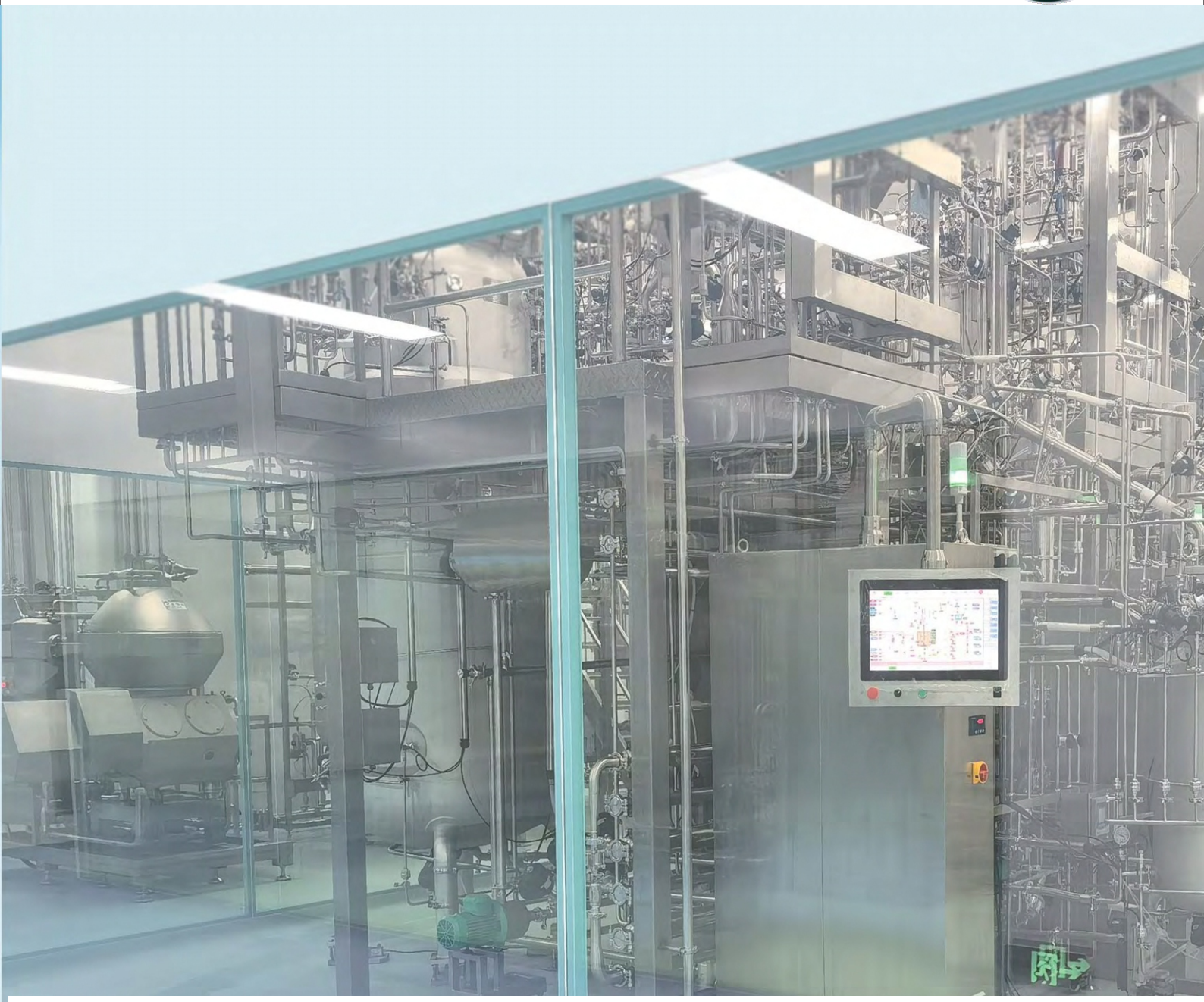
BIOSPECTRIX PVT LTD



High Density Culture Solutions

Full Series of Bioreactor and Fermentor

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Business Scope

Cell Culture System
Ferment Laboratory System
Ferment Production System

Cell Culture System
Ferment Lab
GMP Certification Document



Ferment Process Optimization
Cell Culture Optimiztion

Professional Equipment



- Micro Bioreactor
- Vaccine & Biopharmaceutical Equipment
- Plant Cell Bioreactoe
- Animal Cell Bioreactor
- Solid Fermenter
- Single-Use Bioreactor



