



# LAMBDA Minifor2Bio *touch*

## Smart & Ergonomic Benchtop Fermenter-Bioreactor

Designed to Save Your Time and Enhance Your Research

### Applications

- **Microbial cultures:** Bacteria, yeast, fungi
- **Cell culture:** Mammalian, insect, stem cells
- **Protein production:** Vaccines, monoclonal antibodies
- **Tissue Engineering** & algal/plant cell cultures
- **Culture modes:** Batch, fed-batch, perfusion & continuous
- **Aerobic & anaerobic fermentation**

The **LAMBDA Minifor2Bio touch** brings together decades of expertise in fermentation and cell culture. This intuitive system offers **precise control of all critical culture parameters**, delivering real-time insights to help you optimize every experiment. With its suite of **innovative features**, the Minifor2Bio touch overcomes common bioreactor challenges, **simplifying workflows and boosting efficiency**.

#### Easy Sterility with Ergonomic Glass Vessels



Ditch complex, expensive stainless-steel headplates. The **durable glass vessels with threaded fittings** maintain perfect sterility.

**Setup is effortless** - start your experiments in minutes.

#### Gentle & Effective Mixing with Biomimicry



Inspired by nature, the Minifor2Bio touch uses an **innovative up-and-down agitation with bio-mimicking “fish-tail” discs**.

This **simple yet highly effective mixing** ensures **easy sterility** and **thorough culture homogenization**, all without complex magnetic coupling.

#### Efficient Heating – Gentle as Sunlight



Our innovative heating system mimics the **natural warming effect of the sun**. A **parabolic gold reflector** ensures even heat distribution, eliminating hotspots and overheating - **for precise temperature control at any culture volume**.

#### Interchangeable Vessels – from 0.3L to 7L



Experience **ultimate flexibility** with **interchangeable glass vessels**. Switch easily between working volumes from **35 ml to 6 L** without cumbersome metal head plates - **saving time and cost for every experiment**.

**Minifor2Bio touch - Intuitive. Efficient. Future-oriented.**



The **Minifor2Bio touch** integrates **advanced innovations** that replace bulky components and complex setups.

Enjoy **easy setup, intuitive operation, and clear process monitoring** with our **smart, user-focused design**.

# Minifor2Bio touch Advanced kit (Standard)

## Peristaltic Pumps

Automatically control **pH** with precision using high-quality **peristaltic pumps** for acid/base addition. Multiple pumps can be added for **feed, harvest, etc.** All pumps are **stand-alone instruments** and can be used for other lab applications.

## Modern Connectivity

A **7" TFT IPS touchscreen** provides an intuitive interface for **real-time monitoring and parameter management**. **USB and Ethernet** connections allow **easy data download, storage, and post-processing** of fermentation data.

## Parameter Control

**Temperature, Agitation** (0 - 1'200 rpm)

**Airflow rate** (0 - 5 L/min in 0.01 L/min steps)  
Internal MASSFLOW regulator with proportional needle valve for precise gas control

**pO<sub>2</sub>, pH, ORP (REDOX)** measurement

**Foam detection**

**Cascade control:** Create **customized regulator cascades** with inbuilt software

**Optional Accessories:** Optical density (turbidity) / conductivity / optical pO<sub>2</sub> / pCO<sub>2</sub> / balance / exit gas analyzers / photobioreactor accessories, etc.  
**MIRETO PC software** for remote control and data processing



## Accessories

Height-adjustable cannulas

Self-cleaning micro-sparger & "fish-tail" stirrers

Glass out-gas condenser

Cooling loop (not needed for 0.3L vessels)

Overpressure valve

Digital ARC probes (optional)

pO<sub>2</sub> probe

Sterile sampling device

## Fermentation Vessels

Choose from **0.3 L, 0.4 L, 1 L, 3 L, and 7 L autoclavable glass vessels**, supporting working volumes from **35 ml to 6 L**. Probes, mixer, and spargers are compatible across vessel types, allowing **easy, low-cost switching** based on your experimental needs.

