



# Labfors 5

THE HIGH-END ALL-ROUNDER.

## That's Labfors 5

A truly universal bioreactor: The Labfors 5 is suitable for cell cultures, microorganisms, phototrophic organisms as well as solid substrates and enzymatic bioprocesses. There are almost no limits to its uses. You can control and monitor up to six pieces of equipment at the same time via the touchscreen.



### You have a choice

The Labfors 5 comes in four different versions which cover a wide range of microbial applications through to bioprocesses containing solids. Each version of Labfors 5 can be configured to your needs. You can, for example, set the temperature control system, the gassing strategy or the vessel accessories to suit your requirements. This means you can carry out a whole range of batch, fed-batch and continuous cultivations.

### Make six out of one

Would you like to organise your laboratory work more efficiently? Then connect your touchscreen control to up to six Labfors 5 devices. You can operate them simultaneously, and save time by, for example, calibrating all pH or pO<sub>2</sub> sensors at the push of a button.

### Excellent handling

The Labfors 5 will make it easy for you. The easily accessible ports on the top plate are particularly practical, but that's not all: the pump heads can also be removed. They can be autoclaved together with the vessel and will be ready for use again immediately. The very compact size, with a maximum working volume of 10 L, leaves plenty of laboratory space free.

### Fully equipped

The top plate features Pg13.5 and 19 mm ports for sensors, such as for pH, pO<sub>2</sub>, anti-foaming agents, optical density and redox. Thanks to the analogue feed pump that comes as standard, the Labfors 5 is ready for use immediately for fed-batch cultures. Three digital pumps are included for acids, bases and anti-foaming agents. Up to four gases (air, N<sub>2</sub>, O<sub>2</sub> and CO<sub>2</sub>) can be used in almost any combination. The liquid or gas can be fed either via a mass flow controller or a rotameter.

### Easy to upgrade

The Labfors 5 can be upgraded with many options – even after commissioning. The LabCIP system can be used for the microbial version, saving you time and money with automated and reproducible cleaning and sterilisation. For cultivation with cell cultures, the Labfors 5 can be turned into a single-use bioreactor.



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.

# Application-specific versions



## For microorganisms

- Stirring system with a directly driven high-performance motor
- high oxygenation in high cell density cultivation



## For cell cultures

- Aseptic magnet stirring system
- Spin filter suitable for perfusion processes



## For phototrophic organisms

- 260 water-cooled high-power LEDs
- Maximum lighting intensity of approx.  $3000 \mu\text{mol m}^{-2}\text{s}^{-1}$
- Autoclavable flat-bed culture vessel for a controlled environment with evenly distributed lighting intensity
- Dimming 0.1–100 %
- Simulation of daylight curves (with eve®)
- Technology is scalable up to pilot or production standard
- CO<sub>2</sub> enrichment possible



## For solid substrates and enzymatic bioprocesses

- For various kinds of enzymatic hydrolysis and fermentation
- Very powerful motor for best mixing even with very viscous substances, or with a high dry substance content in the starting material
- Easy addition of solids through the 40-mm port
- Accurate and safe temperature setting for sensitive media containing solids
- Optional display of the motor torque to analyse progress of the hydrolysis

### Option: LabCIP

- Automatic cleaning (CIP) and sterilisation (SIP) of all parts in contact with the product
- Double throughput possible due to overnight cleaning
- Reliable, reproducible and validatable base and/or acid cleaning



### Option: Mobius® Cell-Ready 3L single-use bioreactor

- Working volume from 0.99 L to 2.4 L
- Switch between glass and single-use culture vessel in just two steps





## Features

The Labfors 5 can be configured as you wish, so it can be adapted perfectly to your bioprocess.

### Making every bioprocess a success



#### Touchscreen with integrated OPC server

- Reliable measurement and setting of the bioprocess parameters and communication with eve®
- Parallel management and control of up to six Labfors 5 devices
- Up to 24 selectable parameters, such as temperature, stirring speed, pH, pO<sub>2</sub>, anti-foaming agent, feed

