Thank you very much for your trust and support to our company. It is our pleasure to provide you with information about the Cla210 Series Laboratory Classic Fermenter developed and manufactured by HOLVES:

Cla210

Laboratory Classic Fermenter

Lightweight and Elegant, Multiple Systems



(Product Reference Chart)

Fermenters best suited for presenting multiple systems

Fermentor Cla210 is a classic and standard system developed by HOLVES for laboratory users. Cla210 adopts the latest design language and modular design concept, which is suitable for the design requirements of multiple working conditions in the laboratory. Absorbing foreign sophisticated design concepts, the product is small in size. And it is painted in classic white, with a novel appearance and a

strong sense of design. The series adopts standard imported glass rotor flowmeter (option MFC imported), high-precision flip pump and bus control communication method, which greatly improves the precision and stability of the equipment.

Cla210 adopts a deep modular process design language, an all-in-one structure of the vessel and the control unit, which makes overall space small. All kinds of weak wires are short and easy to install that can be quickly put into laboratory use. The compact size is especially friendly to female users. The modular design concept makes the Cla210 series the best presentation for multiple fermenters. By building blocks, it can easily realize double, triple, quadruple, quintuple, sextuple, and more combined vessel systems. The system can be used separately or in a unified way, which is very adaptable to users and scenarios with different needs.

INTELLIGENT APPLICATIONS

Name	Functional Description
H-Mix® stirring system	• Innovative no machine seal design, the first in the industry, for a cleaner and more hygienic stirring system • It can be used without installation • Adjustable mixing parameters within a customizable time period
Feed-Sup® feed system	• Customizable manual and automatic replenishment on time. • can be cascaded with pH and DO to precisely control the parameters. • Equation replenishment and index replenishment are added to fit the growth process of bacteria and meet the high-density fermentation/culture control.
Meta-Tri® Audit trail	• Exclusive developed system can automatically store operation records. Experimental process can be tracked • Real-time protection of experimental data, advanced permissions can restrict export and deletion to prevent data breach
Smart-SC® Intelligent sequential control	• Unlimited customized time period to regulate TEM, pH, DO, mixing, replenishment and other parameters. • To meet the needs of customers for different parameters at different times of the experiment, to realize highly automated management, saving a lot of manpower and time.
HF-Control V2.2 Control Software	• Data visualization: important data dial display, fermentation state animation: stirring, heating, defoaming, etc. • PV/SP value display on the same screen: (PV is measured value, SP is set/given value) no need to switch back and forth. • Full functions: curve data, alarm, correlation, data exportable, basic running data, administrator rights can be set, language switching, etc. • Multiple system interface, customized design: display multi-vessel data on the same screen, convenient for users to operate multi-linked, can switch between the main control and individual vessel interface.

COMPONENT BRANDS

NO.	Name	Brand Description
1	pH sensor	**Hamilton**
2	DO sensor	**Hamilton**
3	pH / DO signal line	**Hamilton**
4	Controller	**Germany Siemens Original Series, independent intellectual property rights of PID program controll**
5	Touch-screen	**HMI TPC10**
6	Feeding bottle	**SCHOTT**
7	MFC flowmeter	**Dwyer**
8	PT100 sensor	**JUMO**
9	Low-voltage electric	**SCHNEIDER**
10	Cold water quick coupling	**CPC**

TECHNICAL PARAMETERS

NO.	Name	Technical Parameters
1	**Vessel**	★ Full volume: 3L, No need to replace the controller • Liquid volume: Max. 80% • Design pressure: Max 0.15Mpa • Glass vessel: high temperature resistant borosilicate glass • Fermenter lid: AISI 316L with fine grinding and electrolytic polishing ★ Fermenter lid inlets: Air inlet, four-in-one feed inlet, temperature tube, cooling coil, pH/DO electrode inlet, feed inlet, alternate inlet, offgas condenser(detachable), harvest tube, defoamer electrode port
2	**H-Mix® stirring system**	• Servo motor with high precision and low noise. Special mechanical seal • RPM: 0~1000rpm ±1rpm ★ Innovative no machine seal design, the first in the industry, for a cleaner and more hygienic stirring system • It can be used without installation ★ Smart-SC® intelligent smooth control, adjustable mixing parameters within a customizable time period