Benchtop Boreactor

Entry-level and easy-to-operate, the vessel material is glass, with excellent performance and compact size, making it more suitable for laboratory use. We have mature series for you to choose, or customize a suitable solution according to your needs.

Applications

- Scale-up/Scale-down
- High-cell-density cultures
- Optimization of culture process
- Vaccine preparation
- Biologic pharmacy
- Photosensitive cultivations
- Anaerobic cultures
- Biofuels research



Benchtop Cell Bioreactor



BS-CGC is an excellent laboratory benchtop bioreactor for cell culture to create a more sophisticated configuration, with double-wall glass vessel, flexible operation, and more extensive application.

- The volume is 1~10L, which can be customized freely.
- Round bottom design, more precise processing and better mixing.
- Double-wall glass vessel with jacketed water circulation provides a perfect view to your culture.
- Equipped with magnetic stirring with better sealing, and different types of stirring paddles can be replaced.
- Standard with 4 peristaltic pumps, and external pumps can be configured.
- Equipped with four air intakes, air, O_2, CO_2, N_2.
- 10" touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- Controller combines measurement and control hardware for excellent process control.

Benchtop Microbial Bioreactor



BS-JG is a basic benchtop bioreactor, mainly used for microbial culture. Its exquisite appearance and complete configuration can meet your basic needs.

The volume is 1~10L, which can be customized freely.

- Single-wall glass vessel with bottom electric heating stainless steel jacket or electric heating pad; double-wall with water circulation can be selected.
- Equipped with a customized stirring system, mechanical or magnetic stirring, and different types of stirring paddles can be replaced.
- Standard with 4 peristaltic pumps, and external pumps can be configured.
- Can be equipped with multiple air intakes, automatic or manual control.
- 10" touch screen, easy to understand and use.
- Basic control: temperature, rotation rotating speed, pH, DO, antifoam, feeds, etc.
- Controller combines measurement and control hardware for excellent process control.

Benchtop Plant Cell Bioreactor



BS-JGG is laboratory benchtop illumination bioreactor. The lampshade surrounds the glass vessel without taking up extra space, and is more suitable for plant cell growth.

- The volume is 1~10L, which can be customized freely.
- The vessel is surrounded by an external lampshade for uniform lighting.
- Single-wall glass vessel with internal electric heating.
- Equipped with a customized stirring system, mechanical or magnetic stirring, and different types of stirring paddles can be replaced.
- Standard with 4 peristaltic pumps, and external pumps can be configured.
- Can be equipped with multiple air intakes, automatic or manual control.
- 10" touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- Controller combines measurement and control hardware for excellent process control.

Benchtop Duplex Bioreactor



BS-JGD controls two vessels by one controller, which is universal with INOBIO-JG/CG series glass vessels, so replacement is not limited, and save more time and space.

Opational Vessels

- Cell culture vessel
- Microbial culture vessel
- Plantcell culture vessel

- Two glass vessels can be controlled separately at the same time.
- Equipped with a customized stirring system, mechanical or magnetic stirring, and different types of stirring paddles can be replaced.
- Standard with 4 ×2 peristaltic pumps, and external pumps can be configured.
- Can be equipped with multiple air intakes, automatic or manual control.
- 10" touch screen, is easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- Controller combines measurement and control hardware for excellent process control.

Benchtop Multiple Bioreactor-MINI



BS-MJG-X is a miniature parallel bioreactor with integrated design and more precise configuration, which helps scientists to manage more experiments at the same time.

