LabGeni Scientific

LABFREEZ INSTRUMENTS GROUP CO., LTD

ISO 9001 14001 certificated

BIOF-A SERIES FLAGSHIP GLASS BIOREACTOR FERMENTER

EASY TO USE

PROFESSIONAL | STRONG SCALABILITY | HIGH-END CONFIGURATION

BIOF-A series advanced fermenter is a flagship fermenter system developed by LABFREEZ for professional laboratory users. Equipped with famous thermal mass flow meter MFC, automatic ventilation, main control and communication adopts bus mode. BIOF-A has powerful computing power, stable operation ability, high scalability, and can be connected to external weighing balance, exhaust gas analysis, ORP, biomass analysis, etc. It is a product developed and used in depth by laboratory fermentation users.

- LABGENI SECOND GENERATION GUI
- SIEMENS SIMATIC-1200 HIGH-END PROCESSOR
- WATSON-MARLOW HIGH PRECISION VARIABLE SPEED PUMP

BIOF-A series fermenters also undertake the research and development tasks of the latest generation of LABFREEZ: launch the same type of controller suitable for fermenters of various imported brands, and have tested NBS, Sartorius, Applinkon and other well-known brands of tank systems. With the advantages of full-featured controllers, the A series is evolving into the latest generation of LABFREEZ's leading products.

LABGENI SECOND GENERATION GUI

- New generation graphical interface, leading industry design
- Digital dynamic panel, tank dynamics, process changes at a glance
- Refined design, bright color division, simple and fast operation
- Omnipotent function includes four-way intake control, exhaust gas analysis

SIMATIC-1200 HIGH-END PROCESSOR

- Adopt Siemens 1200 series high-end processors, in line with international standards
- Modular design and expandable function, expandable Smart200 module
- PROFINET, network and other bus applications, accurate and fast control

WATSON-MARLOW HIGH PRECISION VARIABLE SPEED PUMP

- Watson-Marlow high precision flip-top pump, easy to use and strong stability
- Step electrode variable speed regulation, standard bus communication control
- FOAM, ACID, BASE, FEED four-way pump can be customized and interchangeable

CONVENIENT FOR LABORATORY OPERATION

- Overall AISI316L stainless steel material, fine grinding, electrolytic polishing, the overall ma nufacturing process is comparable to the sam e imported products from abroad

AUTOMATIC AIR INTAKE SYSTEM

- Adopt the thermal mass flow meter MFC impo rted from Switzerland
- Ventilation digital control, can be associated with DO control to reduce the impact of ventil ation on the process and automate the control process

MOST POWERFUL LF-M CONTROLLER

- Integrated tank cold water temperature contr ol, condenser cold water temperature control Extensible: exhaust gas analysis, ORP, weighin g balance, biomass analysis, etc.
- Built-in LF Control V2.2 control software, which can impl ement online monitoring, recording and curve display
- Can be used with analysis software LF-Analysis V1.0
- Can be connected with OPC XML DA via Ethern et data communication

SPECIFICATIONS DESCRIPTION

ITEM NAME	DESCRIPTION
Tank	• * Full volume: 3L, 5L, 10L, 15L optional, no need to replace the controller • Filling volume:Max.80% • Design pressure: Max 0.15Mpa • * Tank cover port: air inlet, four-in-one feeding port, temperature sleeve, cooling coil, PH/DO electrode port, feed port, spare port, exhaust gas condenser (removable)
Stirring system	• High precision and low noise servo motor, special mechanical seal • Rotation speed: 0~1200rpm ±1rpm • * Fifteen stages of speed regulation, the program sets the required speed of each stage
Air intake system	• Intake: air; quick release structure • * Imported thermal mass flow meter MFC • Annular gas distributor, optional microporous bubble distributor
pH	• Range: 2.00～12.00pH, Accuracy: ±0.02 • Sterilization temperature: 0~130℃ • Control: LN-K integrated transmitter with filter, signal isolator, RS-485 communication
DO_2	• Range: 0～200%, Accuracy: ±0.1% • * Sterilization temperature: 0～130℃ • * Control: LN-K integrated transmitter with filter, signal isolator, RS-485 communication
Temperature Control System	• Thermal blanket electric heating method • 24V safe voltage • Temperature control range cooling water +5℃～65℃±0.1℃ • Temperature sensor: imported PT100 platinum electrode (high temperature resistant quick release form)
Cold water module	• Integrated LF-M controller control • * Communicate with the host PLC, the solenoid valve controls the on-off • * Cold water connector adopts imported self-locking quick interface, and the interface contains self-locking valve
Peristaltic pump	• FOAM/FEED/ACID/BASE 4-way peristaltic pump • * Original imported flip-top peristaltic pump, quick connection • Peristaltic pump can achieve: cumulative flow, instantaneous flow, speed adjustment, 100% adjustment, associated PID adjustment, manual control and other functions
Defoaming system	• Mechanical defoaming stirring paddle with rake pressure type mechanical defoaming pulp • Defoamer: Flow addition by peristaltic pump • Highly sensitive defoaming electrode
Sampling	• Sterile sampling system, autoclavable • The negative pressure design of the syringe can get rid of the trouble of easy contamination during the sampling process • Dual design, users can also use traditional flame inoculation to inoculate
LF-M Controller, LF-Control V2.2 control system	• 10.1 inch HMI touch screen, brightness >350 cd/m2 • * Siemens SIMATIC -1200 series high-end processors • Low-voltage electrical appliances use internationally renowned brands such as Schneider • Embedded LF-Control V2.2 embedded control software configuration to achieve local full operation

