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HABITAT photo ferment

/// Data Sheet

The HABITAT photo ferment control tower features LED panels essential for transforming your HABITAT research bioreactor into a photobioreactor. This system functions as a photo fermenter, suitable for specialized applications that integrate light into fermentation processes.

Photo fermenters enhance bioprocesses through controlled light and optimal conditions, crucial for specific biochemical reactions and microbial activities. For instance, they activate metabolic pathways in microorganisms to produce complex pharmaceuticals or boost the production of vitamins and beneficial metabolites in fermented food products.



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The system includes two LED panels, the control unit with all connection options for gas supply, liquid addition, sensors, temperature control, and a tablet for simple and clear operation of the fermenter.

Control and monitoring

The intuitive software allows easy control and monitoring of the bioprocess and associated parameters via a 10.4-inch tablet. Users can select from batch, fed-batch, and perfusion/continuous operating modes, catering to various fermentation techniques. The innovative Chaotic Mixing function enables efficient and homogeneous mixing when required. The control software provides clear calibration management, real-time data visualization, and complete process documentation, ensuring compliance with FDA CFR Part 11 requirements (optional).

Gas supply

Precise and adjustable gassing is achieved through four individual built-in mass flow controllers for four each separate gas line (N₂, O₂, air and CO₂), enabling flow rates of 0.1 – 20 L / min. tailored to fermentation requirements. By using the integrated and freely customizable cascade control system, each gas flow can be automatically adjusted by the software at any time according to the ambient conditions in order to maintain the target parameters.

Liquid supply

Four integrated Watson-Marlow pumps with adjustable direction and speed offer highest precision and versatility in pumping acids, bases, anti-foam agents, and nutrient solutions for the management of media in photobioreactors and fermentation processes.

Sensors

HABITAT Bioreactor comes equipped with latest technology sensors to precisely monitor and control critical bioprocess parameters. The following sensors are included in our standard sales vessel packages:

- pH
- DO (dissolved oxygen)
- temperature
- filling level
- foam

Optional sensors: CO₂, Conductivity, Turbidity, Viable cell mass, Redox, Off-gas analysis and more.

PID temperature control

The integrated PID control ensures precise temperature regulation at all times, regardless of vessel type (single-wall or double-wall) or fill level. Single-wall glass vessels can be heated with a heating blanket, allowing for accurate temperature settings above room temperature. With the optional use of a cooling finger, it is also possible to achieve temperatures below room temperature. For double-wall vessels, in combination with an IKA thermostat, the temperature range can be freely adjusted between 5-80°C, independent of room conditions or heat generated by the culture itself.

All features at a glance

- compact, space-saving design, dimensions: 223 x 402 x 450 mm (WxDxH)
- latest technology sensors for better insights and more control



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- large screen tablet for easy operation (10.4 inch)
- intuitive, easy-to-use control software that provides simple initial setup and intuitive user assistance throughout the process
- four integrated Watson-Marlow pumps
- high precision motor speed control
- cross platform connectivity: USB, PC, RS232, OPC-UA, ethernet, external signal input, external pump, single-use unit, thermostat
- data storage
- four built-in mass flow controllers for gas supply: N₂, O₂, air, and CO₂
- status LED display: direct error display by indicator light

Note: Only a control tower and the separately available vessel package make up a functional unit.

Scope of delivery

- HABITAT photo ferment S099
- Tablet with software for bioreactor
- HA.pl. Peltier cooling element
- LED panel (2pcs)



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