

Tower	
Dimension Controller 120 or 230 VAC	338 x 660 x 450 (mm); without tempering system
	338 x 790 x 450 (mm); with tempering system
Dimension cultivation system	Diameter 400mm; Heihgt 560 mm
Temperature Environment	4 - 45°C
Material	Stainless steel, brushed
Display, resolution	Touchscreen 10,4", 640 x 480 dpi
Media supply	Gasses, dry, dust free, 1,5 barg; Water preregulated 2 barg; free drain

Measurement range, accuracy	
Circulation speed	Pump specific
Temperature	0 - 100°C; 0,3°C
	Pt100
pH	2 - 12; 0,05pH
	Mettler, Hamilton, Presens a.o.. (classical or disposable)
Redox	-2000 - 2000 mV; 1 mV
	Mettler, Hamilton, a.o.
DO	0 - 100%; 0,5%
	Mettler, Hamilton, a.o. (classical or disposable)
Foam, Level	Conductive
Offgas O ₂ , CO ₂	0 – 25% (O ₂), 0- 10 % (CO ₂); 0,2%
	ZrO ₂ , Infrared
Pressure	0 - 2000 mbar / 0 - 200 mbar (disposable); 1 mbar
	Scilog, Wika, a.o.
Optical density	0 - 6 AU (dependent on media); 0,05 AU
	Absorption
DCO ₂	0 - 100 %; 1%
	Mettler

Tempering system (optional)	2-stage cascade
Thermostate system	8°C higher than cooling water up to 65°C

Gas mixing	Free stratgy
Mass Flow Controller (optional)	10 ml/Min - 30 l/Min
	Up to 6 MFC of free choice, calibrated for specified gasses

Pumps	
Pump heads	peristaltic; up to 6 per towerTower
	WM 400, 102, 114, 3xx, all PWM or analogue
Circulation pump	Standard with internal pump 100 – 2000 ml/min external up to 11.000 ml/min

Contact

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Interfaces	
Balances	2 seriell per tower
External process values	analogue inputs, current or voltage
s	2 external, analogue or digitally controlled pumps
USB	for data storage in csv-format
Ethernet	For external screens, SCADA, OPC
Free customization	

Kultivierungseinheit	
Illumination	Stainless steel holder for 8 fluorescent tubes or day light tubes Each tube with 24 Watt 230 VAC from controller
Piping modul	One-piece, single wall Borosilicate-glass-pipe 20mm inner diameter, around 900 cm, 3 Liter volume with connectors for 8mm or 16 mm dependent on circulation pump
Degassing vessel	1,3 Liter, tangential influx of media for better gas exchange Cylindrical double wall for tempering Bottom outlet with connectors as used at the piping module stainless steel 1.4435 Top plate with ports 4 x 13,5; 1 x 19mm, Adaptor in the centre, 7 x 10mm Pt100, pH-probe, samplin and addition ports and pipes



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