

Ambr[®] 250 Modular



Technical Specification

Scope

System combines 2, 4, 6 or 8 "Easy-Connect" single-use bioreactors, automated platform, bioreactor controller and flexible system control software.

Recommended Working Space

System dimensions including monitor, excluding chiller and external system options.

Ambr[®] 250 Modular 2 vessel system

Width	Depth	Height
88.5 cm	45.5 cm	60 cm
35"	18"	24"

Ambr[®] 250 Modular 4 vessel system

Width	Depth	Height
127 cm	45.5 cm	60 cm
50"	18"	24"

Ambr® 250 Modular 6 vessel system

Width	Depth	Height
165.5 cm	45.5 cm	65 cm
65"	18"	25.5"

Ambr® 250 Modular 8 vessel system

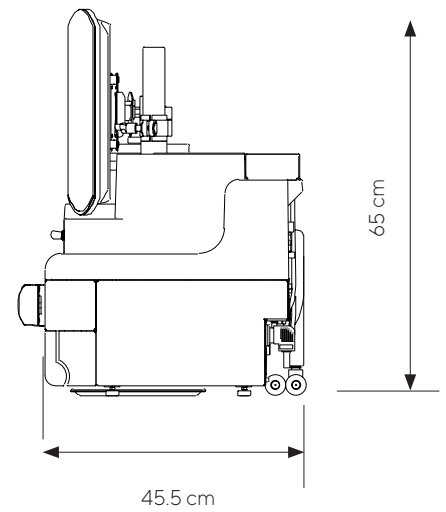
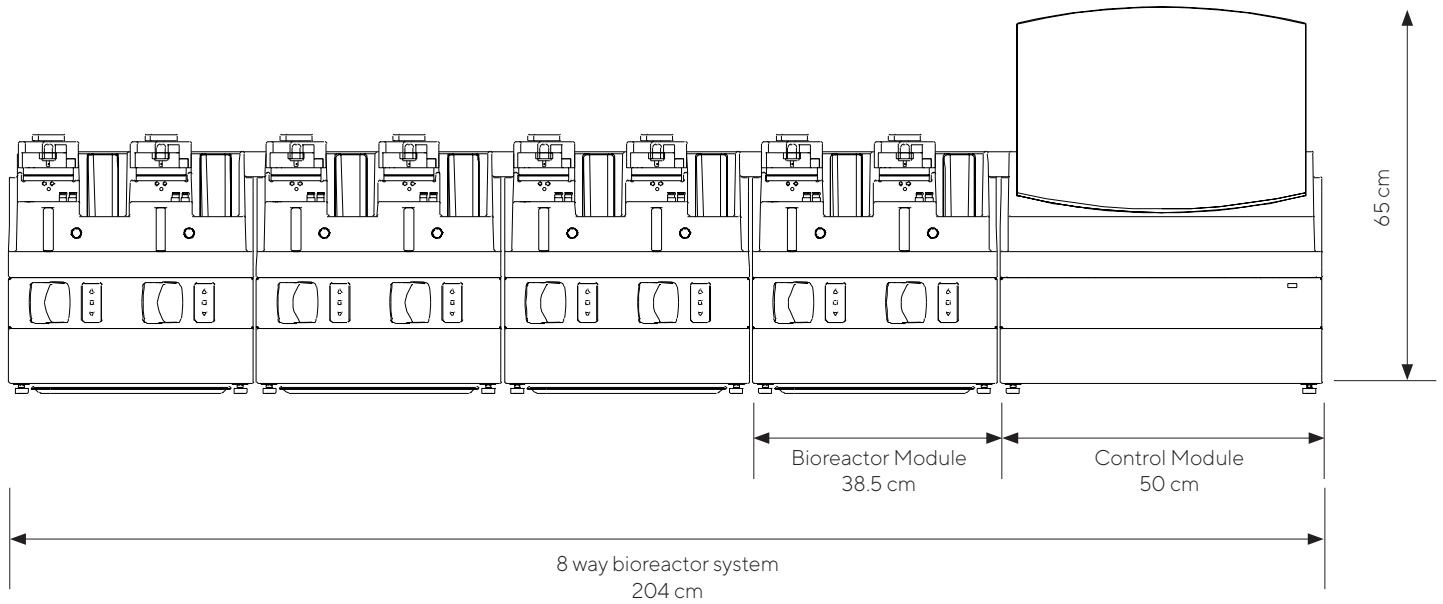
Width	Depth	Height
204 cm	45.5 cm	65 cm
80"	18"	25.5"