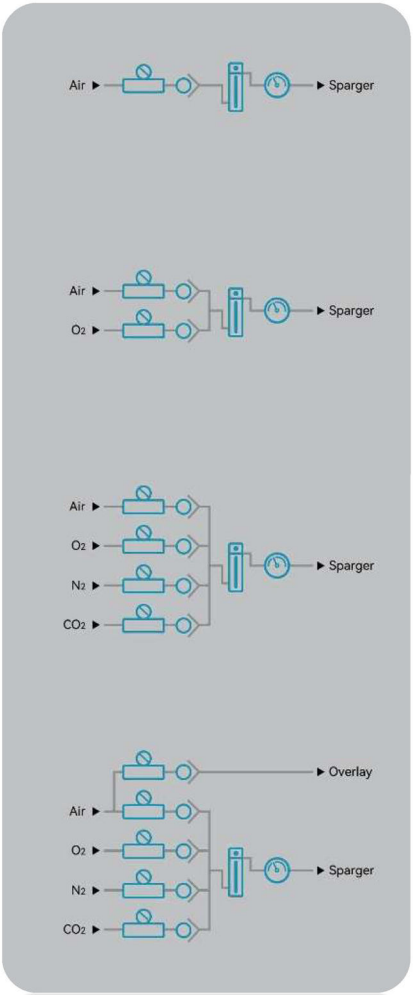
	• FOA, PH, DO, T, etc. can realize automatic and manual control of RPM, T, PH, DO2 curve display function, historical data recording and USB export • Four-way intake Air, O2, N2, CO2 control and display (requires options) • Online display: OUR, CER, Kla, RQ (requires options) • * Extensible: ORP, biomass, balance, external peristaltic pump, exhaust gas analyzer (including imported and domestic), etc. • * Can be used with analysis software LF-Analysis V1.0 • * Can be connected to OPC XML DA via Ethernet data communication
Power supply	• Input: AC110～240v/1.2kw • Output: Motors, thermal blankets, peristaltic pumps and other power components use 24V safe voltage

* *Means special features*

COMPONENT BRANDS

ITEM NAME	BRAND	ORIGINAL
pH sensor	METTLER TOLEDO / HAMILTON	Switzerland
DO_2 sensor	METTLER TOLEDO / HAMILTON	Switzerland
pH, DO_2 signal line	METTLER TOLEDO	Switzerland
PLC	Siemens high-end series	Germany
Touch screen	MCGS	Taiwan
Machinery Seal	JOHN CRANE	U.K.
Peristaltic pump	Watson-Marlow	U.K.
Refill bottle	SCHOTT	Germany
Thermal Mass Flow Meter	Vogtlin	Switzerland
PT100 sensor	JUMO	Germany
Low voltage electrical	Schneider	France
Cold water quick plug	CPC	U.S.

VENTILATION SOLUTION



AIRFLOW

- MFC controls gas flow · One-way valve prevents gas backflow
- Flow meter displays real-time flow
- The pressure gauge monitors the pressure in the tank

O2-ENRICHMENT

- Bypass oxygen enrichment: Air and O2 mixing and Oz replenishment via MFC
- Both gases use MFC and one-way valve to control gas flow
- Glass rotameter shows total flow
- O2 replenishment is automatically controlled by the system The pressure gauge monitors the pressure in the tank in real time

