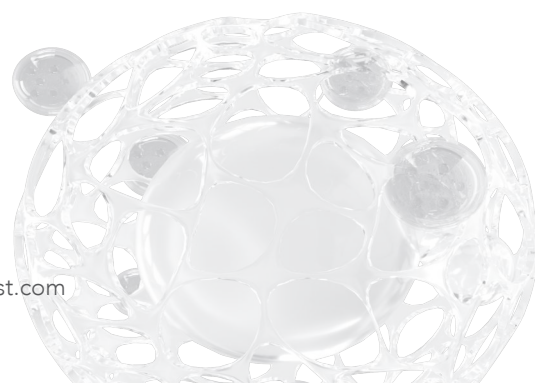




- > Modular Scalability
- > Cell Cultivation
- > Precise Process Control

BIOREACTOR

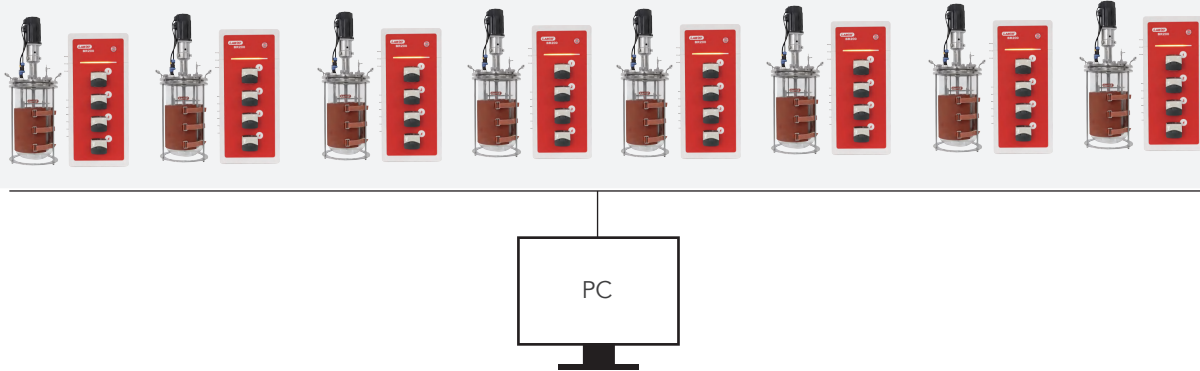
BR200-C Series



Advantages

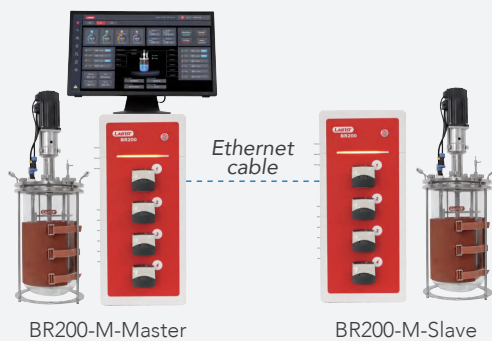
SCADA Central Control

The SCADA system is expandable to control up to 8 units for parallel production.



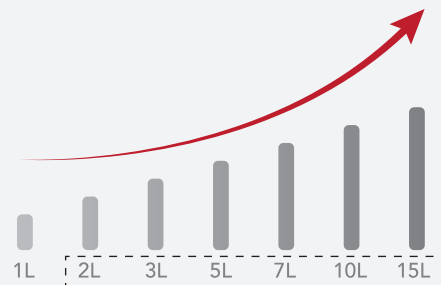
Dual-Vessel Control Mode

A master chassis can control a slave chassis for 1-to-2 control functionality.



Flexible Vessel Switching

This single unit is compatible with culture vessels ranging from 2L to 15L and allows for easy changeover between them.



Two Operation Modes

BR200-C offers two distinct control modalities: direct touchscreen interaction via the 22" display and traditional data entry with a keyboard & mouse.

Mode 1



Mode 2



Smart Expansion Module

The BR200-EM8 Module delivers extensive expansion capabilities, supporting up to 8 peripheral devices such as sensors, balances, scales, peristaltic pumps, exhaust gas analyzers, etc.



