Multifors 2

BIG TECHNOLOGY IN A SMALL SPACE

www.infors-ht.com/en/multifors-2

We bring life to your laboratory.

INFORS HT


Air
CO2
Air/O2/N2
POWER
Acid
Base
Feed

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, N_2, O_2 and CO_2) 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 pO_2 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.

Microorganisms or cell culture? Both!

Depending on the configuration used, the geometry of the Multifors 2 culture vessels comes adapted to the needs of the application at hand. The highlight of the microbial version is its powerful motor, delivering stirring speeds of up to 1600 min^{-1}. The stirring system of the cell version is gentle and comes available with an optional round-bottom vessel, making it suitable for suspension cultures and adherent cells on microcarriers.

QUALITY
MADE IN SWITZERLAND

At the heart of our quality label is Switzerland – a center of research, development and manufacturing, where experts guarantee the top-notch quality of the materials, workmanship, safety and reliability that characterise our shakers and bioreactors.

Features

The Multifors 2 is suitable for use in bioprocesses involving microorganisms and cell cultures alike, and will be equipped according to your needs.

Making every bioprocess a success

Gassing
- Customer-specific gassing with up to 5 gas lines, either via a sparger or in the headspace
- 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

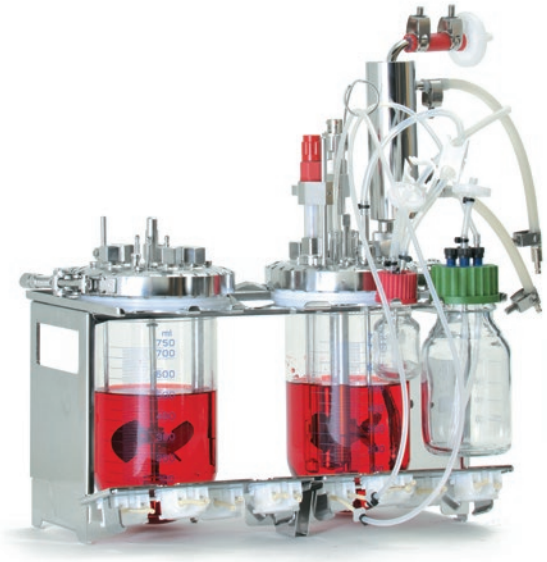
Sensors
- Customers may choose from digital (Modbus) or analog sensors.
- Product calibration of the pH sensor for reliable measurements during long-running bioprocesses

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)
- Profile-based pump-speed control with eve®

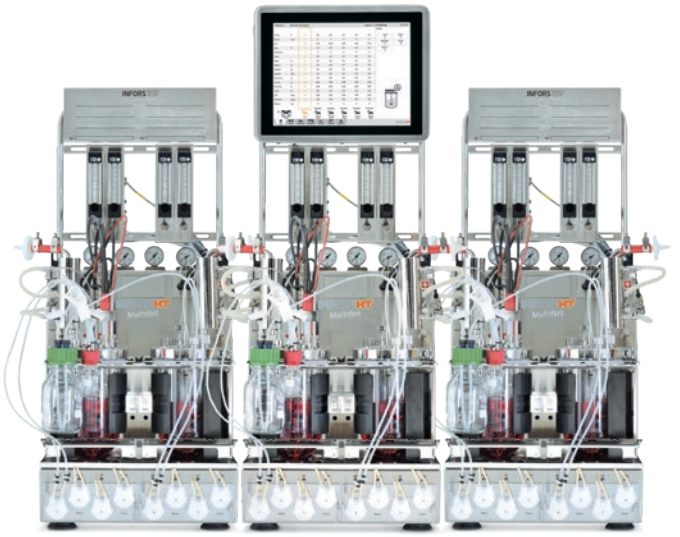
Culture vessels
- Total volume ranges from 0.4 L to 1 L
- Powerful magnetic drive
- Magnetic coupling reduces the risk of contamination and simplifies handling
- Culture vessels are easy to exchange
- Specialized stirring systems for microorganisms and cell cultures



Features

Technical data

Version for	Microorganisms	Cell cultures
Working volume	0.115–0.25 L / 0.18–0.5 L / 0.32–1 L	0.097–0.25 L / 0.15–0.5 L / 0.22–0.75 L
Dimensions (W x D x H)	350 x 520 x 960 mm	350 x 520 x 960 mm
Drive unit	Magnetic drive 100 min^{-1} to 1600 min^{-1}	Magnetic drive 30 min^{-1} to 300 min^{-1}
Temperature	Coolant temperature +5°C to 70°C / 95°C	Coolant temperature +5°C to 70°C / 95°C
Gassing	Up to 4 rotameters or MFCs, up to 2 vvm	Up to 4 rotameters or MFCs, up to 0.1 vvm
Pump speed	3 fixed, 1 variable, optional: 1 additional variable	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}	Depending on the design: 0.0012 mL min^{-1} to 3.46 mL min^{-1}
Ports	4 x 7 mm, 4 x 10 mm, up to 5 x 12 mm (Pg13.5)	4 x 7 mm, 4 x 10 mm, up to 5 x 12 mm (Pg13.5)
Connectivity	OPC XML DA via Ethernet	OPC XML DA via Ethernet



Contact us and we'll be happy to advise you.

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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, contro, 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
- Cell retention systems (spin filters, filtration probes, external systems, etc.) available for harvesting cell-free culture media

Super Safe Sampler

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

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, pCO_2
- Sensors for cell density an biomass measurement such as ASD12-N from Optek or ABER's Futura Biomass

Exit gas analysis

- Analysis of oxygen and carbon dioxide concentrations of the exit gas
- The BlueInOne sensor from BlueSens or the INFORS HT Gas Analyser
- Connect directly to the Multifors 2
- Multiplexing capability (one analytical instrument for multiple culture vessels)
- Additional information provided by eve® soft sensors such as OUR, CER or RQ

We always find the right solution for you

Every bioprocess is different – and sometimes very special. To help make your projects a success, we offer custom-made versions for nearly every device, reviewing every customer request within the framework of a feasibility study. Your INFORS HT contact person will be happy to provide support for your project.