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INNOMENTOR™

Biological Reactor

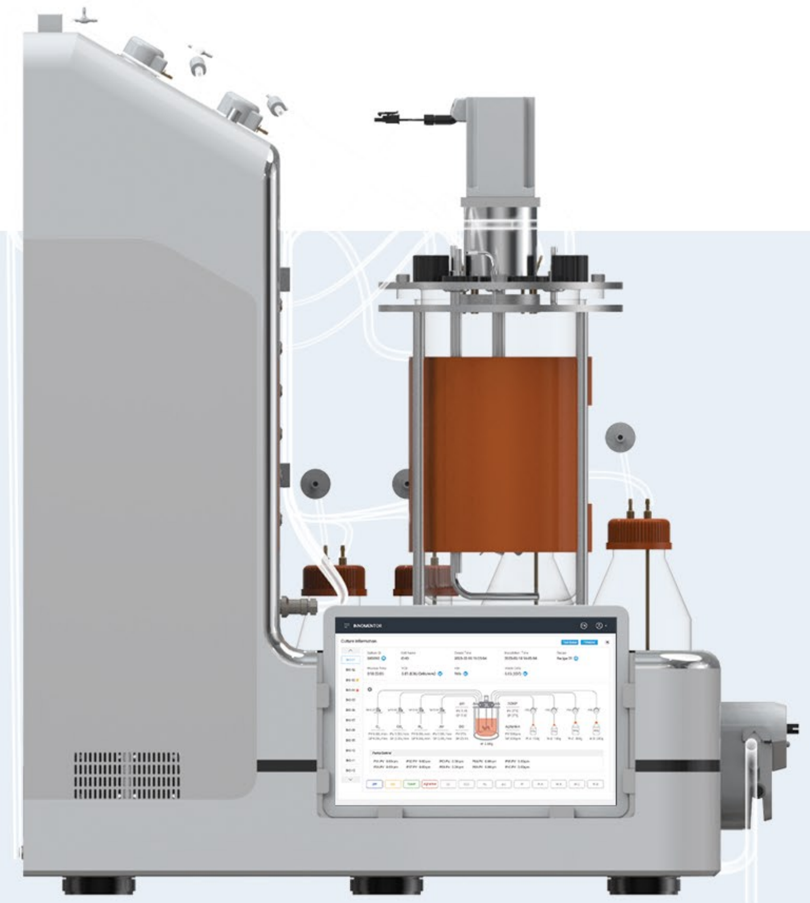
Desktop Biological Reactor

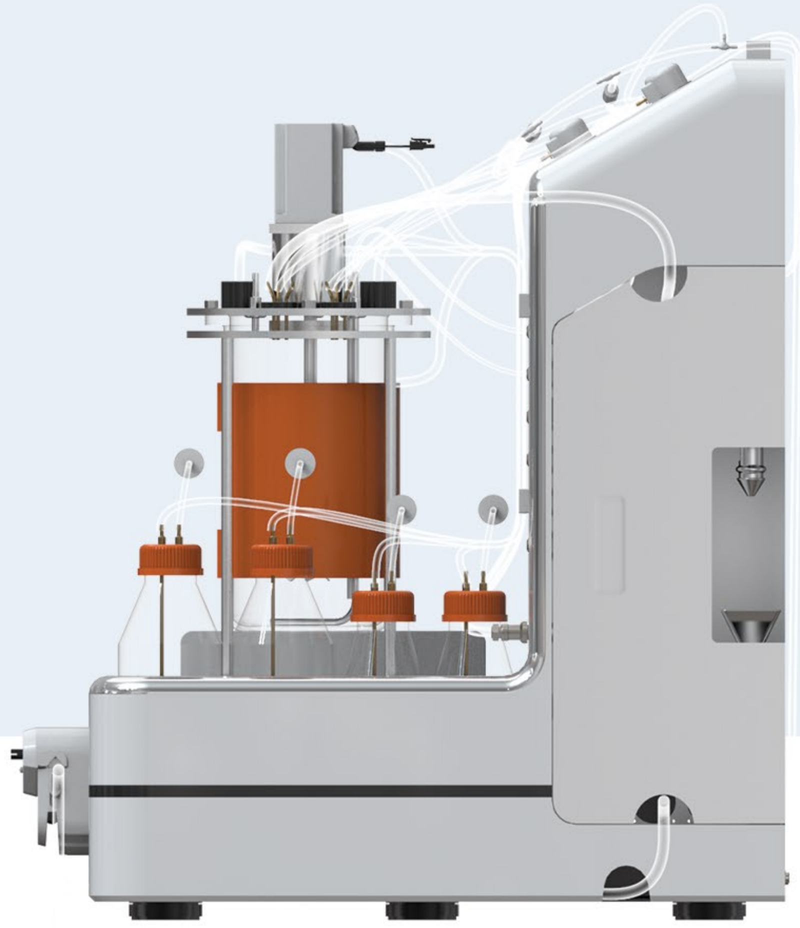
INNOMENTOR™

INNOMENTOR is a desktop biological reactor which integrates automatic culture, sampling, feeding and online control. It offers convenient ways to biological fermentation and cell culture.

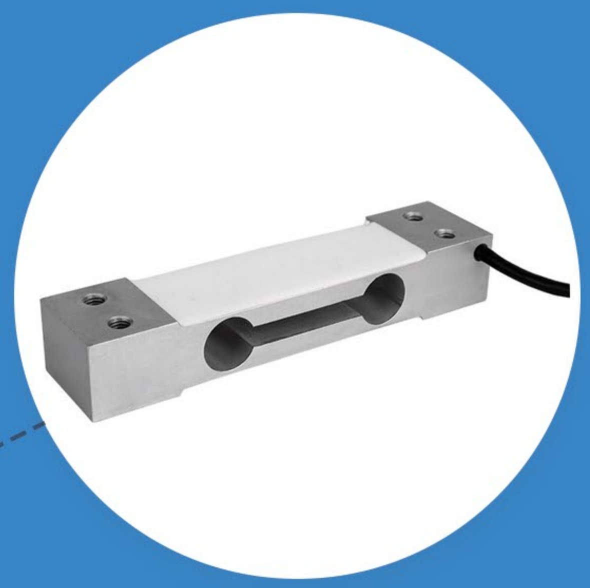
Advantages

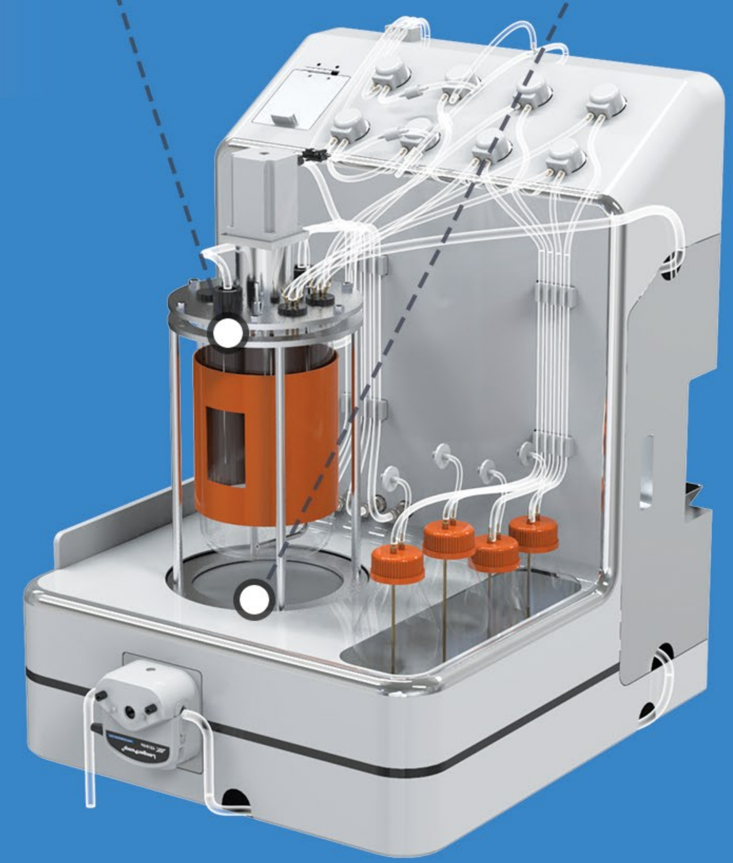
- Culture capacity of 0.5L–15L.
- Disposable consumables to ensure safety and sterility.
- Feeding pumps, sampling pumps and circulating perfusion pumps to operate automatically.
- High–precision weighing modules to control reaction system, feeding volume and sampling volume precisely.
- Integrate various types of online high–precision pH、DO sensors and 6–channel (max) high–precision MFC.
  Real–time monitoring and control of pH and DO values to maintain at the optimal state.
- User–friendly operation, robust automation features, compact volume and batch configuration.
  Reduce labor and optimize production cost.(equipment,lab space and product quality)