Application

- Culture medium formula screening
- Process optimization
- Strain screening

- Control 2~108 vessels at the same time.
- Embedded design takes up less space.
- The volume is 0.2~2.5L, which can be customized freely.
- Using semiconductor anhydrous temperature control technology.
- Each vessel is connected with separate sensor and 4 peristaltic pumps to achieve individual control.
- 15"LCD touch screen, which has a rich and complete display content.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- Can be connected to upper computer for data transmission and display.

Benchtop Multiple Bioreactor



BS-JG-X is a fully integrated high-throughput system. One controller controls multiple glass vessels, which is suitable for laboratory parallel contrast fermentation experiments. Getting experimental results more intuitively and faster. Saving more time, space and costs.

Application

- Culture medium formula screening
- Process optimization
- Strain screening

- Simultaneously support 2~6 glass vessels, and equipped with a 10"touch screen.
- The volume of each vessel is 1~10L, which can be customized freely.
- Single-wall glass vessel with electric heating or double-wall with jacketed water circulation can be selected.
- Floor stand multiple bioreactor for optional.
- Each vessel is connected with separate sensors and 4 peristaltic pumps to achieve individual control.
- Each vessel can be disassembled for sterilization.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- The controller communicates with control system for accurate and reliable measurement and control.

Configuration and Parameters

							
		INOBIO-CGC	**INOBIO-JG**	**INOBIO-JGG**	**INOBIO-JGD**	**INOBIO-MJG-X**	**INOBIO-JG-X**
Total volume		1~10L	1~10L	1~10L	1~10L	0.2~2.5L	1~10L
Load rate		30%~70%	30%~70%	30%~70%	30%~70%	30%~75%	30%~70%
Glass vessels	Single-wall	○	●	●	●	●	●
	Double-wall	●	○		○		○
Sterilization	In Autoclave	●	●	●	●	●	●
	In-situ*	○	○		○		○
Gassing	Standard	4 gas	1 gas	1 gas	1×2 gas	1×n gas	1×n gas
	Multiple gas	○	○	○	○	○	○
Gas flow control	Rotor Flowmeter	●	●	●	●	●	●
	Mass Flowmeter	○	○	○	○	○	○
Stirrer	Mechanical stirring	○	●	●	●	●	●
	Magnetic stirring	●	○	○	○	○	○
Peristaltic pumps	Fixed speed	●(4 pcs)	●(4 pcs)	●(4 pcs)	●(4×2 pcs)	●(4×n pcs)	●(4×n pcs)
	Variable speed	○	○	○	○	○	○
	Extra pump	○	○	○	○	○	○
Sensor	Temperature	●	●	●	●	●	●
	pH	●	●	●	●	●	●
	DO	●	●	●	●	●	●
	Antifoam	●	●	●	●	●	●
Illuminance				100~10,000lux, adjustable			
Suspension culture		●	●	●	●	●	●
Microcarrier culture		○					
Fibra disk culture		○					
Number of parallel units					2	2~108	2~6
Touchscreen controller		●	●	●	●	●	●
Upper computer						○	

● : Satandard
○ : Optional
* : In-situ Sterilization is only suitable for single wall.



Stainless Steel Fermentor

Have wider range of volume options, with humanized structural design, supporting batch, fed-batch, semi-continuous, and continuous cultivation. We have mature series for you to choose, or customize a suitable solution according to your needs.

Application

- Biofuels and secondary metabolite production
- Vaccine, recombinant protein and monoclonal antibody production
- Production process development
- Pilot and large-scale production
- High cell density fermentation
- Scale-up and scale-down of experiment





Stainless Steel Cell Fermentor

BS-CSC is stainless steel suspension cell culture fermentor that integrates many advanced functions, suitable for cell culture process development and large-scale culture of suspension cells.



