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HOLVES

HOLVES

FERMENTOR

Eu210

Laboratory Advanced Fermentor



THANK YOU VERY MUCH FOR YOUR TRUST AND SUPPORT TO HOLVES
WE ARE PLEASED TO PROVIDE YOU WITH INFORMATION ABOUT THE EQUIPMENT DEVELOPED AND MANUFACTURED BY BEIJING HOLVES BIOTECHNOLOGY CO.,LTD

EASY TO USE

Professional Scalability Configuration.

Strong scalability | High-end configuration

Eu210 series advanced fermenter is a flagship fermenter system developed by HOLVES for professional laboratory users. Standard imported thermal mass flow meter MFC, automatic ventilation, main control and communication using bus mode. Eu210 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 that is deeply used by laboratory fermentation users.

Eu210 series fermentor also undertakes the latest generation of research and development tasks of Holves: launch the same type of controller suitable for fermenters of various imported brands. At present, the vessel system of well-known brands such as NBS, Sartorius and Applinkon has been tested. Eu210 series with the advantage of a full-featured controller, it is evolving into the latest generation of Holves' fist products.



HOLVES
Second-generation GUI

- The new second-generation GUI, industry-leading design
- Digital dynamic dashboard: dynamic changes of fermentor are apparent to the eye
- Refined design, the colors are distinct, simple and fast operation
- The functional area is versatile, and the standard includes four-way intake control and exhaust gas analysis system

SIMATIC-1200
High-end processor

- Adopt Siemens the latest 1200 series high-end processor, in line with international standard
- Modular design and scalable function, scalable Smart200 module
- Integrated PROFINET, network and other buses are used for remote use, and the control is accurate and fast

Watson-Marlow
High precision variable speed flip pump

- Easy to use and strong stability
- Step electrode adjustable speed, standard bus communication control
- FOAM, ACID, BASE, FEED four-way pump can be customized and interchangeable



Comparable to Imported Manufacturing Process of Vessel

- The design ideas of vessel derived from Sartorius and Applinkon, replaceable vessel
- Stable air-tightness, convenient for laboratory operation with quick disassembly and assembly
- Stainless steel material of AISI 316L with fine grinding and electrolytic polishing, the overall manufacturing process is comparable to imported products from abroad.

Automatic air intake system

- Adopt Swiss imported thermal mass flow meter MFC
- Ventilation digital control, can be linked with DO
- Reduce the impact of ventilation on the process and automate the control process

The most powerful Eu-M controller

- Integrated vessel cold water temperature control, condenser cold water temperature control
- Scalable: exhaust analysis, ORP, weighing balance, Biomass analysis, etc
- Built-in HF-control V2.2 software, can be implemented online monitoring, recording, curve display
- It can be matched with Analysis software HW-Analysis, V1.0
- External OPC XML DA VIA Ethernet data communication can be connected

COMPONENT BRANDS

pH sensor	METTLER TOLEDO, HAMILTON
DO sensor	METTLER TOLEDO, HAMILTON
pH, DO signal line	METTLER TOLEDO
Controller	Siemens High-end Series, independent intellectual property rights of PID program controll
Touch-screen	HMI TPC10
Peristaltic pump	WASTON-MARLOW
Feeding bottle	SCHOTT
Glass rotor flowmeter	DWYER
PT100 sensor	JUMO
Low-voltage electric	SCHNEIDER
Cold water quick coupling	CPC