## Infrared Heating

The **sun-like infrared heating system** ensures **uniform temperature with no hotspots**, regardless of the culture volume.

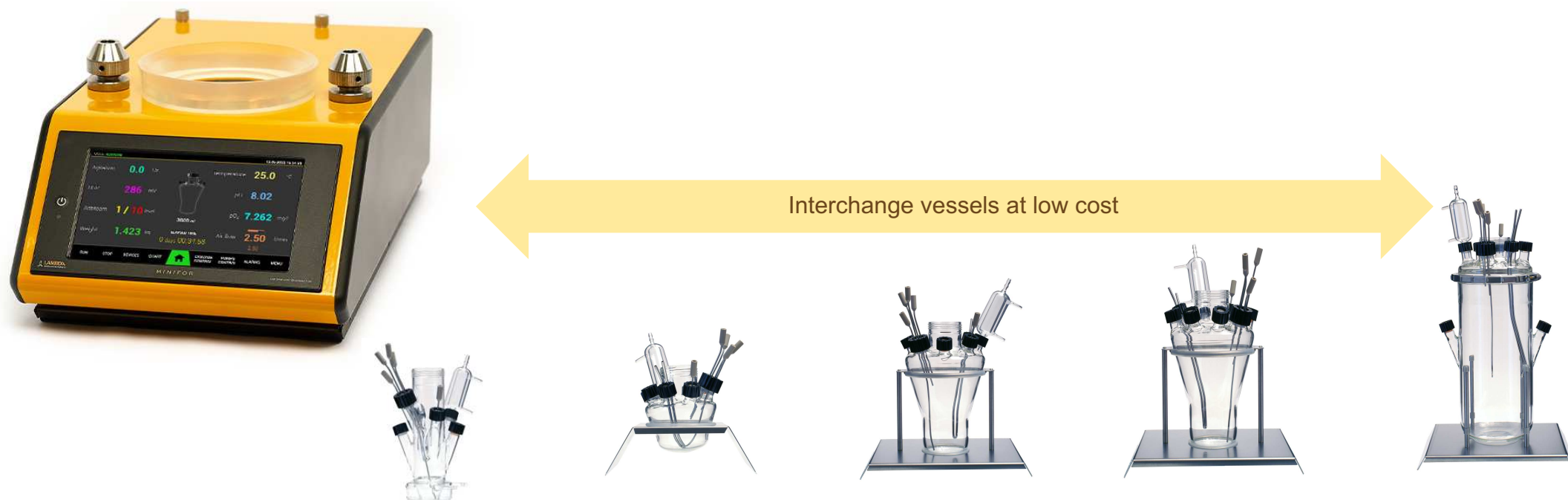
## Small Footprint & Ergonomic

Very small footprint similar to **an A4 sheet of paper**, regardless of the vessel size, **saving valuable bench space** while maintaining ergonomic accessibility.

## Vessel Volume & Ports – Flexible & Cost-Efficient

The **LAMBDA Minifor2Bio touch** bench-top laboratory fermenter and bioreactor was designed to meet the need for a **compact, versatile laboratory-scale fermenter** handling working volumes from **35 ml to 6 L**.

Thanks to its **interchangeable glass vessels**, it is possible to **switch working volumes quickly and cost-effectively**, without replacing probes, mixer, or spargers.



### Vessel type:

### Working volume:

Minimum (L)

Maximum (L)