01 Reactor Module





Bioreactor

Borosilicate glass with low dilatation coefficient, high thermal conductivity, high temperature resistance (270℃), high strength and high chemical stability.

The cap is made of medical–grade stainless steel SUS316L. The inner side is polished by machine (Ra≤0.2) and the fluid transfer port is easy to clean.

Weighing Modules

The bioreactor is marked with liquid level indicators and equipped with multi–channel weighing sensors–LFP–20(20KG, precision: CV±0.02%F.S) and one 4–20 mA transistor.

The handheld tablet can automatically monitor and control the weight of bioreactors.

pH、DO Sensor

Independently control pH value and DO value in the bioreactor.

pH sensors integrate temperature sensors, operating temperature ranges from 0℃–90℃. The CV of the pH sensor is ±0.02.

The CV of the DO sensor is ±1%.

The fluid transfer interface is made of medical-grade stainless steel SUS316L.

Stirrer

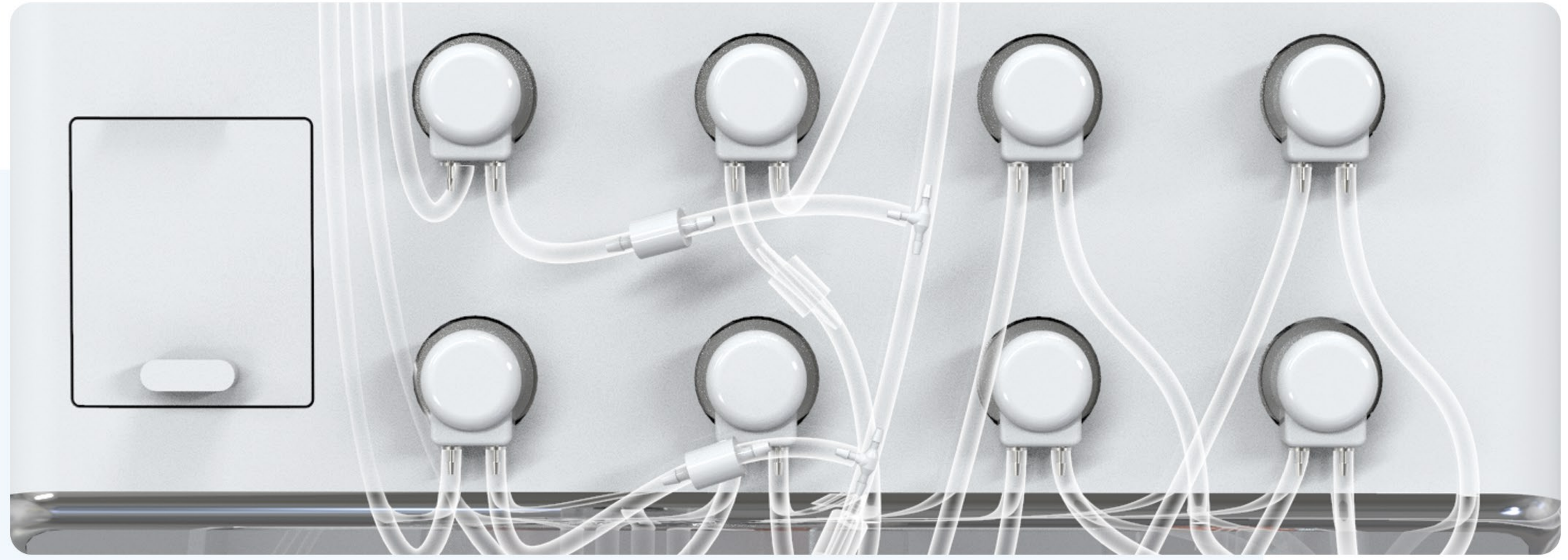
Cap equipped with magnetic stirrers with speed range 0–300rpm.

