

BioLector XT Microbioreactor

Microfluidic Bioprocess Control

CULTIVATION CONDITIONS

TEMPERATURE

10 - 50 °C (min. temp.: 8 °C below ambient temp.)

SHAKING SPEED

100 - 1500 rpm (3 mm diameter)

ENVIRONMENTAL CONDITIONS

Active humidification

Ambient air

1 - 100 % O₂ (optional)

0 - 12 % CO₂ (optional)

Anaerobic cultivation (optional)

OXYGEN OPTODES

0 - 100 % dissolved oxygen¹

pH OPTODES

pH 4 - 7.5 (depending on plate)

MTP READING TIME

2.7 min / filter / 48 wells @ 1000 rpm

MICROFLUIDIC FEATURES^{1,2}

TRIGGERED pH CONTROL (CLOSED LOOP CONTROLLER)

pH control range: 4.0 - 7.5 (depending on plate)

Fully editable PI control

Slow, medium and fast PI default settings

FEEDING OPTIONS

Two sided pH control (alkali and acid)

One sided pH control and one feed line (alkali or acid + one feed)

Two feed lines

FEEDING PROFILES

Profile equation: $\frac{dv}{dt} = A + B \times t + C \times e^{D \times t}$

Constant: A [$\mu\text{L}/\text{h}$]

Linear: A [$\mu\text{L}/\text{h}$] and B [$\mu\text{L}/\text{h}^2$]

Exponential: A [$\mu\text{L}/\text{h}$], B [$\mu\text{L}/\text{h}^2$], C [$\mu\text{L}/\text{h}$] and D [h^{-1}]

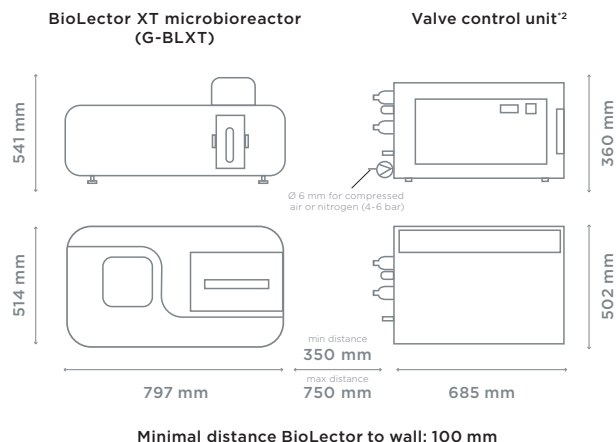
Pulse feed

Full feeding profile flexibility permits broad experimental design

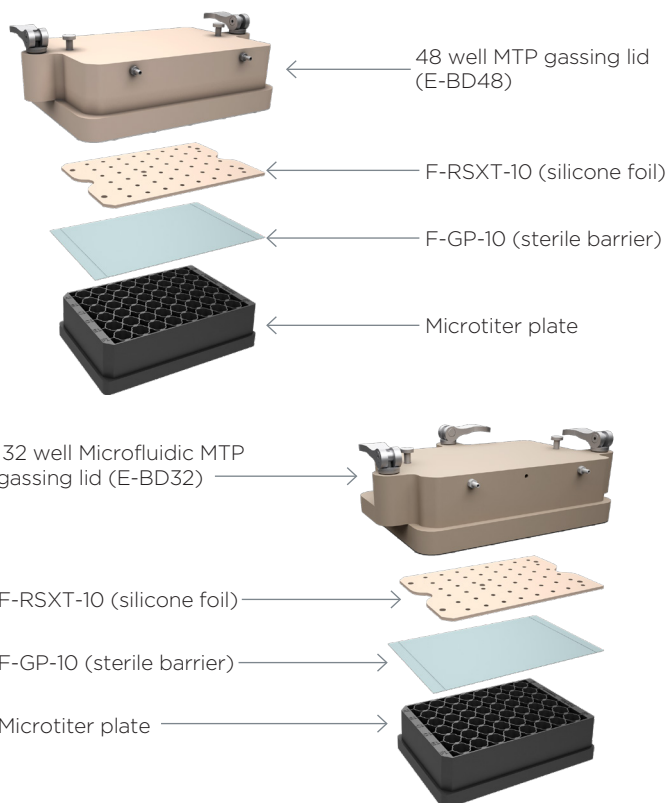
PUMP RATE

Up to 665 pump strokes per hour

SYSTEM DIMENSIONS



GASSING LID DIMENSIONS



AVAILABLE OPTIONAL MODULES

Part no.	Module description	Additional feature	Note
E-XTMF	Microfluidic module	Active control of pH according to online signals and continuous feeding of up to two solutions	only with Microfluidic plates
E-O2XT-100	O ₂ up-regulation module	Control of gas atmosphere in head space: 21 - 100 % O ₂	
E-O2XT-25	O ₂ down-regulation module	Control of gas atmosphere in head space: 1 - 21 % O ₂	use only with N ₂
E-CO2XT-12	CO ₂ up-regulation module	Control of gas atmosphere in head space: 0 - 12 % CO ₂	
E-AN-300	Anaerobic cultivation module	Gassing with 100 % N ₂ allows cultivation of organisms in anaerobic conditions	use only with N ₂

All optional modules compatible in one BioLector microbioreactor device.

MICROTITER PLATES

FLOWERPLATE

48 cultivation wells

Filling volume: 800 - 1900 µL (rpm dependent)

High OTR and high $k_L a$

ROUND WELL PLATE

48 cultivation wells

Filling volume: 1000 - 2400 µL (rpm dependent)

Lower OTR and low shear force

MICROFLUIDIC PLATE

Available as both FlowerPlate and Round Well Plate

32 cultivation wells controlled by 16 reservoir wells

Maximum filling volumes in reservoir wells:
1800 µL (FlowerPlate) and 2000 µL (Round Well Plate)

Same filling volumes for cultivation wells as in 48 well plate

LAB SPACE AND MATERIAL REQUIREMENTS

Flat surface with a minimal loading capacity of 100 kg for BioLector XT microbioreactor or 250 kg for BioLector XT microbioreactor with the valve control unit²

Device weight: 58 kg for BioLector XT microbioreactor (61 kg with microfluidic module) and 44 kg for valve control unit²

1x power supply for BioLector XT microbioreactor: 90-264 VAC, 47-63 Hz

1x power supply for laptop: 90-230 VAC, 50/60 Hz

1x power supply for valve control unit²: 90-264 VAC, 47-63 Hz (US/Canada); 85-264 VAC, 47-63 Hz (EU, ROW)

Microfluidics: requires 4 to 6 bar dry and oil-free compressed air, 6 mm \varnothing_{OUT} push-in connection

Gassing modules (O₂ up, O₂ down, CO₂ up, anaerobic module): require 1.5-2 bar dry and oil-free O₂, CO₂, or N₂; 4 mm \varnothing_{OUT} push-in connection

Humidity control: 400 mL deionized water

¹ 100 % corresponding to the DO level reached while gassing with 100 % O₂ without O₂ consumption

² only with optional microfluidic module

OTR: Oxygen transfer rate [mmol/L/h]

$k_L a$: Volumetric oxygen transfer coefficient [h⁻¹]

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