Features



- Design excellence: An advanced solution for cell culture.
- Versatile vessel volumes: 7 vessel sizes (1L, 2L, 3L, 5L, 7L, 10L and 15L) to suit diverse experimental needs.
- Powerful scalability:
 - > Interchangeable vessels support a wide range of volumes (2L-15L).
 - > Modular expansion allows one master chassis to control a slave for dual-vessel operation.
 - > Centralized SCADA control can scale to manage up to 8 units for parallel production.
- Next-Gen interface: 22" capacitive touchscreen with multi-touch support (including zoom and gloved operation) and an intuitive second-generation GUI for effortless control.
- Global remote access: Secure real-time monitoring via PC/mobile devices with worldwide connectivity.
- Space-efficient architecture: Compact footprint with flexible touchscreen placement for optimal lab space utilization.
- Advanced automation: Mass flow controllers (MFCs) replace rotameters for automated, quantified gas control and accelerated process development.
- Advanced software capabilities: Feedback-, time-, condition-, and script-based control strategies.
- Optimized vessel engineering: Premium materials with modular construction for easy disassembly and maintenance.
- Reliable precision performance: Equipped with globally top-tier hardware components for superior control accuracy.
- Two type interface: Optional dark/light background for your choice.
- Tri-color status lights: Red/Yellow/Green indicators for alarm/standby/operation status.
- Customizable Chassis Color: Flexible exterior color options to match lab aesthetics or branding.



Specification

>>> Independent Control Tower

BR200-M-Master

Housing Material	Cold rolled steel plate + white powder coating
Dimensions [WxDxH, mm]	240×535×560
Weight [Kg]	Approx. 32 Kg
Display / Operation	22-inch Elo projected capacitive touch display
Controller	Siemens S1200 series PLC, Weinview HMI
Integrated Pump	4 Watson Marlow 114 variable-speed peristaltic pumps
Flow Meter	4 MFCs
Communication	· 2 x USB · 1 x Industrial Ethernet · 1 x Internet · 1 x HDMI
Interface	· 1 x pH sensor cable · 1 x DO sensor cable · 2 x stirring motor control wires · 1 x temperature sensor interface · 1 x foam sensor cable · 1 x heating blanket control wire interface · 1 x main power interface
Water Interface	6× barb interface [inlet/outlet for exhaust condenser, cooling finger, chilled water]
Air Interface	2 × barb [Mixing gas to vessel], 3 × pneumatic [Gas supply]
Power Supply	220V (±10%), 50Hz, single phase
Rated Power [W]	Max. 1.5 KW

BR200-M-Slave

Housing Material	Cold rolled steel plate + white powder coating
Dimensions [Wxdxh, mm]	240×535×560
Weight [Kg]	23 Kg
Display / Operation	N/A
Controller	Distributed I/O
Integrated Pump	4 Watson Marlow 114 variable-speed peristaltic pumps
Flow Meter	4 MFCs
Communication	· 2 x Industrial Ethernet · 1 x RS232
Interface	· 1 x pH sensor cable · 1 x DO sensor cable · 2 x stirring motor control wires · 1 x temperature sensor interface · 1 x foam sensor cable · 1 x heating blanket control wire interface · 1 x main power interface
Water Interface	6× barb interface [inlet/outlet for exhaust condenser, cooling finger, chilled water]
Air Interface	2 × barb [Mixing gas to vessel], 3 × pneumatic [Gas supply]
Power Supply	220V (±10%), 50Hz, single phase
Rated Power [W]	Max. 1.5 KW

Note: The standard BR200-C series bioreactor system includes only the Master unit. The Slave unit is available as an optional upgrade feature.

>>> Control Capacity

Agitation Control

Motor	Maintenance-free, low noise servo motor
Speed Range and Accuracy	5 - 500 rpm, $\pm 0.5\%$
Rated Power [W]	1L: 100 W, 2-7L: 400 W, 10-15L: 750 W

Gas Control *

Gas Source	Air, O ₂ , CO ₂
Control Method	4 x MFCs
Gas Supply	Overlay for Air + Ring sparger
Flow Range	Overlay O ₂ : up to 2 L/min Sparger Air, O ₂ , CO ₂ : up to 2 L/min
Flow Accuracy	1%

Temperature Control

Control Method	Robust PID algorithm
Heating Method	Electric blanket heating [additional]
Cooling Method	Tap water or circulating cooling water [additional chiller]
Sensor	Germany JUMO Pt100 RTD
Measurement Range and Accuracy	0~150.0 °C, $\pm 0.1^\circ\text{C}$
Control Range and Accuracy	8.0 °C above coolant to 40.0 °C above ambient (0-65.0 °C absolute), $\pm 0.2^\circ\text{C}$

PH Control

Control Method	· Robust PID algorithm · Cascade control with peristaltic pump by adding alkali or MFC by adding CO₂
Sensor	Hamilton Sterilizable Gel-filled pH electrode
Measurement Range and Accuracy	2.00~12.00, 0.01
Control Accuracy	± 0.05