The stirrer has good sealing performance and no leakage. The paddle of stirrer is made of medical-grade stainless steel SUS316L.

Liquid Inlet and Liquid Outlet

Cap equipped with magnetic stirrers with speed range 0–300rpm.

02 Liquid Pumping Module



Medium dispensing pump (Max Speed: 1500mL/min, Precision: CV±2%) can pump medium and other reagents into bioreactors. Monitor and control weight in real time with weighing sensors and transistors.

Four micro peristaltic pumps (Max Speed: 90mL/min, Precision: CV±2%), high precision, supply reagents according to process requirements.

Four reagent supply positions (2 250mL bottles and 2 500mL bottles), four weighing sensors LFP–12 (1KG, precision:CV±0.02% F.S) and one 4–20mA transmitter.

Two small pumps for cleaning and disinfection. One is to convey disinfectant and the other is to convey cleaning solution. (Max Speed: 90mL/min, Precision: CV±2%)

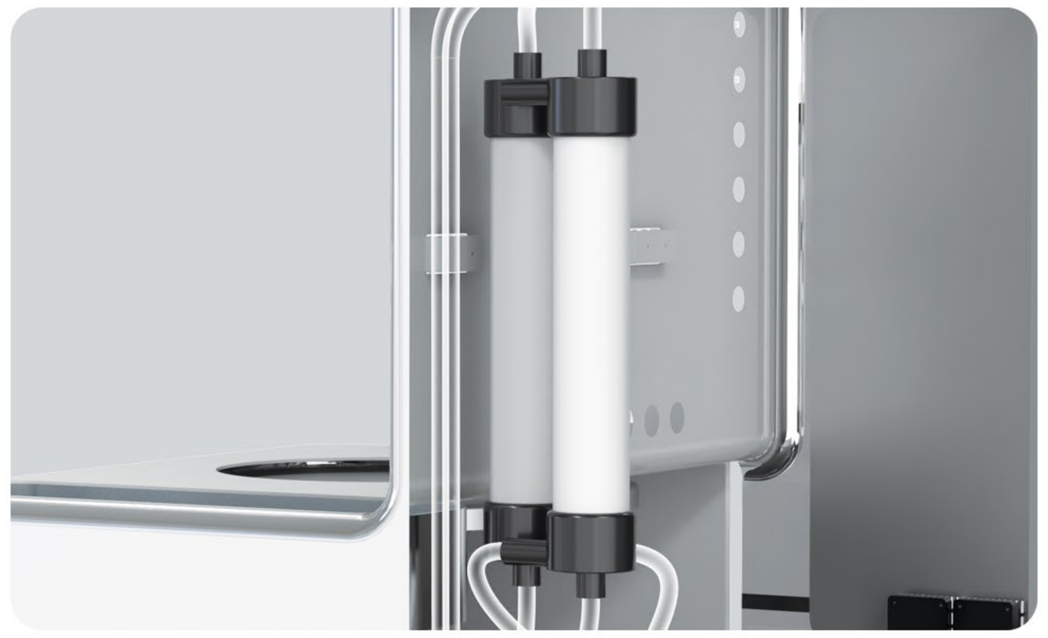
One automatic sampling pump. (Max Speed: 90mL/min, Precision: CV±2%)

Reserve one small pump for potential process needs. (Max Speed: 90mL/min, Precision: CV±2%)

Medium Dispensing Pump

Refill Bottle

03 Hollow Fiber Membrane Module



Equipped with two hollow fiber membrane columns and one gas–liquid mixing pump. (Max Speed:1500mL/min, Head: 2.3 bar, Suction head: –9 bar, precision: CV ± 5%) To do continuous filtering and collection.

