DUONING

DuoBioX® Pro Single-use Bioreactor

Pro Single-use bioreactor

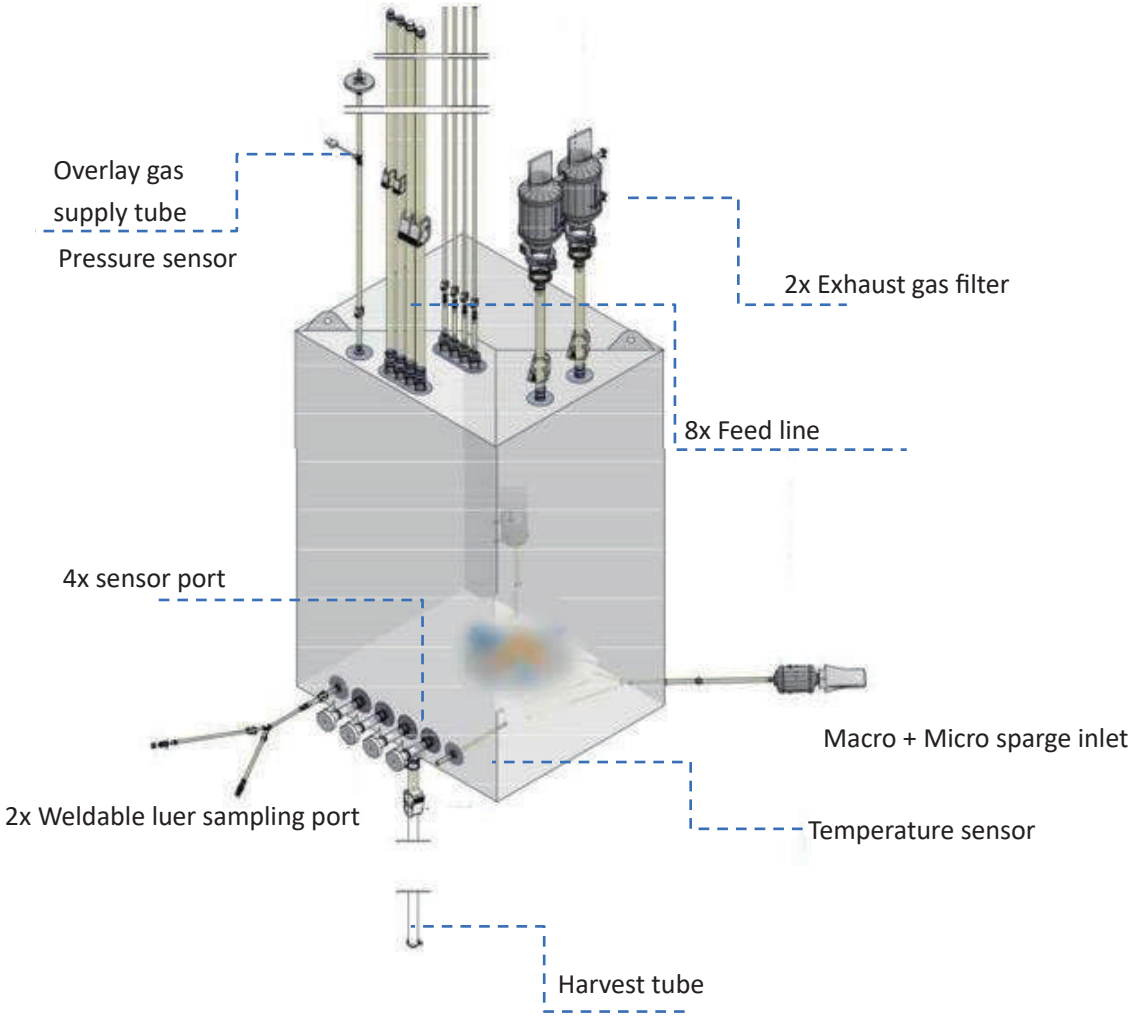
Pro single-use bioreactor adopts bottom-stirring tank design, which can realize linear scale-up from 50L to 2,000L. Combined with 3D disposable cell culture bags independently developed and manufactured by Duoning, there bioreactors features good biocompatibility, together with flexible connection design, they can meet all requirements of complex upstream processes; their unique combination design of stirring and ventilation, not only reduce shear but also ensure excellent mass transfer and mixing performance, thus achieving good consistency during scaling-up. The Pro single-use bioreactors can be widely used in various stages from process development to GMP production of biopharmaceuticals.