### Ports:

No. of side necks

≈ traditional no. of ports

0.3L

0.4L

1L

3L

7L

0.035

0.40

0.15

0.45

0.5

1.7

1.0

3.0

2.0

6.0

6

16

8

22

8

22

8

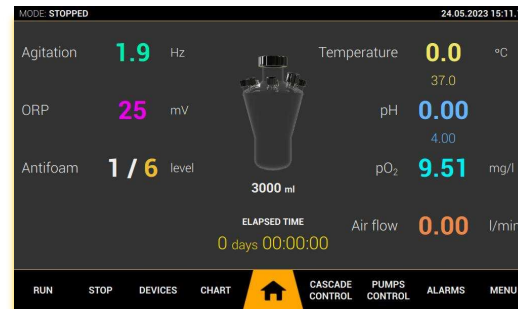
22

10

28

# Intuitive Software with Advanced Controls

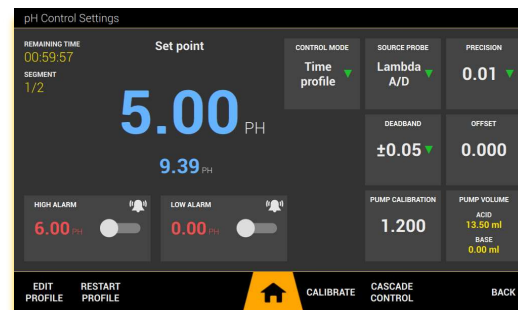
The **Minifor2Bio touch** offers a **user-friendly interface** that makes monitoring and controlling your experiments simple and efficient.



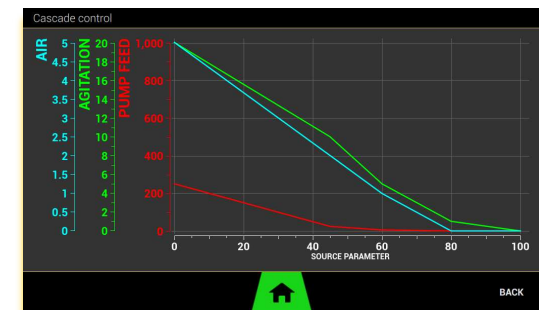
**All-in-One Parameter Overview** - see temperature, pH, pO<sub>2</sub>, gas flow, etc. at once



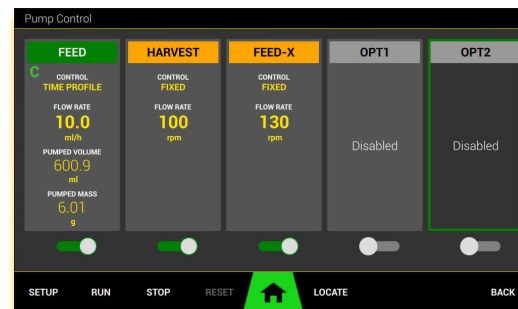
**Trend Charts** - Visualize changes over time for easy process tracking



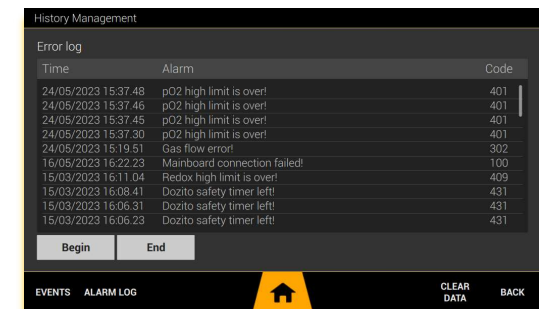
**Custom Control** - Adjust pH, pO<sub>2</sub>, airflow, and cascade configurations with few taps



**Graphical view** of cascade control configuration



**Pump Regulation Settings** - Program automatic feeds, harvest and more



**History Management** - Access events and alarm logs for **better analysis**

## Automatic Gas Mixing with additional MASSFLOW touch Regulators

The **Minifor2Bio touch** enables precise **control and mixing of Air, O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>**, through individual flow paths with additional **MASSFLOW touch** gas flow regulators:

- **4-Gas Mix** - for **mammalian or stem cell cultures** with constant gas flow
- **3-Gas Mix** - for **anaerobic fermentation** and pH control via CO<sub>2</sub>
- **2-Gas Mix** - for **O<sub>2</sub> enrichment** and pO<sub>2</sub> regulation

The **automated gas mixing and real-time monitoring** ensures **efficient gas diffusion** through **sparging or surface aeration** together with an excellent hydrodynamic shear-free agitation.

