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Контроллеры настольных биореакторов



proSET Evo Fermentation System

SKU: CSFS-07

- Duo heating system, thermostat and dry heating combined in one
- Universal system for R&D in cell culture and microbiology
- Interchangeable five (5) types of autoclavable glass vessel
- Control up to sixteen (16) systems from a single interface
- Compatible with microbial and cell culture applications
- Intuitive and user-friendly control software in multi-language
- Small pilot scale 15L and 20L glass vessel compatible
- Ethernet communication with proSET SCADA software, and IP addressing
- proSET EZScript software for advanced fermentation process (optional)

SPECIFICATIONS

Control unit	Control panel	10.4" color touch-screen Interface (Resolution: 800 x 600 pixels)
	Communication port	Remote control through Ethernet
		Data export through USB port
		Analog AUX port for system extension
	Number of vessels controlled per remote control software	Max. 16
	Program storage	Up to 59,994 programs for different kinds of condition
	Log data storage	Up to 100 process monitoring data files
	Cabinet material	ABS front panel and painted iron housing
	Dimension	Footprint: W x D = 15.75" x 22.44" (400mm x 570mm); Height: 29.14" (740mm)
	Rated voltage	110V~/220V~; 50/60 Hz, 10A
Aeration	Inlet gas flow-meter	0, 0.1-1LPM (0.5L); 0, 0.4 - 5LPM (1L); 0, 1 - 10LPM (3, 5L); 0, 2 - 20LPM (10L); 0, 4 □ 50LPM (15, 20L)
	Sparger	Orifice ring
	Baffle	Removable 316L stainless steel baffles

Temperature	Heating	1. Thermostat System: built-in heat exchanger (550W heater, water circulation pump)
		2. Dry heating system (heating blanket or heating base unit)
	Cooling	Cooling coil valve
	Range	with FS-V-A / B / C series : 5°C (41°F) above coolant up to 60°C (140°F); with FS-V-D series :5°C(41°F) above coolant up to 90°C (194°F);
	Probe	Platinum RTD probe (PT-100), non autoclavable
	Control mode	Manual or Programmable 15 steps PID control
Agitation	Drive	Removable top brushless motor (M3 for 0.5L, 1L; M2 for 3-20L)
	Speed range	a. For extremely shear-sensitive cell line: 30-300rpm b. For fermentation and cell culture: 30 - 1200rpm (0.5-5L); 30 - 1000rpm (10L); 30 □ 700rpm(15, 20L)
	Resolution	1rpm
	Impeller	2 impellers for 0.5L &1L vessel and double jacketed vessels 3 impellers for 3L vessel and above Note: Customized impellers are available upon ordering
	Control mode	Manual or Programmable 15 steps PID control
pH	Range	2 - 14pH

	Resolution	0.01pH
	Probe	Gel-filled electrode, autoclavable
	Control mode	Manual/programmable 15 steps PID control with adjustable deadband, pH stat with smart feeding technology
DO	Range	0 - 200%
	Resolution	0.10%
	Probe	Polarographic DO sensor; autoclavable
	Control mode	2-stage DO cascade response a. Increase or decrease agitation speed b. Oxygen Enrichment module(Optional) c. Gas Mixing Station module(Optional) DO stat with smart feeding technology
ORP(optional)	Measurement range	-/ 2000mV
	Resolution	1mV
	Probe	Gel-filled electrode: autoclavable
Foam / Level	Probe	316L stainless steel protector with insulated PTFE tube, autoclavable, adjustable sensitivity control
	Control Mode	Foam: On/Off switch Level: On/Off switch control with wet/dry probe set up
Peristaltic	Pump number	4 x built-in pumps, 1 to 2 external pumps (Optional)

Pump	Motor type	Precise stepping motor; minimum speed is 1rpm
	Speed range	0 to 65rpm
	Resolution	1rpm
	Control mode	Manual or Programmable 15 steps feeding control; pump can be assigned for Acid, Base, Antifoam and/or Substrate; pump can calculate flow rate and total volume
Exhaust	Device type	316L stainless steel condenser

