

Multifors 2



This is Multifors 2

With Multifors 2 you can work with up to six bioprocesses in parallel. Thanks to a selection of preconfigured packages and a variety of connection possibilities and options, you will be ideally equipped for optimizing sophisticated bioprocesses on a small scale.



Everything you need in 1.2 meters

The Multifors 2 is a compact, free-standing device with up to six culture vessels on three base units. To give you more flexibility in the lab, we have organized the vessels into groups of two that you can separate, recombine or expand however you like. The integrated touchscreen controller lets you see all of your bioprocesses at a glance and control all of your culture vessels.

Fully equipped

An integrated analog feed pump is a standard feature that makes the Multifors 2 immediately ready for fed-batch cultures. The unit includes three digital pumps for acids, bases and antifoaming agents. Up to four gases (air, N₂, O₂ and CO₂) can be used in virtually any combination. Users can select either a mass-flow regulator or a rotameter for a precise feed.

Excellent handling

A number of details make your bioreactor easier to use. The removable pump heads are especially practical, as these can be autoclaved right alongside the culture vessel and are immediately ready for reuse. Better still: the touchscreen controller allows you to start up bioreactors simultaneously and calibrate up to six pH or pO₂ sensors at the press of a button.

Developed for scale-up

The Multifors 2 offers you fully functional bioreactors on a small scale, employing the same sensor technologies as larger bioreactors and consequently delivering directly comparable data. Optional PAT tools offer you a simple way of preparing for later production in a benchtop or pilot-plant reactor.

Options and accessories

Use powerful options for optimizing your Multifors 2. If your requirements change later on, its modular design means you can expand your bioreactor at any time.

eve®: The bioprocess platform software

eve® is able to do more than just plan, control, and analyse your bioprocesses. The eve® integrates workflows, equipment, bioprocess knowledge and big data in a platform, with which you can organise your bioprocesses in a webbased system. You will have an overview of your projects, and be able to carry them out efficiently thanks to a wide range of monitoring, control and analysis features.

The big data platform software for comprehensive bioprocess management

- Connect to third-party bioreactors and analytical instruments
- Communication using the latest OPC UA standard
- A single database for all bioprocess information

External balances and additional pumps

- For dispensing and quantifying additional nutrient solutions and corrective agents

Super Safe Sampler

- Aseptic sampling without laminar flow
- No dead volume
- Needle-free
- Reusable (SAT)

Qualification and process validation

- Design qualification
- Installation qualification
- Operational qualification
- Factory Acceptance Test (FAT)
- Site Acceptance Test (SAT)
- Software validation

Optional PAT sensors

- Redox, conductivity, pCO₂
- Sensors for cell density and biomass measurement such as ASD12-N from Optek

Exit gas analysis

- Analysis of the oxygen and carbon dioxide concentrations of the exit gas
- BlueInOne- or BlueVary-Sensor by the manufacturer BlueSens
- Direct connection to the Multifors 2
- Multiplexing capability (one analytical instrument for multiple culture vessels)
- Additional information obtained via the eve® soft sensors, such as OUR, CER or RQ

Features

Gassing

- Customer-specific gassing with up to 4 gas lines, either via a sparger
- Feed via rotameter or mass-flow controller
- Cascades may be configured in serial or in parallel for controlling the pO_2 via the stirrer speed, gassing rate, gas composition, etc.
- pH control with acid and CO_2

Sensors

- Customers may choose from digital (Modbus) or analog sensors
- Product calibration of the pH sensor for reliable measurements during long-running bioprocesses

Top plate

- Motor beneath the vessel for excellent accessibility to available ports
- Up to 13 ports for sensors (antifoam, optical density, pH, pO_2 , redox, conductivity, live cell density, etc.)

Touchscreen with integrated OPC sensor

- Reliable communication with eve[®] or other software
- Parallel control and monitoring for up to three base units (i.e., six reactors)
- Up to 24 parameters, incl. temperature, stirring speed, pH, pO_2 , antifoam, feed

High-performance pumps

- Four precision pumps per culture vessel (option of one more)
- Autoclavable pump heads
- Gravimetric feeding (with external scale)

Culture vessels

- Total volume ranges from 0.4 L to 1 L
- Powerful magnetic drive
- Magnetic coupling reduces the risk of contamination and simplifies handling
- Culture vessels are easy to exchange
- up to 1600 min^{-1}



Features



Technical information

	Microorganisms
Working volumes	0.115–0.25 L / 0.18–0.5 L / 0.32–1 L
Dimensions (W × D × H)	350 × 520 × 960 mm
Drive unit	Magnetic drive 100 min ⁻¹ to 1600 min ⁻¹
Temperature	Coolant temperature +5°C to 70°C / 95°C
Gassing per vessel	Up to 4 rotameters or MFCs, up to 2 vvm
Pump speed	3 fixed, 1 variable, optional: 1 additional variable
Pump output	Depending on the design: 0.0012 mL min ⁻¹ to 3.46 mL min ⁻¹ up to 4 × 7 mm
Ports	4 × 7 mm, 4 × 10 mm, up to 5 × 12 mm (Pg13.5)
Connectivity	OPC XML DA via Ethernet

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