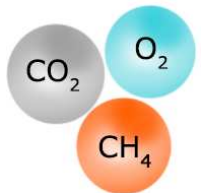


One MASSFLOW regulator for Air/N<sub>2</sub> included in the control unit.

## Exit Gas Analyzers

Monitor your bioprocess with LAMBDA's **flow-through optical gas analyzers**:

- For applications where **Oxygen, Carbon dioxide and Methane concentration** in the gas flow need to be determined.
- **OUR (Oxygen Uptake Rate), CPR (Carbon Dioxide Production Rate), and RQ (Respiratory Quotient)** can be calculated from the exit gas measurements.
- Fully **operable as standalone instruments**, providing flexibility for both integrated and independent applications.



**OXYMETER touch**  
measures  
**O<sub>2</sub> concentration** in the  
exit gas



**CARBOMETER touch**  
measures  
**CO<sub>2</sub> concentration** in the  
exit gas



**METHANMETER touch**  
measures  
**CH<sub>4</sub> concentration** in the  
exit gas

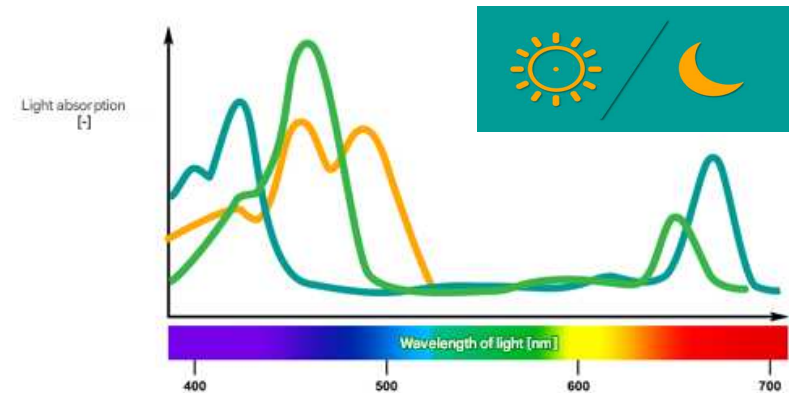
# Minifor2Bio *touch* – Photobioreactor Setup

Transform your **LAMBDA Minifor2Bio *touch*** into a **photobioreactor** using the **LUMO light controller** and external **LED light source module** for optimized phototrophic culture growth.

## LUMO Light Intensity Controller

The **LUMO module** provides **adjustable light intensity and duration** for phototrophic cell suspensions. Simply plug the compact module into the Minifor2Bio *touch* and control your light conditions digitally and effortlessly.

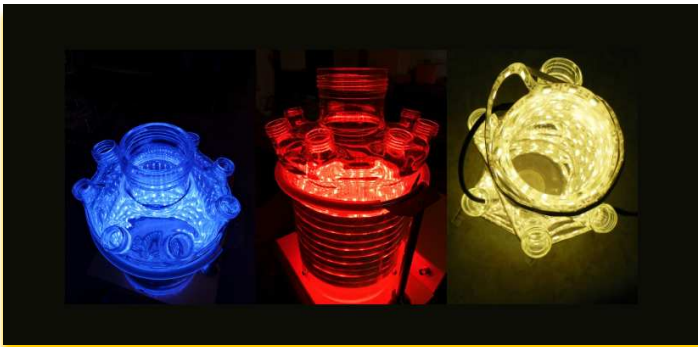
- **Simulate day/night cycles** for natural growth patterns
- **Select light intensity** manually or automatically
- **Set wavelength/spectral properties** according to your culture requirements



## LED Holder Module

The **high-intensity, low-heat LED light source** ensures **consistent and efficient light delivery**, maximizing photosynthesis and culture growth rates.