- The culture volume is 5~5000L.
- Provide various function from general to comprehensive by modular design.
- This system provides thorough solution for different kinds of budgets and requirements.
- Meet most requirements of today' s bio-pharmaceuticals by advanced pressure vessel manufacture process and function

Successful cases

BHK cell of foot-and-mouth disease, BHK cell of pseudorabies vaccine, high 5 cell of PCV, MDCK cell of bird flu, CHO cell antibody, 293 cell of rabies vaccine, SF9 cell of rabbit plague, SF9 cell of cow garget, SF9 cell of swine fever.



Application

- Suspension cultures of microorganisms and cells
- Developing and optimizing of cell culture process
- Seed amplification
- Mass production

Microcarrier Fermentor





Application

- Batch, fed-batch or continuous perfusion culture of insect, plant, mammalian cell
- Microcarrier culture of anchorage dependent cell
- Amplification of cell seed
- Pilot scale sample preparation and industrial scale production

Application

- Batch, fed-batch or continuous perfusion culture of anchorage dependent cells such as animal cells, insect cells,etc.
- Produce cell secretory products, such as genetic recombinant protein, virus, etc.
- Pilot scale sample preparation and industrial scale production

Successful cases

Vero cell of rabies vaccine, vero cell of IPV, 293 cell of rabies vaccine, diploid cells of rabies vaccine, ST cell of swinefever, PK 15 cell of PCV, Marc 145 of PRRS.





The unique design makes anchorage dependent cell adhere to microcarriers more easily, which greatly reduces cost, and achieves maximal output. It is mainly suitable for anchorage dependent animal and plant cell culture.

Successful cases

Vero cell of rabies vaccine, vero cell of IPV, MDCK cell of bird flu, BSR cell of rabies vaccine of veterinary use, CHO cell of EPO, vero cell of nephri&#xfffd;c syndrome, verocell of swine fever, vero cell of BVDV, diploid cells of rabies vaccine.





Adopt self-produced multi-hole carrier with high efficiency, which can provide sufficient superficial area for cell culture, apply to anchorage dependent cell culture of animal cell, insect cell, etc.

Stainless Steel Microbial Fermentor



BS-JS is an in-situ sterilized fermentor for microbial culture, with stainless steel as the main body, and suitable for pilot and production.

- The volume is 5~1000L, which can be customized freely.
- SUS316L stainless steel material, internal polishing accuracy is less than 0.4um to reduce bacterial contamination.
- Jacketed water is electrically heated and circulated,which has good heat exchange efficiency.
- Equipped with a customized stirring system, mechanical or magnetic stirring, and different types of stirring paddles can be replaced.
- Controller combines measurement and control hardware for excellent process control.
- 10” touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- With external chiller for optional, you don't have to worry about finding a suitable cooling water source for your bioreactor.
- The large volume vessel can be connected to the CIP cleaning station, and there is no need to worry about cleaning.

Stainless Steel Plant Cell Fermentor



BS-JSG is stainless steel illumination fermentor, with internal lamp lighting, and suitable for plant cell growth.

- The volume is 5~1000L, which can be customized freely.
- Equipped with internal lamp for uniform illumination.
- SUS316L stainless steel material, internal polishing accuracy is less than 0.4um to reduce bacterial contamination.
- Jacketed water is electrically heated and circulated, which has good heat exchange efficiency.
- Equipped with a customized stirring system, mechanical or magnetic stirring, and different types of stirring paddles can be replaced.
- Controller combines measurement and control hardware for excellent process control.
- 10” touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- With external chiller for optional, you don't have to worry about finding a suitable cooling water source for your bioreactor.
- The large volume vessel can be connected to the CIP cleaning station, and there is no need to worry about cleaning.

Solid Fermentor



BS-SS is equipped with a rolling axis vessel, and suitable for the transition experiment of solid fermentation from laboratory scale to production.