System Specification

Controller	Duo heating system controller				
	Built-in rotameter				
	4 x built-in pump heads				
Vessel	Double jacketed vessel (includes glass body, head plate, T-handling bar, 2 probe adaptors)	Single wall dish bottom vessel (includes glass body, head plate, T-handling bar, 2 probe adaptors)	Airlifter vessel (includes glass body, head plate, draft tube, T-handling bar, 2 probe adaptors)	Single wall dish bottom with heating blanket (includes glass body, head plate, T-handling bar, 2 probe adaptors and heating blanket)	Single wall plain bottom with heating base unit (includes glass body, head plate, T-handling bar, 2 probe adaptors and heating)

					base unit)
	2 adjustable Pitched-blade impeller	3 adjustable Rushton-type impellers	no impellers	3 adjustable Rushton-type impellers	3 adjustable Rushton-type impellers
	Baffle assembled		Draft tube assembled	Baffle assembled	
	Condenser assembled				
	Air sparger assembled		Micro sparger assembled	Air sparger assembled	
Motor	Agitation motor		N / A	Agitation motor	
Probes	1x pH probe and 1x pH cable				
	1x Do probe and 1x DO cable				
	1x Temperature probe and 1x Temperature cable				
	1x anti-foam/level sensor and 1x anti-foam/level sensor cable				
Start-up Kit	Complete start-up kit includes, silicone tubes, tube				

clamps, metal connector and autoclavable disc filters

Vessel Specification

Vessel	Double Jacketed (FS-V-A series)					Single Wall (FS-V-B series)				Air Lifter (FS-V-C series)
	500 ml	1L	3 L	5 L	10 L	1L	3 L	5 L	10 L	
Working volume	500 ml	1L	3 L	5 L	10 L	1L	3 L	5 L	10 L	5 L
Total volume	1L	1.5L	3.8 L	6.8 L	12.5 L	1.5 L	3.8 L	6.8 L	12.5 L	7 L

Vessel	Single Wall with Heating Blanket (FS-V-B series)						Single Wall with Heating Base Unit (FS-V-D series)		
	1L	3 L	5 L	10 L	15L	20L	3 L	5 L	10 L
Working volume	1L	3 L	5 L	10 L	15L	20L	3 L	5 L	10 L
Total volume	1.5L	3.8 L	6.8 L	12.5 L	18L	24.4L	3.7 L	6.4 L	13.4L

Utility Requirement

Power source	100-120V / 210-230V, 50-60Hz with electrical safety cutoff switch
Water source	10 psig (0.69 barg), 14.5 psig (1 barg) maximum; (water supplied to fermenter must be softened and at least 15°C below set operating temperature)

Air source	10 psig (0.69 barg), 29.0 psig (2 barg) maximum; air must be dry, oil-free and filtered
Sterilization	Autoclave; size of the autoclave inner chamber must be able to accommodate vessel with condenser attached



proSET One Fermentation System

SKU: **CSFS-06**

- Duo heating system, thermostat and dry heating combined in one
- Linux based system for stable and virus proof operation
- Extreme compact in size: (WxLxH) 250x510x500mm
- Compatible with any vessel types up to 10 liter
- Economic model for budget saving lab
- Three speed adjustable peristaltic pumps control feedings in various flow rates
- SCADA software ready
- Expansion module available for system upgrade supports to optional devices

SPECIFICATIONS

Cat. No.	CSFS-06	
Control unit	Control panel	8" Color touch-screen interface
	Communication	Remote software control through Ethernet, up to 16 systems per PC

	port	Data export through USB port
		Analog AUX port for system extension
	Program storage	Up to 59,994 process programs
	Log data storage	Up to 100 process monitoring data files
	Cabinet material	ABS front panel and painted iron housing
	Dimension	Footprint: W x D = 9.84" x 20.08" (250mm x 510mm), Height: 19.69" (500mm)
	Rated voltage	110V~/220V; 50/60 Hz, 10A
Aeration	Inlet gas flow-meter	0,0.1-1LPM (0.5L), 0, 0.2-2.5LPM (1L), 0, 1-10LPM (3, 5L), 0, 2-25LPM (10L)
	Sparger	Orifice ring
	Baffle	Removable 316L stainless steel baffles
Temperature	Heating	1. Thermostat System: built-in heat exchanger (550W heater, water circulation pump)
		2. Dry heating system (heating blanket or heating base unit)
	Cooling	Cooling coil and solenoid valve