- Choose the appropriate **wavelength and spectrum** for algae, plant cells, cyanobacteria, or other phototrophic cultures
- Evenly distributed light around the vessel ensures **uniform illumination**
- Minimal heat emission prevents culture overheating while maintaining **optimal growth conditions**



## Advanced Connectivity - Remote Control & Data Storage

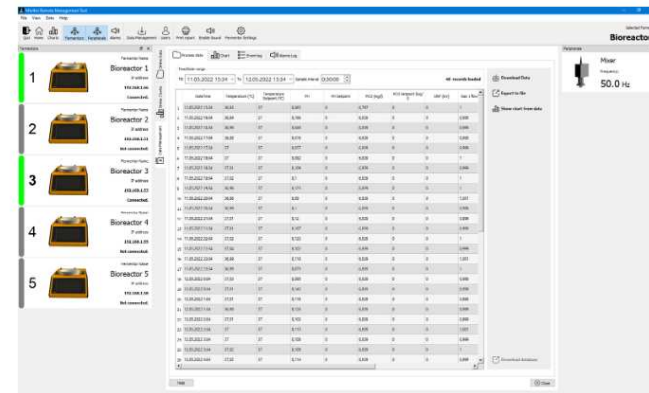
The **LAMBDA Minifor2Bio *touch*** offers **modern connectivity options** for seamless data management and remote operation:

- **USB and Ethernet (LAN) interfaces** for easy data download, storage, and post-processing
- **LAN connection** enables **remote monitoring and management** of your bioreactor from anywhere in the world
- Optional **WIFI module** for wireless connectivity



## Parallel Cultivation Made Easy

Run multiple experiments simultaneously! Several **Minifor2Bio *touch*** units can be connected and controlled through the **MIRETO fermentation software**, enabling efficient **parallel experimentation** and streamlined data handling.