Application

- Pilot-scale production
- Production of raw materials for medicine and health products
- Biological feed fermentation
  esearch on natural or waste solids

- The volume is 10~1000L, which can be customized freely.
- Horizontal or vertical vessel structure.
- Equipped with large viewing port, easy to observe.
- Using the mixing and crushing system to achieve uniform and stable fermentation.
- Vessel can be directly injected with steam to achieve the purpose of in-situ sterilization.
- The combination of vacuum and ventilation for cooling can adjust the water content of the material at the same time.
- SUS316L stainless steel material, internal polishing accuracy is less than 0.4um to reduce bacterial contamination.
- 10” touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, humidity, feed water, etc.

Stainless Steel Multiple Fermentor



BS-JSM-X controls multiple vessels of the same size by one controller, which can achieve rapid process verification. It is suitable for

Application

- Culture medium selection
- Optimization of fermentation process parameters
- Production process validation
  Strain validation

- Control 2~6 stainless steel vessels at the same time by one controller.
- Each vessel is connected with separate sensor and 4 peristaltic pumps to achieve individual control.
- Single vessel can be used independently.
- SUS316L stainless steel material, internal polishing accuracy is less than 0.4um to reduce bacterial contamination.
- 15” touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- With external chiller for optional, you don't have to worry about finding a suitable cooling water source for your bioreactor.
- The large volume vessel can be connected to the CIP cleaning station, and there is no need to worry about cleaning.

Stainless Steel Multi-step Fermentor



BS-JSMS-X can be equipped with multi-step seed vessels, which is a powerful assistant for process research, development and optimization. Saving labor and time for rapid process validation.

Application

- Pilot-scale production
- Direct inoculation of seed
- Experimental research of transition from shake flask to production

- Equipped with one or two-step seed vessel, and different volume vessels can be combined according to user needs.
- Each vessel is connected with separate sensor and 4 peristaltic pumps to achieve individual control.
- Reliable seed-transfer pipeline.
- Single vessel can be used independently.
- SUS316L stainless steel material, internal polishing accuracy is less than 0.4um to reduce bacterial contamination.
- 15" touch screen, easy to understand and use.
- Basic control: temperature, rotating speed, pH, DO, antifoam, feeds, etc.
- With external chiller for optional, you don't have to worry about finding a suitable cooling water source for your bioreactor.
- The large volume vessel can be connected to the CIP cleaning station, and there is no need to worry about cleaning.

Configuration and Parameters

							
		INOFE-CSC	**INOFE-JS**	**INOFE-JSG**	**INOFE-JSM-X**	**INOFE-JSMS-X**	**INOFE-SS**
Total volume		5~5000L	5~1000L	5~1000L	5~1000L	5~1000L	10~1000L
Load rate		30%~70%	30%~70%	30%~70%	30%~70%	30%~70%	40%~60%
Stainless steel vessels		●	●	●	●	●	●
SIP		○	○	○	○	○	○
CIP		○	○	○	○	○	○
Gassing	Standard	4 gas	1 gas	1 gas	1×n gas	1×n gas	1 gas
	Multiple gas		○	○	○	○	○
Gas flow control	Rotor Flowmeter	●	●	●	●	●	●
	Mass Flowmeter	○	○	○	○	○	○
Stirrer	Mechanical stirring	○	●	●	●	●	Rolling Ax.
	Magnetic stirring	●	○	○	○	○	
Peristaltic pumps	Fixed speed	● (4pcs)	● (4pcs)	● (4pcs)	● (4×n pcs)	● (4×n pcs)	
	Variable speed	○	○	○	○	○	
	Extra pump	○	○	○	○	○	○
Sensor	Temperature	●	●	●	●	●	●
	pH	●	●	●	●	●	
	DO	●	●	●	●	●	
	Antifoam	●	●	●	●	●	
Illuminance				100~10,000lux, adjustable			
Suspension culture		●	●	●	●	●	
Microcarrier culture		○					
Fibra disk culture		○					
Humidity control							●
Number of parallel units					2~6	2 or 3	
Touchscreen controller		●	●	●	●	●	●

● : Satandard
○ : Optional
* : In-situ Sterilization is only suitable for single wall.