System operating parameters

Agitation speed	100 - 4500 rpm
Culture temperature	18 - 55°C ± 0.5°C
Post culture period chilling	6 - 8°C
Temperature shift rate	> 5°C per 30 mins
pH range	2.0 - 8.5
pH monitoring accuracy	± 0.02 pH units
DO (% air saturation) monitoring range	0 - 200%
DO monitoring accuracy	± 2% @ 100% DO
Maximum air or total gas flow	550 mL/min
Gas-flow monitoring accuracy	± 5% @ > 50 mL/min
Exhaust gas CO ₂ monitoring	0 - 20%
Exhaust gas CO ₂ monitoring accuracy	± 5% @ 5% CO ₂
Exhaust gas O ₂ monitoring range	0 - 50%
Exhaust gas O ₂ monitoring accuracy	± 2% @ 21% O ₂
Integrated pump design	Syringe pumps
Syringe pump flow rates	0 - 20 mL/hr (viscosity dependent)
Syringe pump dispense accuracy	± 5% @ >20 µL/hr
Syringe pump volume accuracy	± 5% @ >10 µL
Integrated syringe pumps per vessel	5
Number of 125 mL reservoirs per bioreactor - one reservoir can be chilled	2
Number of 50 mL reservoirs per bioreactor	3
Peristaltic pumps per bioreactor	1
Highest peristaltic pump speed	150 rpm
Max. flow rate peristaltic pump with 0.8 mm ID tubing (1.6 mm wall thickness)	387 mL/hr
Max. flow rate peristaltic pump with 3.2 mm ID tubing (1.6 mm wall thickness)	4,275 mL/hr

Note. All information is correct at time of publication, but Sartorius reserves the right to make alterations due to technical enhancements or other changes.

Dimensions of Ambr[®] 250 Modular 8 vessel system



SARTORIUS



AMBR® 250
MODULAR

Maximum flow rate mL/min

Gases	Cell culture		Microbial	
	Sparge	Headspace	Gases	Sparge
Air N ₂	550	100	Air	550
O ₂	350	350	O ₂	350
CO ₂	120	120	N ₂	200

Maximum total flow rate depends on selected gassing strategy

Minimum gas flow rate mL/min

Gases	Cell culture	Microbial
Air N ₂	1 mL/min	1 mL/min
O ₂	1 mL/min	1 mL/min
CO ₂	1 mL/min	1 mL/min

Bioreactor vessel general information

Construction material	Polycarbonate, polypropylene, polyethylene
Dimensions	Internal diameter 61 mm. Internal height 128 mm
Total volume	350 mL
Working volume	100 - 250 mL
pH monitoring technology	Single-use electrode
DO monitoring technology	Fluorescence based spot