	Range	with FS-V-A / B / C series : 5°C (41°F) above coolant up to 60°C (140°F); with FS-V-D series :5°C(41°F) above coolant up to 90°C (194°F)
	Probe	Platinum RTD probe (PT-100), non autoclavable
	Control mode	Manual or Programmable 15 steps PID control
Agitation	Drive	Removable top brushless motor
	Speed range	a. For extremely shear-sensitive cell line: 30 - 300rpm b. For fermentation and cell culture: 30 - 1200rpm (0.5 - 5L) and 30 - 1000rpm (10L)
	Resolution	1 rpm increment
	Impeller	2 impellers for 0.5-1L vessel and double jacketed vessels 3 impellers for 3L vessel and above Note: Customized impellers are available upon ordering
	Control mode	Manual or Programmable 15 steps PID control
pH	Range	2 - 14pH
	Resolution	0.01pH
	Probe	Gel-filled electrode, autoclavable
	Control mode	Manual/Acid start/programmable 15 steps PID control with adjustable deadband, **pH stat with smart feeding technology
DO	Range	0 - 200%

	Resolution	0.1%
	Probe	Polarographic DO sensor; autoclavable
	Control mode	1-stage DO cascade response a. Increase or decrease agitation speed **b. Supply external oxygen source using solenoid valve switch (Oxygen enrichment module required, optional device) **c. Adjusting DO level using accurate gas mixing control (Gas mixing station module required, optional device) **DO stat with smart feeding technology
ORP(optional)	Measurement range	-/ 2000mV
	Resolution	1mV
	Probe	Gel-filled electrode: autoclavable
Foam / Level	Probe	316L stainless steel protector with insulated PTFE tube, autoclavable, adjustable sensitivity control
	Control Mode	Foam: On/Off switch Level: On/Off switch control with wet/dry probe set up
Peristaltic Pump	Pump number	3 x built-in Watson Marlow pumps, **1-2 external pump extendable (MU-D series required, optional)
	Motor type	Precise stepping motor; minimum speed is 1rpm
	Speed range	0 to 65rpm
	Resolution	1rpm

	Control mode	Manual or Programmable 15 steps feeding control; pump can be assigned for Acid, Base, Antifoam and Substrate; **flow rate & total volume calculation
Exhaust	Device type	316L stainless steel condenser



proSET Parallel Fermentation System

SKU: CSFS-05

- True parallel system, one controller for two vessels
- Single or dual vessels for independent or simultaneous control
- Duo heating system for thermostat and dry heating compatibility
- Free remote control software included in standard package
- Full compatibility with all optional devices



Solid State Fermentation System for 5L Double Jacketed Vessel

SKU: CSFS-07-SA05P

- 10.4" large colour touch-screen & graphical user Interface, easy to operate
- Automatic vessel angle control mechanism from vertical to horizontal perfectly suitable
- for Simultaneous Saccharification and Fermentation research
- Typical applications covers enzymatic hydrolysis research with Lignocellulosic material and Ganoderma solid status research
- Temperature control environment
- Various optional impeller choices and aeration of the material available

Solid state fermentation (SSF) can be used for enzyme, antibiotics, biofuel, and organic acid production in the food, pharmaceutical, cosmetic, industries, etc. One of the features for Solid state fermentation is to create low water level cultivating conditions for fungus, mold, filamentous fungi, and some bacteria growth. This Solid State Fermentation system is designed for the laboratory scale research to get excellent results. It features a 10.4" color touch screen, user-friendly interface and 4 built-in peristaltic pumps on the Linux based operation system. An automatic vessel angle control mechanism provides an outstanding mixing efficiency for solid state material research. This system is suitable for both aerobic and anaerobic fermentation with three kinds of impellers available (Broken, Anchor and Spiral type).

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