3	**Air inlet system**	• Air inlet: Air, quick disassembly structure ★ Imported thermal mass flow meter • Annular gas distributor, optional microporous bubble distributor
4	**pH**	• Range: 2.00~12.00pH, precision: ±0.02 • Sterilization temperature: 0~140°C ★ Controllor: HN-K integrated transmitter with filter, signal isolator and RS-485 communication ★ Association setting: pH is automatically associated with acid-base pump, dead zone customization ★ Smart-SC® intelligent smooth control, custom time period regulation of pH
5	**DO**	• Range: 0~100% O2 saturation, precision: ±0.1% • Sterilization temperature: 0~140°C ★ Controllor: HN-K integrated transmitter with filter, signal isolator and RS-485 communication ★ DO and stirring, replenishment multi-stage cascade regulation, to ensure sufficient gas output during the experiment ★ Custom time period regulation of DO
6	**TEMP control system**	• Electric heating mode of thermal blanket and cooling water to dual temperature control • 24V safe voltage • Temperature control range: Cooling water+5°C~65°C ±0.1°C • Temperature sensor: Imported PTI00 platinum electrode(quick disassembly resistant to high temperature)
7	**Cold Water Module**	• The cooling water system is controlled by the integrated Cla-M controller, which communicates with the host PLC and the solenoid valve controls the on/off ★ Cooling water connector adopts imported self-locking fast interface, the interface contains self-locking valve ★ Temperature value can be adjusted as needed at any time
8	**Peristaltic pump**	• 4 channels peristaltic pump including FOAM / FEED / ACID / BASE ★ High-precision Flip Pump with variable speed, quick connection • Suitable for multiple sizes of silicone tubes, flow rate up to 326.55mL/min ★ Peristaltic pump: Accumulated flow, instantaneous flow, speed adjustment, 100% adjustment, associated PID adjustment, manual control and other functions ★ The new feed-sup® feed supplement system: support direct, timed, exponential and equation replenishment ★ With Smart-SC® intelligent sequential control can be adjusted at any time according to the needs of the supplement parameters
9	**Defoaming system**	• Mechanical defoaming paddle with rake and compression • Defoamer: Flow addition by peristaltic pump • High-sensitive defoaming electrode
10	**Sampling**	• Sterile sampling system: autoclave sterilization • Syringe negative pressure design: remove bacteria contamination during sampling

11	**Multi fermenters extension**	★ Multiple system expansion of 2-8 fermenters ★ Local HMI centralized control • Multi-fermenters adopt network cable bus communication mode
12	**Cla-M Controller HF-Control v2.2 control system**	• 10 inch HMI touch screen, brightness>350 cd/m^2 • The second generation graphical interface makes the experiment parameters clear at a glance, realizes Data and information visualization, information charting, better human-computer interaction, and more convenient experiment operation • Siemens SIMATIC - Smart Series processor • Low voltage electrical appliances use schneider and other international well-known brands ★ HF-Control V2.2 embedded control software configuration for full local operation • pH / DO / TEM / FOA can realize automatic and manual control • Curve display, historical data records and USB export functions of RPM / pH / DO / TEM ★ Meta-Tri® audit trail：Exclusive developed system can automatically store operation records. Experimental process can be tracked. • Real-time protection of experimental data, advanced permissions can restrict export and deletion to prevent data breach. ★ It can be used with the Analysis software HW-Analysis V1.0 ★ External OPC XML DA via Ethernet data communication ★ Extensible: glass rotor flowmeter of 2~4channels, balance, external peristaltic pump, etc.
13	**Power**	• Input: AC110~240v/1.2kw • Output: Motor, thermal blanket, peristaltic pump and other power parts use 24V safety voltage

★ Refers to features and key functions for HOLVES fermenter Cla210