Bioreactor vessel information

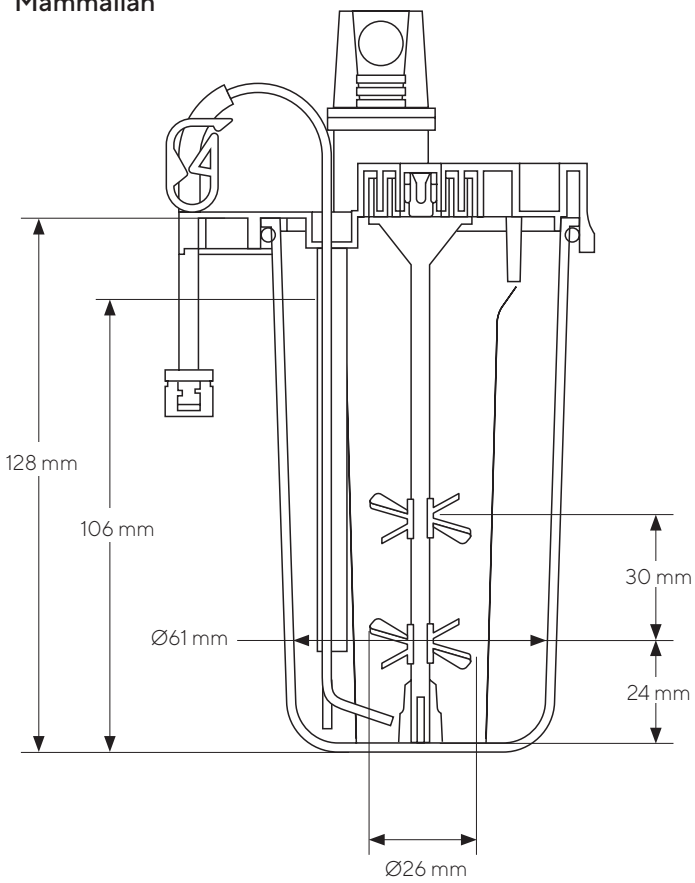
Bioreactor type	Cell culture	Cell culture	Microbial
Baffles	4	0	4
Number of impellers	2	1	2
Impeller type	Pitch blade	Elephant ear	Rushton turbine
Diameter	Ø26 mm	Ø30 mm	Ø20 mm
Power number	1.34	2.07	7.3
kLa	Please see bioreactor characterization section	2.3/h @ 200 rpm, 200 mL water, 6 mL/min air	1780/h @ 4200 rpm, 250 mL water, 375 mL/min air
Maximum power input dependent on nature of culture	-	-	35.1 kW/m ³
Reynolds number	-	-	3.37 x 10E4

Bioreactor Characterization

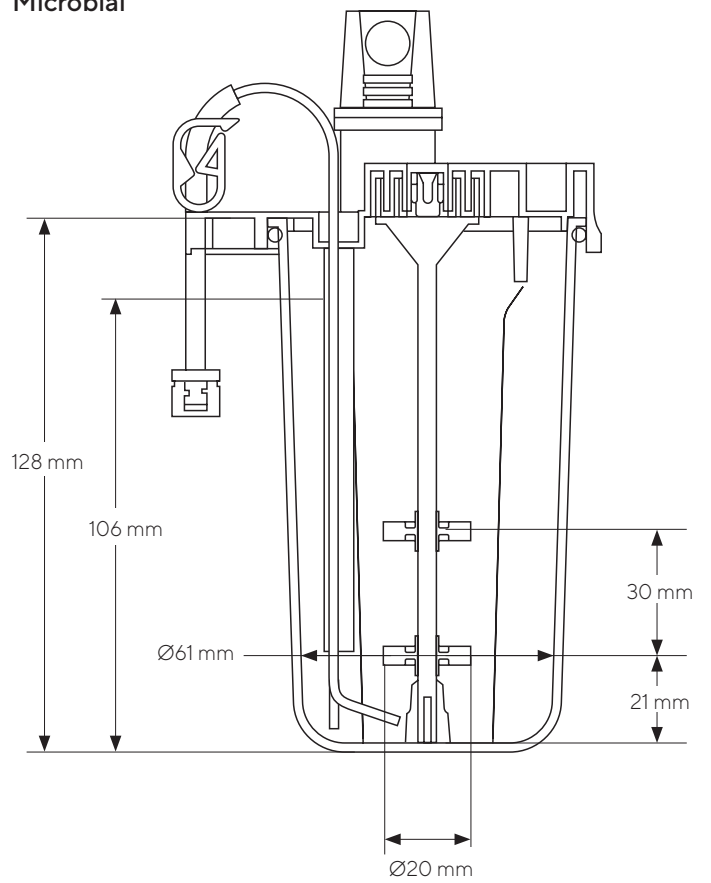
Fill volume (mL)	Stir speed (rpm)	Tip speed (m/s)	Abs. gas flow (mL/min)	Rel. gas flow (vvm)	O ₂ kLa (1/hr)	Mixing time (s)	Power Input (W)	
250	441	0.6	0	0	-	4.4	0.012	
			5	0.02	4.5	-	-	
			12.5	0.05	6.3	-	-	
			25	0.1	8.7	-	-	
	881	1.2	1.2	0	0	-	2.0	0.069
				5	0.02	6.2	-	-
				12.5	0.05	9.6	-	-
				25	0.1	15.7	-	-
	1322	1.8	1.8	0	0	-	1.3	0.192
				5	0.02	7.6	-	-
				12.5	0.05	13.6	-	-
				25	0.1	27.5	-	-
1175	441	0.6	0	0	-	2.1	0.009	
			2.35	0.02	4.0	-	-	
			5.875	0.05	5.0	-	-	
			11.75	0.1	6.2	-	-	
	881	1.2	1.2	0	0	-	1.1	0.044
				2.35	0.02	8.0	-	-
				5.875	0.05	10.3	-	-
				11.75	0.1	13.1	-	-
	1322	1.8	1.8	0	0	-	0.8	0.099
				2.35	0.02	25.9	-	-
				5.875	0.05	36.3	-	-
				11.75	0.1	50.3	-	-