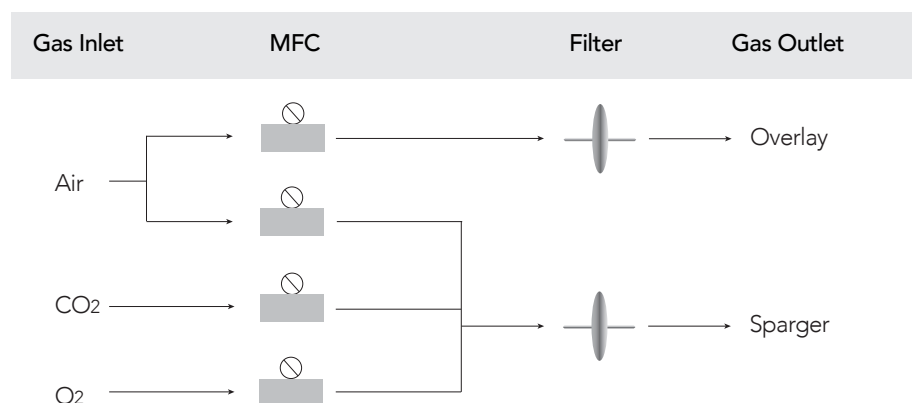
DO Control

Control Method	· Robust PID algorithm · Cascade control with different parameters (agitation, gas flow and peristaltic pump)
Sensor	Hamilton Sterilizable polarographic DO electrode
Measurement Range and Accuracy	0.0~150.0%, 0.1%
Control Accuracy	$\pm 3\%$

Foam Control

Control Method	· Cascade control with peristaltic pump by adding antifoam · Mechanical defoaming blade
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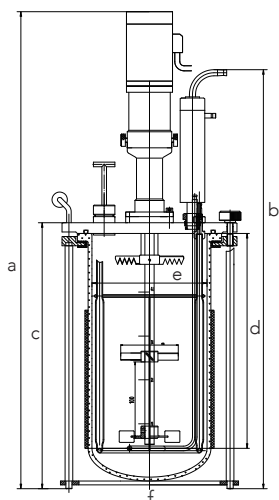
* Gassing Strategy Diagram



>>> Glass Vessel

ST Series

Type	Single-wall round-bottom cylindrical vessel, available for electric blanket						
Total Volume [L]	1	2	3	5	7	10	15
Max. Working Volume [L]	0.75	1.50	2.25	3.75	5.25	7.50	11.25
Min. Working Volume [L]	0.25	0.50	0.75	1.25	1.75	2.50	3.75
Material [Wetted Part]	· Glass vessel material: Boro 3.3 high borosilicate glass · Vessel cover and inner parts: SUS 316L · Seal: EPDM and Silicon						
Surface Treatment	· Inner surface: electrolytic polishing, Ra <0.4 µm · Outer surface: Ra <0.6 µm						
Pressure Design	Working pressure: 0~1 bar @ 150°C Autoclavable						
Height to Diameter Ratio [H: D]	Approx. 2:1						
Vessel Dimensions	Refer to "Table A for ST series"						
Vessel Weight [Excluding Motor] [Kg]	8	9	10	12	13.5	15	18
Vessel Lid Interface	1 × Agitator flange 1 × Inoculation port 2 × Baffle port, including cooling coil 1 × Gas inlet port for ring sparger 1 × Exhaust port, including water-cooled exhaust condenser 1 × Sampling port 1 × PH sensor port 1 × DO sensor port 1 × PT100 temperature sensor port 1 × Foam sensor port N × Feeding port N × Feeding port						
Sealing Type	Top magnetic seal						
Impellers	· 2 layers, top: foam breaker, bottom: 3-blade elephant-ear impeller · Detachable, height adjustable, various type						
Baffles	N/A						