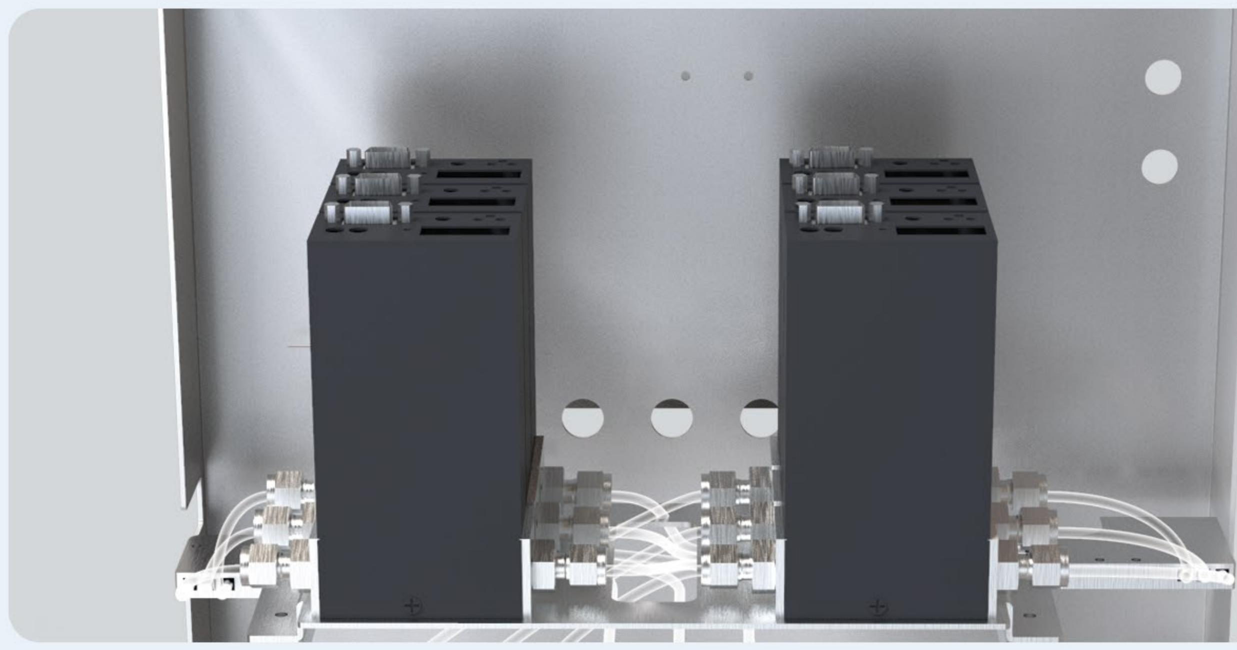
04 Frame Shell Module

Inner Frame: Medical–grade stainless steel SUS304L, with adjustable support feet to level the device.
Frame Shell: ABS material.

05 Automatic Sampling Module

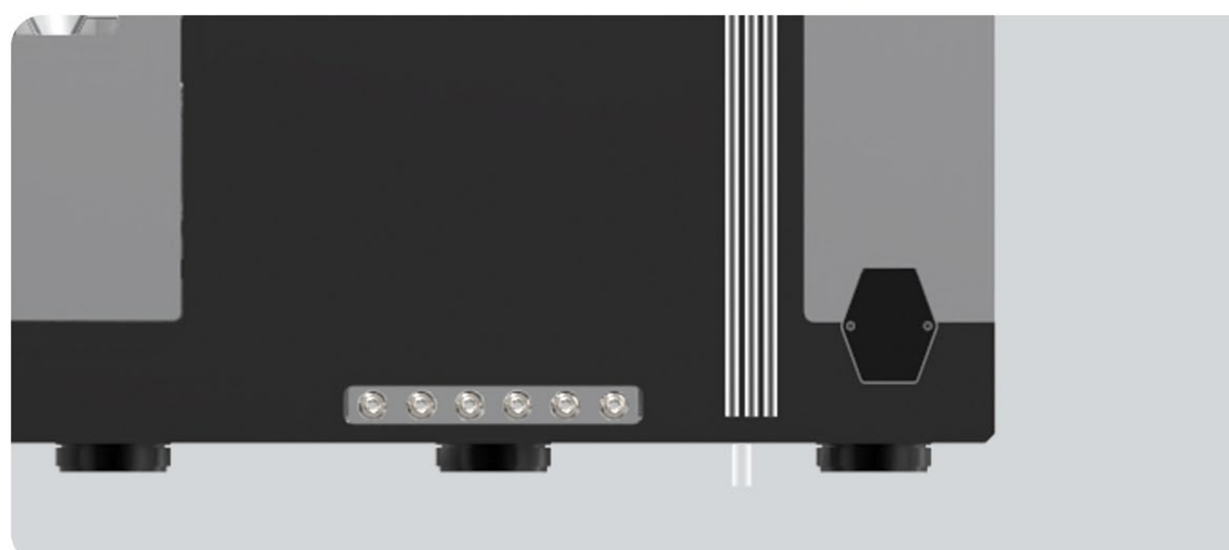
Bump + Check Valve + Steel Needle.
Equipped with disinfectant and cleaning fluid to ensure the sterility of culture system.