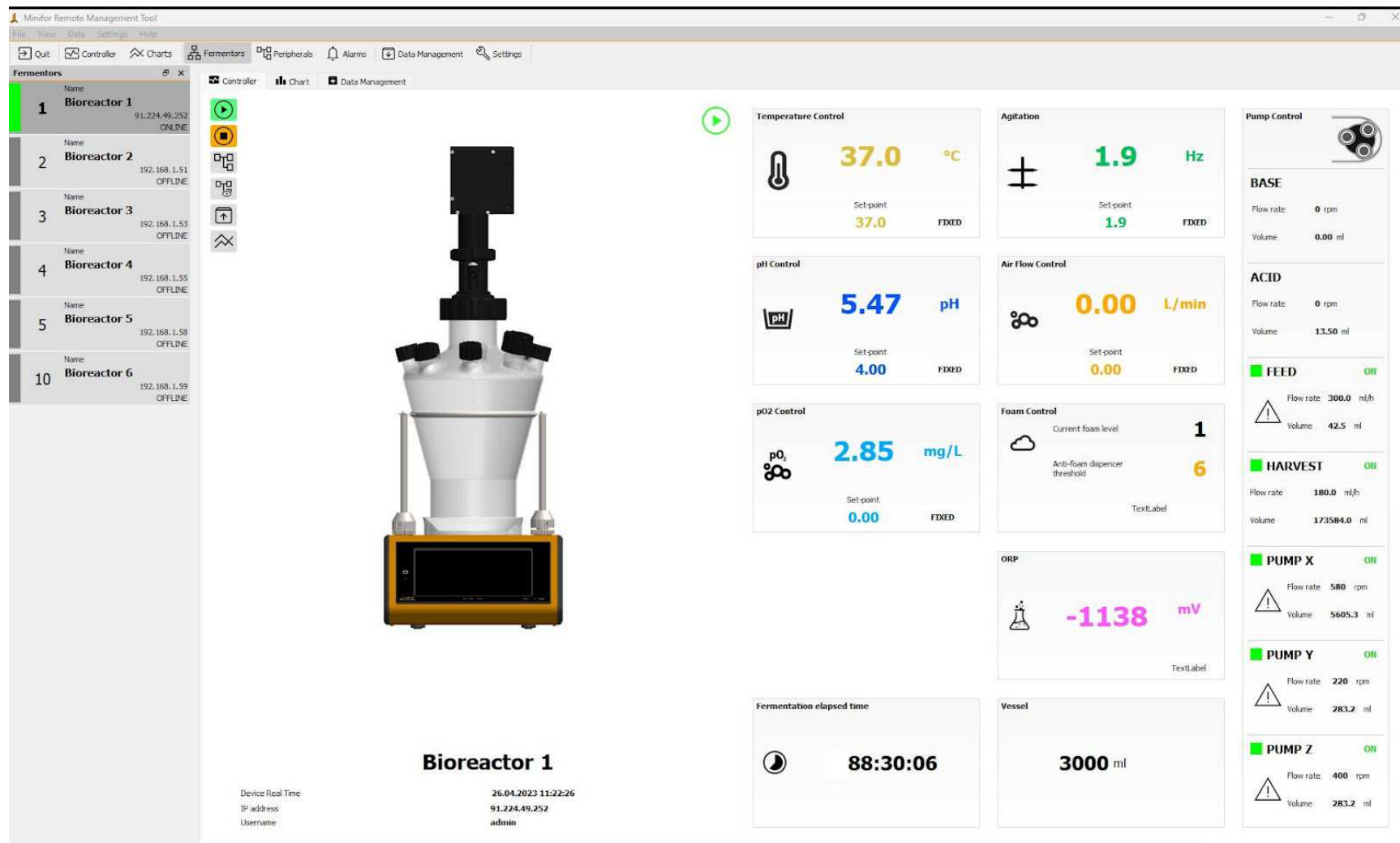


# MIRETO – Minifor2Bio touch Control Software

**MIRETO** is the smart software solution for **remote management and monitoring** of your Minifor2Bio *touch* bioreactors via standard **LAN networks**. It allows you to manage **all process data**, including **history**, with ease and precision.

Designed for both **single and multiple bioreactor setups**, MIRETO provides a **user-friendly yet powerful toolset** to ensure successful experiments and seamless workflow management.

**Stay connected with your bioreactor – wherever you are!**



# Customize Your Minifor2Bio *touch* Fermenter–Bioreactor System

Choose the **preconfigured Basic Start-up Kit**, the **Standard Advanced Kit**, or build a fully **customized system** by selecting the accessories that best suit your project requirements.