METTLER TOLEDO · HAMILTON · SIEMENS

john crane a smiths company · mcgsTpc · SCHOTT · JUMO

vögtlin instruments · Schneider Electric · WATSON MARLOW · • • •

S/N	NAME	Technical Parameters
		* refers to features and key functions for HOLVES fermentor Eu210
01	Vessel	* Full volume: options include 3L, 5L, 7L, 13L. No need to replace the controller o Liquid volume: Max. 80% o Design pressure: Max 0.15Mpa o Glass vessel: high temperature resistant borosilicate glass o 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
02	H-Mix® stirring system	o Servo motor with high precision and low noise. Special mechanical seal o RPM: 0~1000rpm ±1rpm * Innovative no machine seal design, the first in the industry, for a cleaner and more hygienic stirring system o It can be used without installation * Smart-SC® intelligent smooth control, adjustable mixing parameters within a customizable time period
03	Air inlet system	o Air inlet: Air, quick disassembly structure * Imported thermal mass flow meter o Annular gas distributor, optional microporous bubble distributor
04	pH	o Range: 2.00~12.00pH, precision: ±0.02 o 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
05	DO	o Range: 0~100% O2 saturation, precision: ±0.1% o 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
06	TEMP control system	o Electric heating mode of thermal blanket and cooling water to dual temperature control o 24V safe voltage o Temperature control range: Cooling water+5°C~65°C ±0.1°C o Temperature sensor: Imported PTI00 platinum electrode(quick disassembly resistant to high temperature) o The cooling water system is controlled by the integrated Eu-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

S/N	Name	Technical Parameters
		* refers to features and key functions for HOLVES fermentor Eu210
07	Peristaltic pump	o 4 channels peristaltic pump including FOAM / FEED / ACID / BASE * Imported flip peristaltic pump, quick connection * Peristaltic pump: Accumulated flow, instantaneous flow, speed adjustment, 100% adjustment, associated PID adjustment, manual control and other functions * Feed Supplement system Support direct, timed, exponential and equation replenishment * With Smart-SC® intelligent smooth control can be adjusted at any time according to the needs of the supplement parameters
08	Defoaming system	o Mechanical defoaming paddle with rake and compression o Defoamer: Flow addition by peristaltic pump o High-sensitive defoaming electrode
09	Sampling	o Sterile sampling system: autoclave sterilization o Syringe negative pressure design: remove bacteria contamination during sampling
10	Eu-M Controller HF-Control control system	o 10 inch HMI touch screen, brightness>350 cd/m^2 o 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 o Siemens SIMATIC - 1200 Series high-end processor o Low voltage electrical appliances use schneider and other international well-known brands * HF-Control V2.2 embedded control software configuration for full local operation o pH / DO / T can realize automatic and manual control o Curve display, historical data records and USB export functions of RPM / pH / DO / T o Four-way Air intake, O_2 / N_2 / CO_2 control and display (with option) o Online display: OUR / CER / RQ (with option) * Meta-Tri® audit trail Exclusive developed system can automatically store operation records. Experimental process can be tracked o Real-time protection of experimental data, advanced permissions can restrict export and deletion to prevent data breach * Scalable: ORP, biomass, balance, external peristaltic pump, exhaust analyzer (including imported and domestic), etc * It can be used with the Analysis software HW-Analysis V1.0 * External OPC XML DA via Ethernet data communication
11	Power	o Input: AC110~240v/1.2kw o Output: Motor, thermal blanket, peristaltic pump and other power parts use 24V safety voltage

OPTIONAL ACCESSORIES

In order to allow users to better use our fermentors, 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.

Feeding and weighing system



- Brand: METTLER-TOLEDO
- Maximum weighing: 2200g
- Precision: 0.01g
- Control: Eu-M main controller control
- Association: Association control through feeding can customize amount

Exhaust gas analyzer



- Brand: German BlueSens
- CO_2 range: 0-10%, 0-25%, 0-50% optional
- O_2 range: 0.1-25%, 0.1-50% optional
- Precision: 3% of measured value, 0.2% of range
- Can be display online: OUR, CER, RQ

ORP motor



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

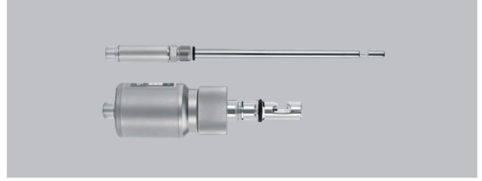


Living cell online concentration



- ABER-Biomass imported living cell online concentration detection
- Real-time online monitoring, of the concentration, density, dry weight of living cells and biomass volume, capacitor size, conductivity size

Online OD



- Imported brand from Germany, the same style as Sartorius
- Interface Pg13.5, length: 120mm
- Measurement wavelength: 730nm~970nm
- Optical path length OPL: 1~1000mm
- Online determination of OD value, data and curve display, compare the data with the fermentation process

