

# Parallel Lab Fermentor Bioreactor System



INNOVATIVE CULTIVATION SOLUTIONS

# Parallel Lab Fermentor / Bioreactor System

## Features

### Control Unit

- Single or dual vessels for independent or simultaneous control
- Hardware and software built for compatibility for thermostat and dry heating systems
- Maintenance-free top drive brushless motor
- Linux based system for stable and virus proof operation
- 15 steps programmable control on pH, temp, feeding, agitation for sophisticated control
- 4 integrated assignable and programmable Watson Marlow pump heads with high resistant to acid and base
- More than to 59,000 programs and 100 process data files available
- pH stat with smart feeding technology
- Purchase free for remote operating software
- Flexible data exporting interface: USB port or PC connection
- Global exclusive real-time notification for control
- Pre-configured software for up to 16-fold operation, optimized for all vessel types. No additional software required
- Extreme compact in size: 400 x 570 x 740mm (W x D x H)

### Autoclavable Glass Vessels

- 4 different types of vessels for selection
- Up to 7 sizes of maximum working volumes for vessels: 1L, 3L, 5L, 7L, 10L, 15L and 20L
- Industry standard borosilicate glass and 316L stainless steel for headplate and all fittings

## How to place order for your Parallel Fermentor / Bioreactor?

Step1: Select your controller



FS-05-220

Step2: Select 2 vessel packages



FS-V-A05P + FS-V-D05P

Step3: Add the Parallel Bioreactor start up kits

Glass Feeding Bottle  
Autoclavable Disc Type Filter  
Connecting Tube  
Silicone Tubing Clamps  
Silicone Tube

FS-A-SK20

Step4: Add any optional devices you desired



FS-0-GM

## Specifications

<b>Control unit</b>	Control panel	10.4" Color Touch-screen Interface			
	Communication port	Remote software control through Ethernet, up to 8 systems per PC RS-485 port for system extension			
	Program Storage	Up to 59,994 programs			
	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" (740 mm)			
	Rated voltage	220V; 50/60 Hz			
<b>Aeration</b>	Inlet Gas Flow-meter	0.5 - 5 LPM (1L)	0, 1 - 10 LPM (3,5 L)	0, 2 - 25 LPM (7,10L)	0, 4 - 50 LPM (15,20L)
	Sparger	Orifice ring			
	Baffle	Removable 316L stainless steel baffles			
<b>Temperature</b>	Heating	1. Thermostat: Built-in heat exchanger (400W heater, water circulation pump) 2. Dry heating			
	Cooling	Cooling coil and solenoid valve			
	Range	5°C (41°F) above coolant up to 60°C (140°F)			
	Probe	Platinum RTD probe (Pt 100), non-autoclavable			
	Control mode	Manual or Programmable 15 steps PID control			
<b>Agitation</b>	Drive	Removable top brushless motor			
	Speed Range	30-1200 rpm (1L) 30 – 1200 rpm (3, 5, 7L) 30 – 1000rpm (10L) 30 – 700 rpm (15, 20L)			
	Impeller	2 impellers for 1 L vessel and 3 impellers for 3 L and above Note: Customized impellers are available			
	Resolution	1 rpm increment			
	Control mode	Manual or Programmable 15 steps PID control			
	<b>pH</b>	Range	2 -14 pH		
Resolution		0.01 pH			
Probe		Gel-filled electrode; Autoclavable			
Control mode		Manual/ Acid start/ programmable 15 steps PID control, pH stat			
<b>DO</b>	Range	0 – 200%			
	Resolution	0.10%			
	Probe	Polarographic DO sensor; Autoclavable			
	Control mode	2-stage DO cascade response: (Manual or Process mode)			
		a. Increase or decrease agitation speed b. Oxygen Enrichment module(Optional) c. Gas Mixing Station module(Optional) Substrate feeding strategy			
<b>ORP</b> (optional for anaerobic condition)	Transmitter	-/+ 2000 mV			
	Resolution	1 mV			
	Probe	Gel-filled electrode; Autoclavable			
<b>Foam</b>	Probe	316L stainless steel detector with insulated PTFE tube; On/Off control, autoclavable, adjustable sensitivity control			
<b>Peristaltic pump</b>	Pump number	4x built-in Watson Marlow pumps per vessel( total 8); 1x external pump (MU-D series required, optional) per vessel			
	Motor type	Precise stepping motor; minimum speed is 1 rpm			
	Speed range	0 – 65 rpm			
	Resolution	1 rpm			
	Control mode	Manual or Programmable 15 steps feeding control; pump can be assigned for Acid, Base, Antifoam and Substrate; flow rate & total volume calculation			
<b>Exhaust</b>	Device type	316L Stainless steel condenser			

## Vessel Information

Vessel	Double Jacketed (FS-V-A series)					Single Wall (FS-V-B series)					Air Lifter (FS-V-C series)
Material	Borosilicate glass / 316L stainless steel for headplate and all fittings										
Working volume	1L	3L	5L	7L	10L	1L	3L	5L	7L	10L	5L
Total volume	1.3L	3.8L	6.8L	8.9L	13.4L	1.3L	3.8L	6.8L	8.9L	12.5L	6.9L

Vessel	Single Wall with Heating blanket (FS-V-B series)						Single Wall with Heating base unit (FS-V-D series)					
Material	Borosilicate glass / 316L stainless steel for headplate and all fittings											
Working volume	1L	3L	5L	7L	10L	15L	20L	1L	3L	5L	7L	10L
Total volume	1.3L	3.8L	6.8L	8.9L	12.5L	18.0L	24.4L	1.3L	3.7L	6.5L	9.1L	13L

## Ordering Information

Cat. No.	Description
FS-05-220	Parallel Lab Fermentor/Bioreactor System, 220V
FS-V-A01P	1L double jacketed dish bottom vessel kit. Including FS-V-A01, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-A03P	3L double jacketed dish bottom vessel kit. Including FS-V-A03, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-A05P	5L double jacketed dish bottom vessel kit. Including FS-V-A05, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-A07P	7L double jacketed dish bottom vessel kit. Including FS-V-A07, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-A10P	10L double jacketed dish bottom vessel kit. Including FS-V-A10, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B01P	1L Single wall dish bottom vessel kit. Including FS-V-B01, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B03P	3L Single wall dish bottom vessel kit. Including FS-V-B03, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B05P	5L Single wall dish bottom vessel kit. Including FS-V-B05, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B07P	7L Single wall dish bottom vessel kit. Including FS-V-B07, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B10P	10L Single wall dish bottom vessel kit. Including FS-V-B10, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B15P	15L Single wall dish bottom vessel kit. Including FS-V-B15, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-B20P	20L Single wall dish bottom vessel kit. Including FS-V-B20, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Brushless motor
FS-V-C053P	5L single wall air lifter vessel kit. Including FS-V-C053, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable
FS-V-C054P	5L double jacketed air lifter vessel kit. Including FS-V-C054, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable
FS-V-D03P	3L single wall plain bottom vessel kit. Including FS-V-D03, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Heating base unit & Heating base unit cable
FS-V-D05P	5L single wall plain bottom vessel kit. Including FS-V-D05, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Heating base unit & Heating base unit cable
FS-V-D07P	7L single wall plain bottom vessel kit. Including FS-V-D07, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Heating base unit & Heating base unit cable
FS-V-D10P	10L single wall plain bottom vessel kit. Including FS-V-D10, pH probe & pH probe cable, DO probe & DO probe cable, Temp. probe & PT-100 Temp. probe cable, Antifoam probe cable, Heating base unit & Heating base unit cable