
|----------------------------|---|-----------------------------|
| MFC (Sparger)              | ○ | 0.02 – 1 (l/min) BB-8847754 |
| MFC (Overlay)              | ○ | 0.02 – 1 (l/min) BB-8847754 |
| Redox measurement          | ○ | 8843469                     |
| Balance for culture vessel | ○ | 8843513                     |

Broad range of accessories available, please contact us for further information.

### Supervisor Process Control Software

|        |   |
|--------|---|
| MFC/DA | • |
|--------|---|

• = included, ○ = option

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