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Customizable Control

BioFlo[®] 510 benchtop SIP fermentation system

Convenience, Flexibility, and Control

The BioFlo[®] 510 fermentation system is designed for rapid delivery and easy field customization, should your requirements change. Compact, versatile, and exceptionally capable. Quality at a very competitive price.

Modular design provides system flexibility

- > Easily add or remove system components at any time, pre- or post-delivery to accommodate changes in your process requirements
- > Numerous ports in the vessel headplate and sidewall provide flexibility to position sensors, spray balls, addition valves, pressure transducer and more
- > Multiple gas flow options, up to two thermal mass flow controllers can be employed
- > Capable of batch, fed-batch and continuous modes
- > Three impeller options
- > Optional SCADA software, validation packages, sprayballs for vessel clean-in-place, redundant pH/DO sensors

Advanced controller optimizes results

> Simultaneously regulate up to 32 process loops through the sophisticated RPC (Reactor Process Controller) or Allen-Bradley[®] CompactLogix[™] PLC (Programmable Logic Controller)

- > Front-accessed, analog inputs and outputs allow you to integrate up to 14 sensors, analyzers, flow controllers or other external devices
- > Security, built into the control system, offers two user groups unique userdefined passwords and auto log-out
- > Touchscreen control screens are exceptionally easy to navigate, to simplify setup, calibration, sterilization and monitoring
- > Store up to ten batch recipes; program and monitor sterilization cycles, gas flow, PI values, and more
- > This same RPC controller is used on our other benchtop fermentors, facilitating scale-up and scale-down

Production-scale system that fits on the bench

- > At just 116 cm wide x 86 cm deep (45.5 x 34.0 in), the compact BioFlo[®] 510 can fit on a lab bench. Or, move and operate it on our sturdy, optional, stainless-steel mobile table
- > Sterile vessel connections, flush with the vessel's interior, virtually eliminate deadlegs, minimizing contamination risk and simplifying cleaning
- > Fully validatable, following V-Model guides for URS, FRS, DDS, IQ, OQ and trace matrix
- > CE-certified and manufactured to meet cGMP guidelines



Enter and view sterilization parameters and valve sequences from the sterilization screen



Trend graphs make it simple to track and export data on up to eight process variables over a six day span

Sunnary Screen		New Brunswick Scientific				Fermentation Mode	
	BF 510	[1 G	rowth			
LoopName	PV	Setpoint	Out%	Control Mode	Units	Case.	
	0	25	0.0	011	RPM	None	1
	39.7	20.0	0.0	011	DegC	None	
	6.71	7.00	0.0	on	pH	None	<u> </u>
	2.0	0.0	0.0	orr	%00	None	
	-0.1	5.0	25.0	Mix	SLPM	None	
	-5.0	0.0	0.0	Mix	SLPM	None	
	-5.0	0.0	0.0	Mix	SLPM	None	
	-3.7	0.0	0.0	Mix	SLPM	None	
	0.0	0.0	0.0	orr	*	None	<u> </u>
							¥
nin Synoptic	🔏 Calib	蹪 сы	и. 💆 т	end 👸 P	umps 🔔	Alarms 👗	Setu

Simultaneously view up to 10 setpoints, current values, cascade loops and more on the Summary screen

8F 510	-		Growth		Vessel Light	
Cascade From 🚺	0	•				
То	Enable	Start Sulpaint	@00 Stat Outs	EndSulpoint	@ DO End Out®	
Agit	YES	250	0.0	800	70.0	
02 (2)	YES	0.0	70.0	100.0	100.0	
None	▼ N0					
None	▼ N0					
None	• NO					

Cascade one or more variables (in this case agitation and O_2) to achieve sophisticated process control, based on the value of any other one or more variables

Advanced system includes benchtop control station with touchscreen interface, stainless steel vessel, and piping skid

Customize PI values for all process parameters or select factory defaults

Multiple PG 13.5 and sanitary connection ports

provide flexibility to position sensors and redundant sensors to meet your process needs

Double mechanical seal with rushton-type impeller

Multiple gas flow options: Choose 1 or 2 thermal mass flow controllers (TMFC) in a variety of flow ranges

Sanitary or quick connects allow utilities to be _____ connected in minutes

ASME and CE certified: Designed and built to ASME and CE standards

Built-in load cell measures vessel volume, enabling weight to be used to automate pump control for additions and harvesting 4 removable vessels baffles provided for enhancing mixing

Resterilizable drain valve enables sterile transfer of vessel contents



Resterilizable sample valve



Adjustable-angle, user-friendly 15 in (38 cm) touchscreen interface simplifies control and provides clear viewing of process parameters

Three built-in, assignable, peristaltic pumps

Safety features: A sanitary rupture disk in the vessel and an ASME safety release valve on the drain jacket are standard



Optional glycol heat exchanger enables rapid cool-down; closedloop, eco-friendly design reduces need for single-pass cooling water through the system



Resterilizable addition valve array: Each vessel can accommodate up to four addition ports for vessel additions (one addition port shown)



Optional impellers: Pitched blade impeller (left) for high aeration and low shear in insect and other cell cultures; marine blade impeller (right) for the growth of insect cells and other cultures

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BioElo[®] 510 fermentor specifications*