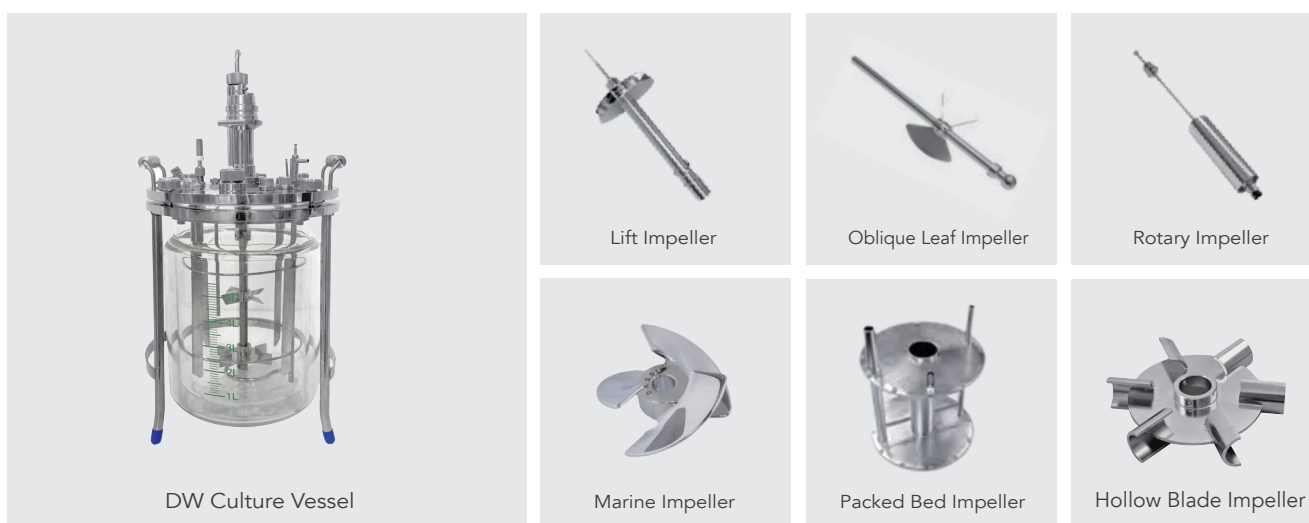


* Table A - ST Series vessel

Dimension							
Vessel Volume [L]	1	2	3	5	7	10	15
a [mm]	450	471	567	622	712	753	851
b [mm]	430	450	492	546	636	641	738
c [mm]	227	214	292	347	437	442	484
d [mm]	170	190	230	280	370	360	450
e [mm]	Ø90	Ø110	Ø130	Ø150	Ø160	Ø185	Ø203
f [mm]	180	190	190	212	212	248	270
Sterilization Requirement							
Minimum Size [mm]	Ø220x450	Ø230x470	Ø230x500	Ø265x550	Ø265x640	Ø300x645	Ø335x740
Recommended Size [mm]	Ø280x500	Ø280x500	Ø280x550	Ø300x600	Ø300x700	Ø350x700	Ø380x800

Options & Upgrades

Item	Description	Function
Culture Vessel	DW Series: Double-wall round-bottom cylindrical vessel + water jacket temperature control	A variety of vessels to meet different needs
Impeller	Lift impeller, oblique leaf impeller, rotary filter, Marine impeller, packed-bed impeller, etc.	Flexible customization to meet different application requirements



Item	Description	Function
pH Sensors	Hamilton® Arc smart pre-pressurized gel-filled sensor for real-time pH monitoring	Pre-calibrated, ready to use, automatic diagnostics
	Mettler Toledo Brand	More brand choices, adaptable to different systems
DO Sensors	Mettler Toledo Brand	More brand choices, adaptable to different systems
	Hamilton® optical dissolved oxygen sensor	No polarization required, quick start
More Sensors	Mettler Toledo Brand	More brand choices, adaptable to different systems
	Hamilton DCO2 sensor	Online real-time monitoring of carbon dioxide dissolved in liquids
	Hamilton VCD sensor	Online real-time monitoring of viable cell density
	Hamilton OD sensor	Online real-time monitoring of cell turbidity

Item	Description	Function
Control Cabinet	Stainless steel 304 housing material	More hygienic
HMI	Siemens	International recognition
Pump	Additional external pumps	Support more in/out materials
Gas	Nitrogen, Methane, etc.	Enables automated flow regulation and precise measurement for specialized application requirement
Communication	SCADA	Integrate systems for powerful real-time monitoring and data analysis
Power Supply	110V ($\pm 10\%$), 60Hz, single phase	Adapt to voltage standards of different countries and regions
Wetted Part Material	2205 duplex stainless steel/titanium	Tolerant to high salinity environments
Aspect Ratio	1.5:1 2.5:1 3:1 Customizable	Flexible customization to meet different application requirements
Sparger Type	Microsparger	Smaller bubble size, stronger gas-liquid mass transfer efficiency
Adapter	Adapter for sensor height adjustment	Flexible positioning of sensor height to suit different vessel volumes
Sampling	Sterile sampling device	Consist of Luer head, one-way valve, T-joint, needle filter, and sterile syringe, suitable for sterile sampling.
Exhaust Gas Analysis	Exhaust gas analyzer for O ₂ and CO ₂	Online real-time detection of CO ₂ and O ₂ in exhaust gas, analysis of respiratory metabolic parameters CER/OUR/RQ
Exhaust Gas Heating	Exhaust heater	Heating the exhaust gas filter to avoid filter clogging
Weighing	Vessel weighing Feed weighing	Weight measurement for level control
Qualification	IQ/OQ documentation	Meet compliance requirements
Certification	Comply with ASME, BPE, UL and other certifications	Meet the certification requirements of different countries and regions