|                                                                                                                                                               | Basic Start-up Kit | Standard Advanced Kit | Build Your Own Kit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|--------------------|
| <b>Master control unit:</b> with 7" TFT IPS touchscreen, MASSFLOW, internal software                                                                          | ✓                  | ✓                     | ✓                  |
| <b>Agitation:</b> 0-20 Hz in 0.1 Hz steps (0-1200 rpm), "fish-tail" agitation discs                                                                           | ✓                  | ✓                     | ✓                  |
| <b>Temperature:</b> measurement 0 – 99.9°C in 0.1°C steps, automatic control, IR heating, cooling loop                                                        | ✓                  | ✓                     | ✓                  |
| <b>pH:</b> measurement 0-13 pH unit, automatic controller                                                                                                     | ✓                  | ✓                     | ✓                  |
| Acid and Base PRECIFLOW <i>touch</i> peristaltic pump for automatic pH regulation, storage bottles, magnetic bottle holders and lines                         | optional           | ✓                     | optional           |
| <b>Aeration / Air flow:</b> measurement with internal MASSFLOW, flow controller                                                                               | ✓                  | ✓                     | ✓                  |
| <b>pO<sub>2</sub> (dissolved oxygen - DO):</b> automatic controller                                                                                           | ✓                  | ✓                     | ✓                  |
| Measurement with pO <sub>2</sub> probe                                                                                                                        | optional           | ✓                     | optional           |
| <b>Digital probes (ARC technology):</b> automatic controller, socket                                                                                          | ✓                  | ✓                     | ✓                  |
| <b>Alarms:</b> low and high values of single parameters                                                                                                       | ✓                  | ✓                     | ✓                  |
| <b>Sterile sampling device</b>                                                                                                                                | optional           | ✓                     | optional           |
| <b>Overpressure valve</b>                                                                                                                                     | ✓                  | ✓                     | ✓                  |
| <b>Self-cleaning micro-sparger</b>                                                                                                                            | ✓                  | ✓                     | ✓                  |
| <b>Glass outgas condenser</b>                                                                                                                                 | ✓                  | ✓                     | ✓                  |
| <b>Fermentation control software:</b> MIRETO, laptop                                                                                                          | optional           | optional              | optional           |
| <b>Automatic antifoam control:</b> foam detection cable, DOZITO miniature pump                                                                                | optional           | optional              | optional           |
| <b>Feed &amp; Harvest pumps, Chemostat:</b> weighing module (balance)                                                                                         | optional           | optional              | optional           |
| <b>ORP (REDOX) probe:</b> controller, pump / massflow                                                                                                         | optional           | optional              | optional           |
| <b>pCO<sub>2</sub> (dissolved CO<sub>2</sub>) probe:</b> controller, pump / massflow                                                                          | optional           | optional              | optional           |
| <b>Conductivity probe:</b> controller, pump / massflow                                                                                                        | optional           | optional              | optional           |
| <b>Turbidity / Optical density probe (OD):</b> controller, pump / massflow                                                                                    | optional           | optional              | optional           |
| <b>Gas-mix / O<sub>2</sub> enrichment:</b> MASSFLOW 500 / 5000 <i>touch</i>                                                                                   | optional           | optional              | optional           |
| <b>Exit gas measurement:</b> O <sub>2</sub> (OXYMETER <i>touch</i> ), CO <sub>2</sub> (CARBOMETER <i>touch</i> ), CH <sub>4</sub> (METHANMETER <i>touch</i> ) | optional           | optional              | optional           |
| <b>LUMO:</b> light module, controller for photobioreactor (PBR)                                                                                               | optional           | optional              | optional           |
| <b>Air compressor:</b> AeroSilento <i>touch</i> , pressure-regulated air compressor                                                                           | optional           | optional              | optional           |