Dimensions of vessels

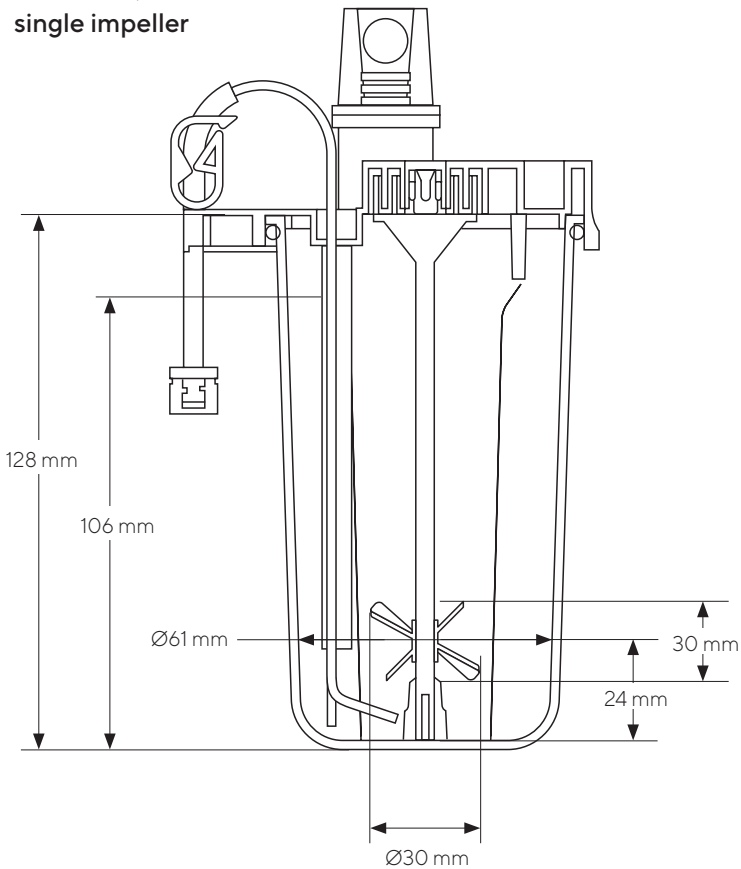
Mammalian



Microbial



Unbaffled, single impeller



Chemical compatibility

Compatibility with chemical reagents has to be checked with a Sartorius representative before use of the system to avoid damage to the vessel and system or blockage of tubing lines. In case of doubts, a respective pretest is recommended before the actual use of the system.

The following reagent concentrations are only to be understood as an indication for chemical compatibility.


Hydrochloric acid	max. 1M
Sodium hydroxide	max. 1M 4.0% w/v (not to be added directly to the vessel)
Sodium bicarbonate	max. 1M 8.4% w/v
Ammonium hydroxide	max. 17% w/w
Dimethicone	max. 5% w/v
Polypropylene glycol	max. 10% v/v
Glucose	max. 60% w/v
Methanol	100%

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