#### Vessels

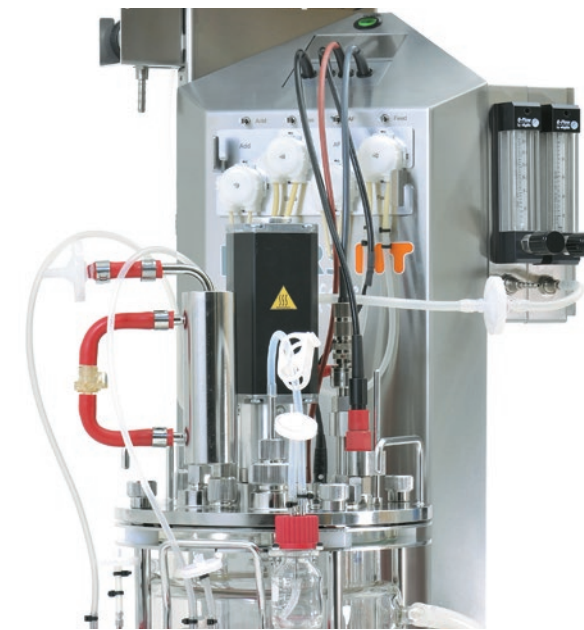
- Working volumes from 0.5 to 10 L
- Up to 14 ports for sensors (anti-foaming agent, optical density, pH, pO<sub>2</sub>, redox, conductivity, living cell density etc.)
- Can be set individually with a selection of various stirrers, spargers and special accessories
- Without welded top plate parts – ideal for GMP applications



### Technical information

Version for	Microorganisms	Cell cultures	Phototrophic organisms	Solid substrates and enzymatic bioprocesses
Working volumes	0.5–1.2 L / 0.5–2.3 L / 1–5 L / 2.2–10 L	0.5–1.2 L / 1–2.3 L / 1–5 L / 2.1–7 L / 2.2–10 L	1.6–1.8 L	1–2.5 L
Dimensions (W x D x H)	464 mm x 462 mm x 996 mm	464 mm x 462 mm x 996 mm	559 mm x 442 mm x 996 mm	515 mm x 515 mm x 1050 mm
Drive	Direct drive up to 1,500 min <sup>-1</sup>	Magnet drive up to 300 min <sup>-1</sup>	Air lift	up to 1000 min <sup>-1</sup>
Temperature	Coolant + 5 °C to 70 °C or 95 °C	Coolant temperature + 5 °C to 70 °C or 95 °C	Cooling agent temperature + 15 °C to 70 °C or 95 °C	Coolant temperature + 5 °C to 70 °C
Gassing per vessel	up to 5 MFCs, up to 2 min <sup>-1</sup> (vvm)	up to 5 MFCs, 0.1 min <sup>-1</sup> (vvm)	up to 5 MFCs, 2 min <sup>-1</sup> (vvm)	up to 5 MFCs 2 min <sup>-1</sup> (vvm)
Pump rate per vessel	3 fixed, 1 variable, optional 2 other variable	3 fixed, 1 variable, optional 2 other variable	3 fixed, 1 variable, optional 2 other variable	3 fixed, 1 variable, optional 2 other variable
Pump output	Depending on version, from 1.2 µl min <sup>-1</sup> to 17.1 mL min <sup>-1</sup>			
Ports	up to 4 x 7 mm 2 x 10 mm up to 6 x 12 mm (Pg13.5) up to 6 x 19 mm	up to 4 x 7 mm 2 x 10 mm up to 6 x 12 mm (Pg13.5) up to 6 x 19 mm	1 x 4 mm 1 x 6 mm 3 x 10 mm 13 x 12 mm (Pg13.5)	2 x 10 mm 3 x 12 mm (Pg13.5) 4 x 19 mm 1 x 40 mm
Connectivity	OPC XML DA via Ethernet	OPC XML DA via Ethernet	OPC XML DA via Ethernet	OPC XML DA via Ethernet

## Features



#### Open frame gas supply

- Up to four gases (air, N<sub>2</sub>, O<sub>2</sub> and CO<sub>2</sub>)
- Can be used in almost any combination and easy to upgrade
- Optional pressure regulation



#### High-performance pumps

- Three digital pumps for acids, bases and anti-foaming agent/level/harvest, a pump for variable feed rate
- Pump heads can be sterilised with the vessel
- No time-consuming insertion of tubes into the pumps
- Secure handling
- Automatic and parallel emptying and filling of the pump tubes
- Gravimetric feeding possible

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

[www.infors-ht.com/en/labfors5](http://www.infors-ht.com/en/labfors5)

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## Options and accessories

Use powerful options for optimizing your Labfors 5. 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 web-based 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 compatible platform software for comprehensive management of bioprocesses

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

### Sensors for PAT

- Redox, conductivity, pCO<sub>2</sub>
- Sensors for cell density and biomass measurement, e.g. ASD12-N by the manufacturer, Optek or ABER Futura Biomass

### Exit gas analysis

- Analysis of the oxygen and carbon dioxide concentrations of the exit gas
- BlueInOne-Sensor by the manufacturer BlueSens or INFORS HT Gas Analyser
- Direct connection to the Labfors 5
- Multiplexing capability (one analytical instrument for multiple culture vessels)
- Additional information obtained via the eve® soft sensors, such as OUR, CER or RQ

### Qualification and process validation

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

### Super Safe Sampler

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

#### 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.