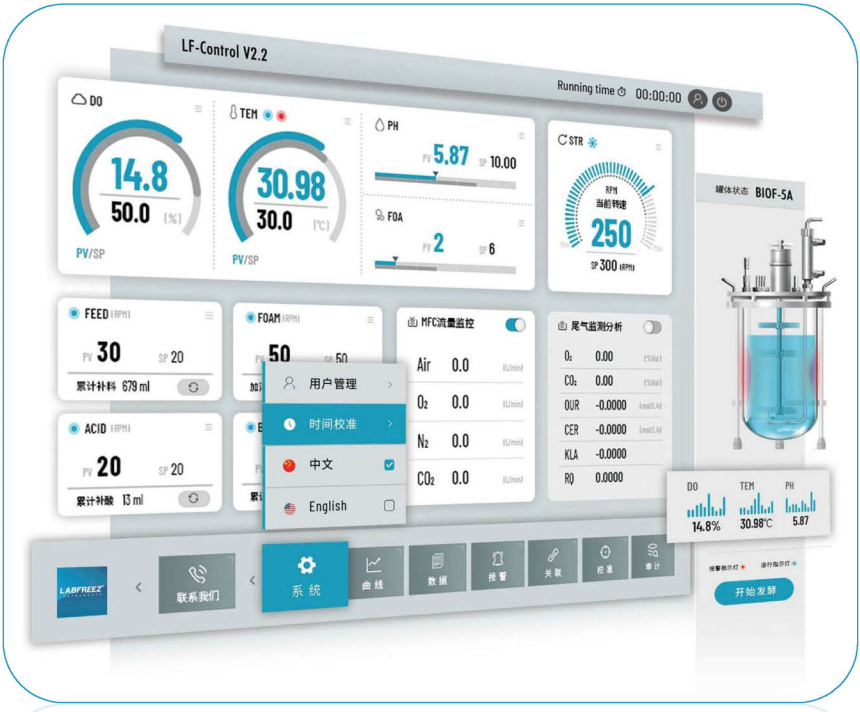
GAS FLOW RATIO CONTROL

- Air, O2, CO2 and Nz are independently controlled and mixed by MFC and one-way valve respectively. Through the mixing of different gases in different volumes, the gas requirements of various working conditions can be fully met
- Controller changes CO2 gas flow by pH value
- Control the different volume ratios of Air, O2, N2 by changing the DO value o Display the total flow by a glass rotor flowmeter

ADVANCED ADDITIVE FLOW

- 5-way MFC for gas control separately
- Four-way gas mixing control of Air, O2, COz and Nz for deep ventilation.
- Another way of Air (or other designated channels) is carried out by MFC and one-way valve
- superficial ventilation

SECOND GENERATION GUI



Since the birth of the first-generation graphical interface, LABFREEZ has received more and more customer feedback, and put forward many opinions on aesthetics and convenient use. Combining user feedback and abandoning the consistent graphic interface design features of fermentation tanks, in 2022, LABFREEZ cooperated with a professional graphic design team to create a second-generation graphic interface with great visual impact and practicality.

The second-generation graphical interface uses the latest instrument panel design language to comprehensively update the dynamic numbers and dynamic graphics that users are most concerned about. Users can see the key data in the fermentation process at a glance by observing the digital dial without entering the secondary interface. For graphics, animations and dynamic presentations are made, which are more flexible and intuitive. Through the second-generation graphical interface, the user has a very accurate grasp of the parameters and status of the fermenter to make the fastest decision.

The graphical interface created by the professional design team has a great sense of design and practicality at the same time. Through the design, the data and operations that users care about are extremely convenient and easier to identify, which improves user familiarity and efficiency.

OPTIONAL ACCESSORIES

In order to allow users to better use our fermentation tanks, we have developed a variety of high-quality accessories for users

To meet the needs of users in different industries and different working conditions, users can choose relevant accessories according to their own conditions

FEED WEIGHING SYSTEM

- Brand: METTLER-TOLEDO
- Maximum weight: 2200g
- Accuracy: 0.001g
- Control: LF-M main controller control
- Association: Associated control through feeding can customize feeding amount

EXHAUST GAS ANALYSER

- Imported brand: BluelnOne
- c02 range: 0-10%, 0-25%, 0-50% optional
- 02 range: 0-25%, 0-50% optional
- Accuracy: 3% of the measured value ± 0.2% of the range Resolution ± 0.01%
- Can be displayed online: OUR, CER, Kla, RQ

ORP ELECTRODES

- Brand: METTLER-TOLEDO
- High temp. sterilization: -30 °C - 130 °C
- Transmitter: LN-K integrated transmitter, including filtering and self-calibration, RS-485 communication
- LF-M Controller Controls and Settings

LIVE CELL ONLINE CONCENTRATION

- ABER-Biomass imported live cell online concentration detection can measure live cell concentration, density, dry weight, capacitance, biomass volume, conductivity
- UK HEL exhaust gas analyser: a more cost-effective exhaust gas analyser
- Tangential flow ultrafiltration TFF system, system is directly connected to filtration and control

ONLINE OD

- Germany brand, same style as Sartorius
- Interface Pg13.5, length: 12mm
- Measurement wavelength: 730nm~970nm
- Optical path length
- PL:1~1000mm
- On-line measurement of OD value, data and curve display, and the same data comparison with the fermentation process

One year free after-sales service

Lifetime support for software upgrades

Timely response service

Expired product service continuation

LABFREEZ INSTRUMENTS GROUP CO., LTD is committed to providing professional equipment and services in the field of bioengineering.

In order to create a new generation of fermentation tanks, LABFREEZ will provide users with most complete after-sales service system in industry.

Here we make the above commitment