Single-Use Bioreactor



BS-SU is equipped with self-produced 3D single-use culture bag, and improving the production process with single-use technology. It saves time and reduces risk, achieve efficient process research, accelerate the speed to clinic, and improve the efficiency of commercial production.

- Cell contact materials are safe and non-toxic to ensure cell vitality and product safety.
- 304 stainless steel shell, no dirt accumulation, provides protection for single-use culture bags.
- Equipped with four-legged Mettler weighing sensor, the accuracy can reach 3‰.
- Constant temperature circulating water control system to achieve temperature stability.
- Simplified maintainance, higher security, ease of use.
- Real-time monitoring of culture temperature, pH, DO, weight and pressure.



Intelligent Software

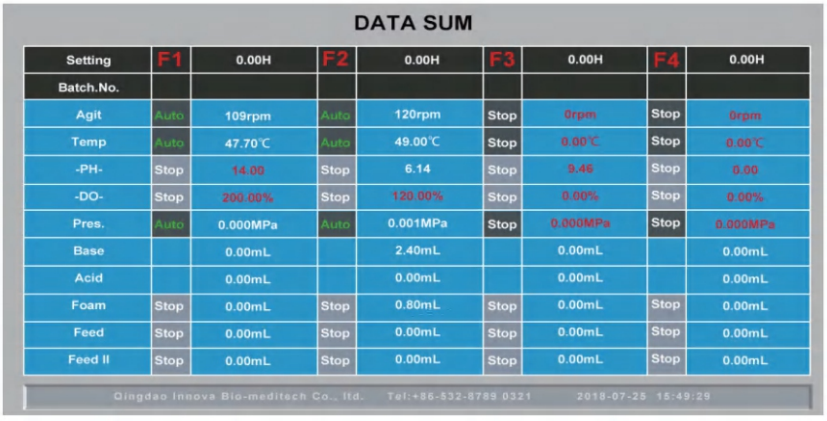
Not only provide biological process control, but also provide comprehensive data and information management to support research work. It is a flexible software platform for microorganisms or cell cultivation, control functions can be added according to expansion configurations.

Running modes

- Manual control: You can open valve or set the percentage of valve opening.
- Automatic control: You can select continuous or PID control the switch.
- Sequence control: The control of all parameters can be pre-set at least 10 control section.
- Automatic segmentation remotely control: PC control.
- Related control: Rotating speed & dissolved oxygen, gasing & dissolved oxygen, feeding & pH, etc.

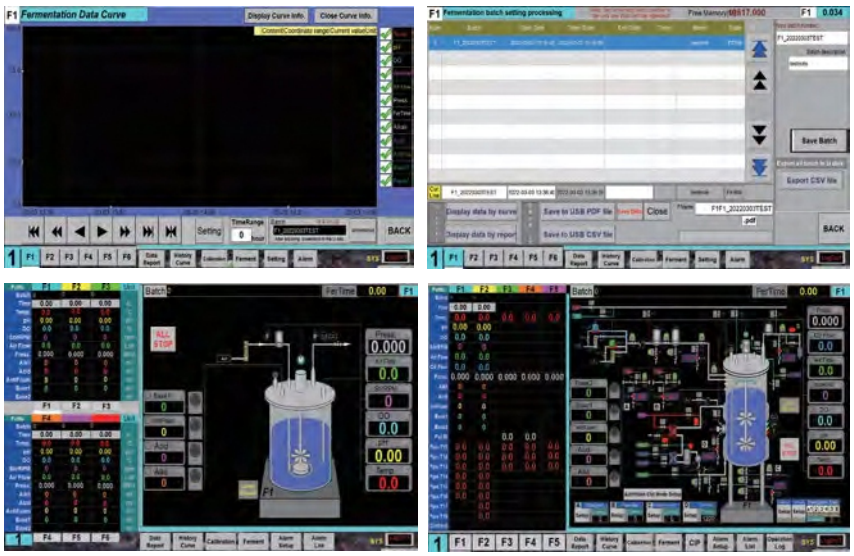
XY-axis to record real-time progress:

Any expansion and contraction of graphics display, to help the operator determine the parameters of the interaction between the effects of the fermentation process to quickly modify and adjust.