Product features

- The cell culture bag features good biocompatibility, extremely low extractables and leachables, and ensures the safety of the product. All materials in contact with the product have passed relevant validation requirements of CFDA for single-use system and meet USP standards.
- The system is designed with Siemens PLC+WinCC system, can be connected to SCADA data management system, all data can be recorded and exported, and supports audit trail, while complies with 21CFR Part 11 regulations.
- The system integrates optical dissolved oxygen sensor with DO resolution of 0.1% and control accuracy of ±2%, the pH resolution is 0.01 with control accuracy of ±0.02; and temperature resolution is 0.1°C with control accuracy of ±0.5°C; the weighing accuracy is ±3‰ with pressure accuracy ±of 2%.
- The default configuration provides 3 channels of gas supply: macro-sparge bottom gas supply (0.05 vvm oxygen, 0.05 vvm air, 0.025 vvm carbon dioxide), micro-sparge bottom gas supply (0.025 vvm oxygen), overlay gas supply (0.05 vvm oxygen, 0.05 vvm air). All use Swiss Vogtlin or German Bürkert mass flowmeter.
- 1-2 way exhaust heating as standard (depending on the model of the culture bag); magnetic coupling stirring device with inclined angle at the bottom, speed 0-300 rpm, temperature control range 20-50 ℃.
- Mettler-Toledo high precision load cell unit.

Advantages

- Hardware: The main spare parts are from industry leading suppliers, thus improve the product quality and stability of the hardware and reduce failure rate
- Software: With rich experience in bioreactor development and careful consideration of characteristics of various cell culture processes, Duoning has built a mature control software system.
- Service: Professional technical service team, after-sales training and services of bioreactors will be provided by experienced engineers, until end-users master all required skills.
- After-sales: Relying on the strong after-sales service team of Duoning, we have set up offices in various regions, and can respond immediately to technical and after-sales problems.



Vessel and I/O cabinet

Model	50 L	200 L	500 L	1,000 L	2,000 L
Max working volume	50 L	200 L	500 L	1,000 L	2,000 L
Min working volume	13 L	35 L	100 L	200 L	350 L
Jacket pressure resistant	Atmospheric pressure				
Temperature resistant	80℃				
Aspect ratio	2.25:1	1.6:1	1.5:1		
Jacket material	304SS				
Exhaust gas heating device	2				
Culture bag lifting device	none		inching with protection		
Blade	3 pitched blades				
Blade diameter	21.6 cm(8.5 in)		26.6 cm(10.5 in)	31.7 cm(12.5 in)	41.9 cm (16.5 in)
Impeller position	Directly below	15° lower side			
Standard gas sparger	2 μm×1 20 μm×1	2 μm×2 20 μm×2	20 μm×6 1.0 mm×2	20 μm×6 1.0 mm×2	20 μm×8 Separate macro-sparge

Model	50 L	200 L	500 L	1,000 L	2,000 L
	0.5 mm×2 1.0 mm×1	0.5 mm×2 1.0 mm×2		Separate macro-sparge	
pH sensor	1 (2 for optional)	2			
DO Sensor	1(2 for optional)	2			
CO_2 Sensor	Optional				
Gas	Air, O_2, CO_2, N_2				
MFC	5 as standard, can configure 6th one as optional				
Built-in peristaltic pump	2x Watson Marlow 114D 2x Watson Marlow 313D			2x Watson Marlow 313D 2x Watson Marlow 520	
External peristaltic pump		Optional maximum 1			
Temperature Control Unit (TCU)	Air-cooling Heating 2.3 kw Cooling 1.2 kw		Air-cooling Heating 4.5 kw Cooling 5.0 kw	Air-cooling Heating7.5 kw Cooling 10.0 kw	Air-cooling Heating7.5 kw Cooling 10.0 kw
Weighing feet	3	4			
Gas source	Air 200kPa, O_2 200kPa, CO_2 200kPa, N_2 200kPa is optional. Use 1/4" or 1/2" air tube quick connection				
IO cabinet power supply	Supply through control cabinet				
TCU connection	TC50				
Dimension (HxWxD)	1533*1078*908mm	1912*1348*908mm	2850*1470*1088mm	3039*1720*1407mm	3834*1900*1469mm
Net weight	215 kg	260 kg	530 kg	940 kg	1,377 kg
Full load weight	265 kg	460 kg	1,030 kg	1,940 kg	3,377 kg

Control Cabinet

Hardware	SIEMENS IPC477E
Dimension	550*960*1,350 mm
Weight	89 kg
Touch screen	19 inch（52.4mm）10-point touch
UPS	Maintain sensor and data recording for 30 minutes
Software	SIEMENS WINCC
Compliance	21 CRF Part 11
Power	220V, ≤2kw（w/o TCU）

Temperature control unit

Model	VC1200	VC1200	VC5000	VC10000
Power	220 v, 3 pins plug		380 v, Industrial power 5 pins plug	
Heating power	2.3 kw		4.5 kw	7.5 kw
Cooling power	1.2 kw		5.0 kw	10.0 kw
Dimension	450*550*650mm		550*650*970mm	650*670*1250mm
Minimum heat dissipation interval (front, back, left, and right)	20*20*20*20 cm		50*50*20*20 cm	
Net weight	54 kg	57 kg	98 kg	147 kg
Volume	15 L	15 L	33 L	64 L
Temperature control range	-20℃~80℃（When the temperature is lower than 5°C, antifreeze should be used as circulating water）			
Circulating water pressure	3.2 bar Max			
Circulating water flow rate	37 L/min			
Heat dissipation	Air/water cooling			
Working temperature	5 – 40 ℃			
Working humidity	Max 80% @ 31 ℃			

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