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HABITAT photo cell

/// Data Sheet

The HABITAT photo cell control unit package of the HABITAT research bioreactor is used to monitor and control the bioprocess. With the help of the LED panels included in the scope of delivery, the system can be used as a photobioreactor, for example for algae cultivation. The adjustment of the light intensity enables the simulation of the day-night rhythm. Furthermore, the package includes the control unit with all connection options for the gas supply, liquid addition, sensors and temperature control as well as a tablet for simple and clear operation of the bioreactor.

Control and monitoring

The bioprocess and all associated test parameters can be easily controlled and monitored via the tablet attached to the



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control unit and with the help of the intuitive and easy-to-use software. Depending on the type of cultivation, you can choose between the operating modes batch, fed-batch and perfusion/continuous. The new Chaotic Mixing function ensures faster and more effective mixing when required. The 10.4-inch tablet allows direct access to all actuators directly on the main screen. A clear calibration management, a diagram overview and the complete documentation of the process round off the operation. A software version that meets FDA CFR Part 11 requirements is available as an option.

Gas supply

Built in mass flow controllers for 4 separate gas lines (for N₂, O₂, air and CO₂) ensure precise, individually adjustable gassing, ideally tailored to the needs of your cells. Flow rates of 0-2000 cc/min can be achieved.

Liquid supply

4 integrated Watson Marlow pumps, adjustable in direction and speed, give you the variability to pump in and pump out different liquids (like acid, base, anti-foam agent, feeding solutions).

Sensors

HABITAT photo cell enables the measurement of the following parameters by means of sensors:

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

Temperature control

The constant and precise temperature control during the cultivation is guaranteed by the heating sleeve, which is adapted to the respective vessel size. (Heating sleeve is included with the HABITAT cell vessel package).

All features at a glance

- compact, space-saving design, dimensions: 223 x 402 x 450 mm (WxDxH)
- large tablet for clear operation (10,4 inch)
- intuitive, easy-to-use software with a lot of functionalities.
- 4 integrated fast-load pumps (Watson Marlow)
- connectivity: USB, PC, RS232, ethernet, external signal input, external pump, single-use unit, thermostat
- data storage
- gas supply with 4 built-in mass flow controllers: e.g. for O₂, Luft, N₂, CO₂
- Status LED display: direct error display by indicator light

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



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Technical Data

Controller	Cell Growth
Operating mode	timer, continuous and program operation
Display	Tablet PC
Operation	touch screen
Data memory size [GB]	32
Auto restart after power failure	yes
Ethernet interface	yes
Single use reactor interface	yes
Thermostat interface	yes
Ext. pump interface	yes
Filter heater	yes
LED light panel	yes
Stirring motor	yes
Calibration guide temperature	yes
Calibration guide pH	yes
Calibration guide pO ₂	yes
pH - temperature compensation	yes
Mode hose filling	yes
Stirrer control mode	off, manual, profile, Cascade-pO ₂ control, chaotic
Speed range [rpm]	1 - 2200
Speed deviation ≥ 100 rpm [%]	± 2
Speed deviation ≤ 100 rpm [rpm]	± 5
Speed display	TFT
Reversible direction of rotation	yes
Timer	yes
Timer display	TFT
Time setting range [min]	1 - 120
Heating blanket	yes
Heat output [W]	250
Heat control	TFT
Temperature control	PT1000
Working temperature [°C]	5 - 60
Connection for ext. temperature sensor	PT1000
Temperature display	yes
Temperature measuring range [°C]	0 - 100
Temperature measurement resolution [K]	0.1
Temperature control accuracy [°C]	± 0.2
Temperature limit min. [°C]	0
Temperature limit max. [°C]	110
Fixed safety circuit [°C]	75
pH measurement	yes
pH control mode	off, auto, profile
pH value display	TFT
pH measuring range [pH]	0 - 14
pH measurement resolution [pH]	0.01
Accuracy of pH measurement [pH]	0.02
Connction for pO ₂ sensor	yes
pO ₂ control mode	off, manual, auto, profile





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Measurement range pO2 min. [%sat]	0
Measurement range pO2 max. [%sat]	200
Resolution pO2 measurement [%sat]	0.01
Accuracy of pO2 measurement [%sat]	0.3
Gas in connection Air [mm]	6
Gas out connection Air [mm]	6
Gas in connection O2 [mm]	6
Gas out connection O2 [mm]	6
Gas in connection N2 [mm]	6
Gas out connection N2 [mm]	6
Gas in connection CO2 [mm]	6
Gas out connection CO2 [mm]	6
Aeration mode	continuous