# Technical Specifications – LAMBDA Minifor2Bio touch

|                                     |                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power</b>                        | Universal power supply for mains 100–240 V   AC/50–60Hz, 400W   CE conform   Fused 5 x 20 F2A                                                                                                                                                                                                                                             |
| <b>Display</b>                      | 7" TFT IPS with resolution 1024x600 and capacitive touch panel                                                                                                                                                                                                                                                                            |
| <b>Dimensions</b>                   | 220 x 444 x 350–550 mm (W x D x H)                                                                                                                                                                                                                                                                                                        |
| <b>Fermentor vessel</b>             | Pyrex borosilicate glass with 6 to 8 threaded necks; 0.3, 0.4, 1, 3, 7 L vessels                                                                                                                                                                                                                                                          |
| <b>Temperature control</b>          | High efficiency 150 W infrared (IR) radiation heat source with gilded parabolic reflector<br>Regulation: From 5 °C over RT to 70°C   Measurement: From 0-99.9 °C in 0.1 °C steps   Precision: ± 0.2 °C (0-60 °C)                                                                                                                          |
| <b>Sensor</b>                       | Pt 100 incorporated in the glass electrode of the pH probe                                                                                                                                                                                                                                                                                |
| <b>pH control</b>                   | Sterilizable pH electrode pH 0-14 with automatic temperature correction, two-point calibration and Variopin connector or digital probe<br>Hamilton ARC. Range: 0-14.0 pH unit   Resolution: 0.1 or 0.01 pH unit (adjustable)                                                                                                              |
| Analog probe types                  | Analog autoclavable Hamilton/Mettler Toledo pH-probe with Pt 100 temperature sensor or similar with Variopin connector                                                                                                                                                                                                                    |
| Digital probe types                 | Hamilton ARC technology with Variopin 8 connector                                                                                                                                                                                                                                                                                         |
| <b>pO<sub>2</sub> control</b>       | Sterilizable Clark-type oxygen sensor with fast response, automatic temperature correction, two-point calibration, dissolved oxygen (DO) control through regulation of the airflow rate or cascade controller.<br>Range: 0-25 mg oxygen/l, in 0.1 mg/l steps, 0-100% saturation (adjustable units)   Resolution: 0.1 or 0.01 (adjustable) |
| Analog probe type                   | LAMBDA sterilizable Clark type oxygen sensor with fast response                                                                                                                                                                                                                                                                           |
| Digital probe type                  | Hamilton ARC technology (Clark type or optical)                                                                                                                                                                                                                                                                                           |
| <b>Air flow</b>                     | 0-5 l/min in 0.01 l/min steps, measured by precise mass flow meter, linearity ± 3%, reproducibility ± 0.5%                                                                                                                                                                                                                                |
| <b>Control</b>                      | Proportional valve controlled by microprocessor                                                                                                                                                                                                                                                                                           |
| <b>Supplied air pressure</b>        | 0.05-0.2 MPa (0.5-2 atm)                                                                                                                                                                                                                                                                                                                  |
| <b>Agitation</b>                    | 50 W vibromixer 0-20 Hz (0-1200 rpm) in 0.1 Hz steps (6 rpm) with 1 or more stirring discs; Sterility similar to magnetic coupling                                                                                                                                                                                                        |
| <b>Active peripherals (DEVICES)</b> | Device managed by internal software manager                                                                                                                                                                                                                                                                                               |
| Pumps                               | PRECIFLOW <i>touch</i> , HIFLOW <i>touch</i> , MAXIFLOW <i>touch</i> , MEGAFLOW <i>touch</i>                                                                                                                                                                                                                                              |
| Gas flow regulators                 | MASSFLOW 500 <i>touch</i> , MASSFLOW 5000 <i>touch</i>                                                                                                                                                                                                                                                                                    |
| Exit gas Analyzers                  | OXYMETER <i>touch</i> , CARBOMETER <i>touch</i> , METHANMETER <i>touch</i>                                                                                                                                                                                                                                                                |
| Weighing module                     | BALANCE                                                                                                                                                                                                                                                                                                                                   |
| <b>Ports</b>                        | One large quadruple sampling or additions port with four needles with LAMBDA PEEK double-seal connections, used for sampling, inoculation, antifoam, feeds, harvest, addition of correction solutions etc., additional double ports are available                                                                                         |
| <b>Configurable gas mixing</b>      | Several electronic flow controllers with flow rate ranges of 0-5 l/min (MASSFLOW 5000 <i>touch</i> ) or 0-500 ml/min (MASSFLOW 500 <i>touch</i> ) can be used for the controlled addition of gases (e.g. N <sub>2</sub> , O <sub>2</sub> , air, CO <sub>2</sub> ) in cell cultures.                                                       |
| <b>Interface</b>                    | USB 1.1/2.0 type B (PC control)   USB 1.1/2.0 type A (Host) for data export or software updates   LAN   WIFI (optional)                                                                                                                                                                                                                   |
| <b>PC Software</b>                  | MIRETO software for online monitoring, remote operation and data download                                                                                                                                                                                                                                                                 |
| <b>Conformity</b>                   | DIRECTIVE 2014/30/EU   DIRECTIVE 2014/35/EU                                                                                                                                                                                                                                                                                               |
| <b>Technical Standards</b>          | EN 61326-1:2013   EN 61010-1:2010/A1:2019/AC:2019-04                                                                                                                                                                                                                                                                                      |
| <b>Working temperature</b>          | 0 - 40 °C                                                                                                                                                                                                                                                                                                                                 |
| <b>Working humidity</b>             | 0 - 90 % RH, non-condensing                                                                                                                                                                                                                                                                                                               |
| <b>Weight</b>                       | 7.5 kg                                                                                                                                                                                                                                                                                                                                    |

LAMBDA Laboratory Instruments – Where Innovation Keeps Quality High and Price Low