#Read Me

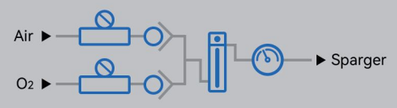
The standard configuration of the fermentor does not include optional configuration
According to different types of options, the supply cycle of the fermentor will be adjusted appropriately, and the specific telephone consultation shall prevail.
If the customer selects one or several options, please contact the salesman to make a new quotation.
EU210 series is developing an exclusive set of depth adaptation system, including depth adaptation ORP electrode, exhaust gas analysis system, weighing system (including feed and vessel), tangential flow ultrafiltration TFF system and Iot alarm system, etc. , because the deep adaptation system not only requires hardware support, but also develops more biological models and calculations, so currently only some users are open to purchase, interested users can directly contact our salesman, In-depth docking and matching work is completed by the technical department.

VENTILATION



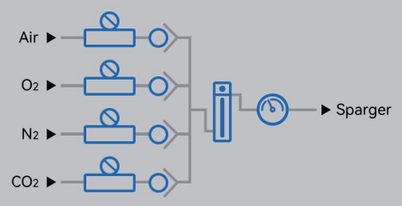
Airflow

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



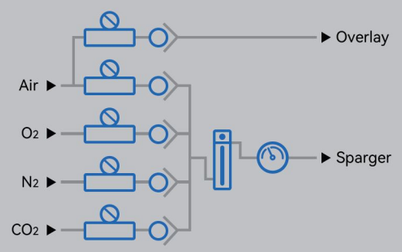
O2-Enrichment

- Bypass oxygen enrichment: Mixing and O_2 replenishment of Air and O_2 via MFC
- The MFC and one-way valve are used to control the air flow
- Glass rotameter shows total flow
- O_2 replenishment is automatically controlled by the system
- The pressure gauge monitors the pressure in the vessel in real time



Gas Flow Ratio Control

- Air, O_2, CO_2 and N_2 are separately controlled and mixed by MFC, one-way valve, through the mixing of different volumes of different gases, the gas requirements of various working conditions can be fully met
- The controller changes the CO_2 gas flow through the pH value
- Different volume ratio control of Air, O_2, and N_2 by changing the DO value
- The total flow is displayed by a glass rotameter



Advanced Additive Flow

- T5-way MFC for gas control respectively
- Air, O_2, CO_2 and N_2 four-way gas mixing control for deep ventilation
- Another way of Air (or other designated way) is superficial ventilation by MFC and one-way valve



Second Generation GUI

Since the creation of the first-generation GUI, Holves has received many feedback from customers, with comments on aesthetics, ease of use, and more. In 2022, By the improvement of the usual GUI design features of the fermentor, Holves works with a professional graphic design team combined with users' feedback to create the second generation GUI with visual impact and practicality.

The second generation GUI uses the latest dashboard design language to update the dynamic numbers and graphics that users care about most. The user can observe the key data in the fermentation process at a glance by looking at the digital panel, without entering the secondary interface. Animations and dynamic presentations are made for graphics, which tend to be more flexible and intuitive. With the second generation GUI, the user can grasp accurately the parameters and status of the fermentors, thus making rapid decisions.

GUI created by the professional design team has both a sense of design and practicability. The data and operations that users care about are convenient and easy to identify, enhancing familiarity and efficiency.

HOLVES

HOLVES
After-Sales Service

AFTER-SALES SERVICE COMMITMENT

One Year Warranty
After-Sales Service

Timely Response
Service

Lifelong Support
For Software Upgrade

After-Sales Service
For Out Of Warranty Products

HOLVES IS COMMITTED TO PROVIDING PROFESSIONAL EQUIPMENT AND SERVICES IN THE FIELD OF BIOENGINEERING.
IN ORDER TO CREATE A NEW GENERATION OF FERMENTOR, HOLVES WILL PROVIDE THE MOST PERFECT AFTER-SALE SERVICE FOR THE CUSTOMER IN THE INDUSTRY.
WE HEREBY MAKE THE ABOVE COMMITMENTS.