06 Pneumatic Module



6–channel MFC units to control gas supply accurately.

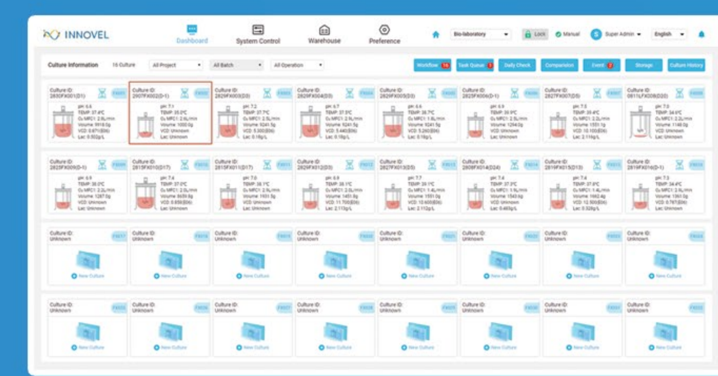
07 Electrical Module



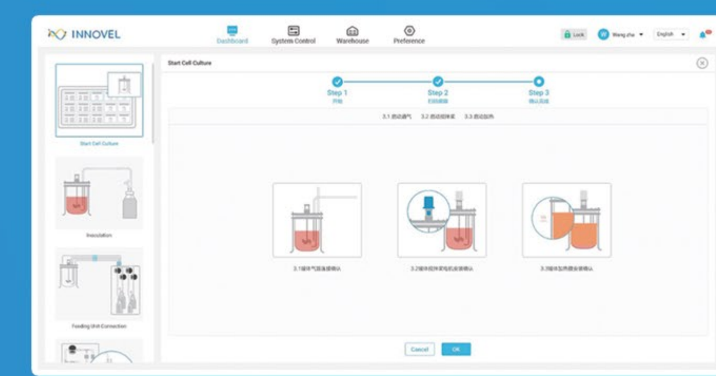
One standard power interface to power the whole equipment.
Six reserved gas interfaces for gas supply.

Integrated Software System

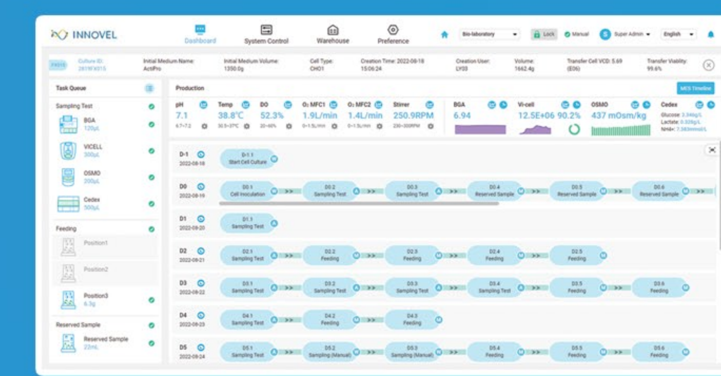
Equipped with a handhold pad, mobile interaction design, real–time display of reactor operating status, set related technical parameters manually and automatically.