Vessel	Working volume	10 75 - 32 0 1						
• (33)	Total volume	40 L						
	Construction	 > Aspect ratio: 2:1 > Material of construction: 316L state > Vessel access: Headplate 	ainless steel	 > Code ratings: ASN > Vessel pressure: 4 > Finish: 15 CLA (0. [standard] 	1E/CE 0 PSIG (5.5 BAR), Full vacuum 38 micrometer) Ra electropolished interior			
	Agitation	Drive: Top drive, double-mechanica	al seal					
	Speed	100 - 700 rpm						
	Impellers	(2) Rushton-type impellers						
	Baffles	Standard: (4) Removable, 316L stai	inless steel. Optiona	al baffle plug kit				
Ports	Headplate	 > (4) PG 13.5 [light, Level 1 sensor. > (4) 1 5 in NBS connect sanitary s 	/spare, Level 2 sens	sor/spare, septum/spa sducer/spare_exhausi	are] and (2) spray balls/septums/spares]			
	Upper side wall	 > (7) 1.5 in NBS connect sanitary style [gas overlay/spare, vessel rupture device, and (4) addition valves/spares] > (1) 3 in NBS connect sanitary style [vessel sight glass] 						
	Lower side wall	> (7) 1.5 in NBS connect sanitary style [RTD, sample/spare, pressure gauge/spare, sparger/spare, and (3) DO/pH/redox or combinations thereof]						
	Bottom	(1) 1.5 in NBS connect sanitary style [radial diaphragm drain valve]						
Controller	Control station	Controls one vessel with 32 control industrial touchscreen monitor/use signals	l loops. Stores 10 re r interface, three b	ecipes and eight proc uilt-in pumps, and co	ess variables for trend graphing. Includes an nnections for all utilities and communication			
	Touchscreen interface/display	38 cm (15 in) Industrial touchscreen interface/display						
Pumps	Standard, options, and control	Standard: Three built-in, assignable, peristaltic pumps. Control modes: Off, Prime, Base, Acid, Foam, Level 2 Wet, Level 2 Dry, Volume Add, Volume Harvest Optional: Two external variable-speed pumps can be added						
	Speed	Pumps 1, 2 and 3: 100 rpm Fixed-s	speed duty cycle, at	pility to view total pu	np flow rates			
Piping skid	Construction	> Material of construction: 316L sta	ainless steel	> Gaskets/O-Rings:	Class (VI) EPDM and silicon			
	Aeration	Standard: 1 thermal mass flow controller (TMFC) with flow rates up to 2 VVM and built in four-gas control (4 solenoid valves) Optional: 2nd TMFC for individual gas control						
	Gas inlet	Sparger/overlay filter housing with 0.2 μ absolute disposal filter. Overlay valve optional						
	Exhaust line	Standard: Line designed for minim backpressure regulator Optional: Automatic backpressure	al backpressure. In control	cludes heater and 1.2	$2~\mu$ nominal exhaust filter and housing, with manual			
	Temperature control line	 > All systems come with automatic > Operating temperature control ra > Line designed to achieve 1 °C/mi 	sterilization progra nge 10 °C above w nute temperature r	am ater supply temperat ises, in the 30 °C - 50	ure to 80 °C) °C range			
		> Optional: Glycol/chiller heat exch	langer designed to	remove 100 watts/L				
Soncor	Options	> pH/DO soppor kits	ime	> Podundant nH/DC) consor kits			
Dimensions (W		116 x 86 x 151 cm (45 5 x 34 0 x 5	59 5 in)					
Additional onti	006	\sim Spray balls \sim Foam/	lovel kits	> Turbidity sensor/t	ransmitter > Utility prefilter/regulator kit			
Autonal opti	0113	 > Transfer lines > 1 or 7 port septum > Validation packages > Addition 	sampling kit e headplate lift onal sight glass	 > Addition vessels > Scales for addition > Vessel passivation 	> Marine and pitched-blade impellers			
Utility requirements	Process air/gases O ₂ , N ₂ , CO ₂	30 PSIG (2.1 bar), 64 SLPM						
and	Instrument air	80-100 PSIG (5.5 - 6.9 bar), 2 scfm	(56.5 SLPM)					
connections	Process steam	35 PSIG (2.4 bar), 10 lb/hr (4.5 kg/	hr)					
	Utility steam	35 PSIG (2.4 bar), 35 lb/hr (15.9 kg	ı/hr)					
	Facility water	30 PSIG (2.1 bar), 2 GPM (7.57 L/n	nin)					
	Water return	Less than 15 PSIG (1.0 bar) back p	ressure					
	Clean condensate	Gravity drain						
	Biowaste	Gravity drain						
	Glycol/chiller	30 PSIG (2.1 bar), 2 GPM (7.57 L/n	nin)					
	Electric	208-230 V AC, single phase, 50/60	Hz, 15 A					
Eppendorf is ISO 1348	5 and 9001 certified. * Specifica	ations subject to change without notice	Input/output connections and communication ports	External devices (RPC only)	Seven analog inputs and seven analog outputs for your external devices such as analyzers, sensors, external pumps, etc. (Reduce by 1 input and output for each additional TMFC added)			
Your local distributor: www.eppendorf.com/contact				2 USB ports	Import firmware/software upgrades and export trend data. Connect an optional 8-port serial box for accessories requiring serial connections			
eppendorf@e	ppendorf.com			Communications port	For optional BioCommand® SCADA software			
www.eppe	endorf.com/biot	flo510	Regulatory		ASMF CAN/CSA-C22.2 No. 61010-1			

compliance

CE

ASME

CAN/CSA-C22.2 No. 61010-1 UL Standard UL-61010-1

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