Data Processing

- Basic function: real-time display, data recording, data analysis, output printing, password management, abnormal analysis, limit alarm, etc.
- To store, display, analyze all the historical curve parameters.
- Display all the parameters of the batch report.
- Copy the data directly with USB.
- Data storage format is compatible with EXCEL format.



Optional accessories

Thermal mass flow meter



Maintain optimal control over culture DO level by installing this optional mass flow controller. The mass flow controller can accurately adjust the flow rate of incoming gas and resist the fluctuation of gas pressure, ensuring precise control and repeatibility of experimental conditions.

A) Cascade control scheme

B) Integrated into controller for simple and automated operation

CO_2 / O_2 Off-Gas Analyzer



The CO_2 / O_2 off-gas analyzer provides real-time measurement of carbon dioxide and oxygen concentration of the bioreactor exhaust gas. The CO_2 concentration is determined by a self-calibrating non-dispersion infrared sensor, while an electrochemical sensor monitors the oxygen concentration. Users can monitor metabolism and analyze cell growth parameters continuously.

Cell Density Monitor



Our special online cell density device allows you to get direct information on your cell growth rate and cell density, as these values are critical to many bacterial, yeast and animal cell cultures. Online cell density device combines monitering and probing system with high measuring accuracy.

Weighing system



Stainless steel vessel weighing

Beam load cell with three point support



Glass vessel weighing

Bench scale with large backlit display



Supplement Bottle weighing

Portable Balances with slim design



- With the function of temperature control, heat preservation and stirring
- Fast heat transfer
- Easy to clean

Optional accessories

Peristaltic pump



- Variable speed, flows up to 300m L/min
- Pumphead accepts various bore sizes of tubing
- Small size, compact and robust design
- Safe and closed with visible rotor movement
- Spring-loaded operation for good pressure control

Valve



- High flow rate pump for stainless steel bioreactor
- Pumphead accepts various bore sizes of tubing
- Automatic control by connecting controller
- Simple and intuitive operation

SIP Station



Inspection free electric heating steam generator fully sterilizes vessel and feeding pipeline by manual or automatic control.

- Equipped with a built-in steam-water separator, improve the steam quality.
- Multiple interlocking safety protection functions.
- High-quality electric heating tube and electrical accessories.
- The quality inspection of professional equipment is safer.
- Easy to install and easy to use.

Chiller



Equipped with external chiller, you don't have to worry about finding a suitable cooling water source for your bioreactor.

- Fully enclosed compressor unit for refrigeration, with multiple protection devices
- Stainless steel inner and countertop, hygienic and corrosion resistant
- Temperature is controllable, uniform and constant

CIP Station



For automated cleaning procedures, a CIP system may be used with SIP fermentation system. Additional valves, connections, and spray-balls will be installed to allow connection of your own CIP system.

*Note that this option MUST be requested at your initial inquiry,

Air compressor



Air pressure generating device, provide gas for production.

- Accurately adjust the range of pressure values
- Equipped with overload protector to ensure safety
- Mute, environmentally friendly and efficient
- Equipped with safety valve and overpressure relief



Solenoid valve



Diaphragm valve



Tank bottam valve



Angle seat valve

Solenoid valve















Engineering Reference



Our company has many technicians who are specialized in such fields as fermentation engineering, biochemical industry, automation control, computer, mechanical engineering, etc., and have rich experience in fermentation engineering design and field construction. Helping our users to solve various problems in production and processes.











Our company provides complete biopharmaceutical upstream and downstream process equipment and comprehensive solutions. We are able to meet different process requirements of customers for cell culture or microbial fermentation, including culture medium preparation, seed expansion, harvesting and clarification, buffer solution preparation, storage system, ultrafiltration system, etc. Helping our users to realize high-standard and high-efficiency technological processes.