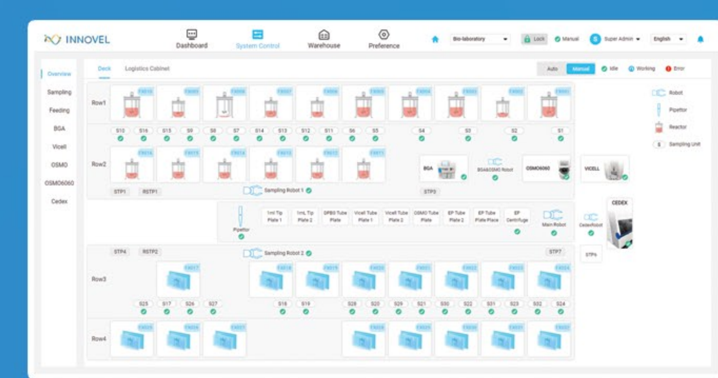
Cluster management, online task assignment and parameter setting



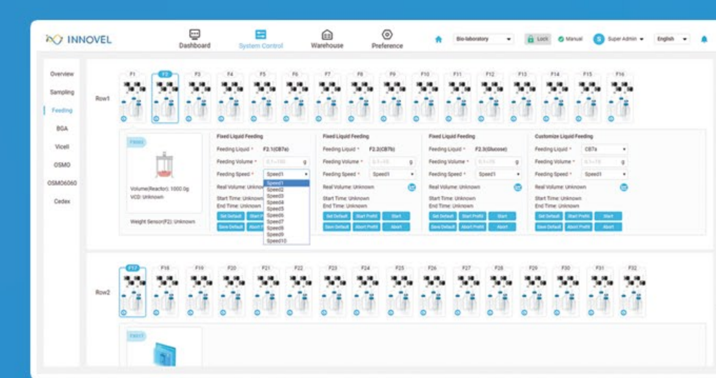
Connection of feeding pot, inoculation, removing pot, taking materials and feeding materials, friendly graphic guidance



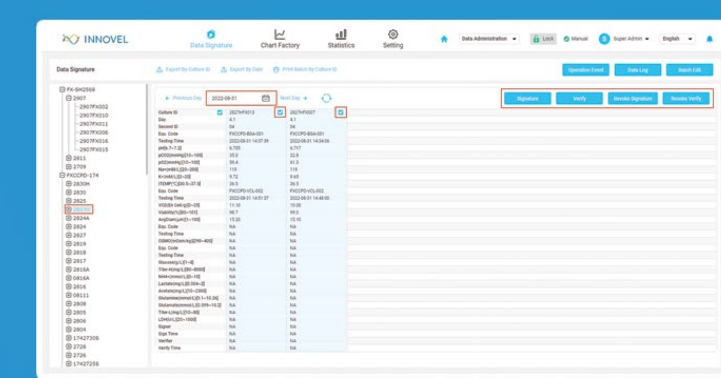
Real–time monitoring of batches of information (online data, offline data, complete period of culture)



Global real–time monitoring of system equipment

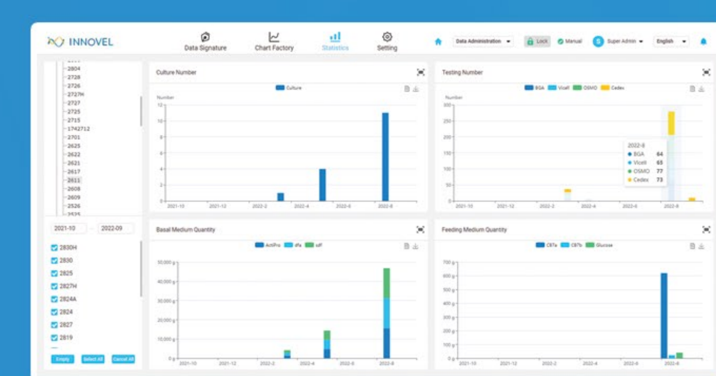


Manual system control, feeding and unloading manually



Process data offline,analyticsn submission, double check, export and archive

Offline data plotting(enlarge and shrink the image,switch to line chart and histogram,view data sheet, download images,set Y axis, set legend according to preference)



Statistic analysis, like cultivation quantity, analytical quantity, con–sumption of basal culture medium and supplemented culture medium

Closed–loop Control of Software

- ✔ Collection and analysis of online monitoring (Online Data)
- ✔ AI analytics
- ✔ Equipment maintenance (Offline Data)
- ✔ Dynamic cooling and decryption operation
- ✔ AI smart feeding strategy
- ✔ Feeding control of nutrients