



2024 BROCHURE



Laboratory Bioreactor / Fermentor

Innovative Life Sciences Tools

Laboratory Bioreactor / Fermentor

Winpact Mass Flow Controller

The composition of gas is important for microorganism/cell culture. To maintain different gases at a defined flow rate during bioprocesses, Winpact Mass Flow Controller can provide accurate and stable flow measurement and control. Mass flow controller (MFC) is a precise device which is used to control a specific type of liquid or gas at a particular range of flow rates. MFC is composed of block, flow-splitter or bypass, sensor, printed circuit board (PCB), and control valves.

When gas flows into MFC, the sensor will detect its real volume and compare with the setting value (standard value). If the detection value is lower than setting value, the inner control valve will open slightly for increasing the input flow. Conversely, if the detection value is higher than the setting value, the inner control valve will close slightly to reduce the input flow. Consequently, MFC is able to adjust the flow automatically and precisely.

Overlay (headspace aeration) control is crucial for some fermentation processes process. Winpact Mass Flow Controller also can sparge different gases into the vessel though the headspace and the sparger at the same time.

Now, Winpact Mass Flow Controller could be integrated into Winpact Fermentation system and improves operational efficiency and creates stable environment for different culture conditions.

Features

- Affordable price
- Self-made, high quality accurate gas control guarantee



FS-O-MF series

Winpact Parallel (FS-05 Series)

- Control up to 16 systems (total 32 vessels) from a single interface



1L Double Jacketed Vessel

FS-05

10L Single Wall Vessel with Heating base unit

- Fully integrated system specifically designed for solid-state fermentation research involving saccharification, hydrolysis and more.
- Programmable angle-adjustable (0-90° for culture control, 120° for harvest control) vessel tilting and stirring mechanism permits superior sample homogeneity
- Impellers are designed to reduce stickiness and it ensures sample integrity during the fermentation process.
- Integrated motor shaft & air sparger assembly creates precise, disturbance-free controls of aeration and mixing
- Chemically resistant double jacketed borosilicate glass vessel design
- Can be used with pH and DO probes to control culture conditions (anchor type impellers only)
- Customizable impellers and aeration controller available

*For more information, please contact your local distributors.

**The minimum speed varies from 1-5 rpm depending on the medium viscosity.

*10L solid state vessel is fixable angle 30° only



5L Solid State (FS-V-SA05P)

*0° - 90° rotation,
120° for harvest



Winpact One (FS-06 Series)



1L Double Jacketed Vessel

1L Single Wall Vessel

FS-06

- Control up to 16 systems from a single interface

Winpact Evo (FS-07 Series)



FS-07

5L Air Lifter Vessel

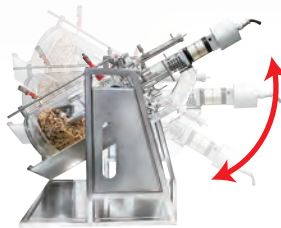
5L Single Wall Vessel with Heating blanket

Winpact Solid State Fermentation System, FS-V-SA05P



FS-V-SA10

10L Solid Vessel

*0°- 90° rotation,
120° for harvest

Impeller Type:



Broken



Anchor



Spiral

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. Winpact Solid State Fermentation system is designed for the laboratory scale research to get excellent results. It is featured with 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).

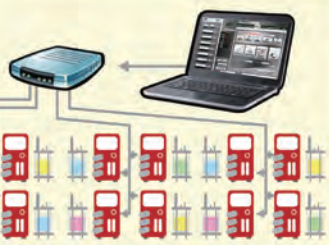
Features

- Fully integrated system specifically designed for solid-state fermentation research involving saccharification, hydrolysis and more.
- Programmable angle-adjustable (0-90° for culture control, 120° for harvest control) vessel tilting and stirring mechanism permits superior sample homogeneity
- Impellers are designed to reduce stickiness and it ensures sample integrity during the fermentation process.
- Integrated motor shaft & air sparger assembly creates precise, disturbance-free controls of aeration and mixing
- Chemically resistant double jacketed borosilicate glass vessel design
- Can be used with pH and DO probes to control culture conditions (anchor type impellers only)
- Customizable impellers and aeration controller available

**The minimum speed varies from 1-5 rpm depending on the medium viscosity.

Vessel	Model	FS-V-SA03P	FS-V-SA05P	FS-V-SA10P
	Working volume	3L	5L	10L
	Total volume	3.8L	6.8L	12.5L
Control Unit	Control Panel	10.4" color touch-screen Interface, (Resolution: 800 x 600 pixels)		
	Communication Port	Remote control through Ethernet, Analog AUX port for system extension		
	Storage Program	Up to 59,994 programs for different kinds of condition.		
	Data Internal Storage	Up to 100 data files.		
	Data External Storage Interface	USB port		
	Cabinet Material	Front panel: ABS / Housing: Painted iron		
	Rated Voltage	110V~ / 220V~ ; 50/60 Hz		
Aeration	Inlet Gas Flow-meter	0, 1 – 6 LPM	0, 1 – 10 LPM	0, 1 – 20 LPM
Dimension	Dimension	Overall Diameter 315mm; Overall Height with Condenser 633 mm; Overall Height without Condenser 388 mm Dimension (with vessel holder) 430mm (L) x 730mm (W) x 780 mm (H)	Overall Diameter 350mm; Overall Height with Condenser 683 mm; Overall Height without Condenser 448 mm Dimension (with vessel holder) 430mm (L) x 730mm (W) x 780 mm (H)	Overall Diameter 385mm; Overall Height with Condenser 815 mm; Overall Height without Condenser 750 mm Dimension (with vesselstand) 1120mm (L) x 320mm (W) x 695 mm (H)
	Heating	Thermostat system: Built-in heat exchanger, 550W heater/water circulation pump		
Temperature	Cooling	Automatic cooling water valve		
	Range	5°C (41°F) above coolant up to 60°C (140°F)		
	Resolution	0.1°C		
	Control Mode	Manual or programmable 15-step PID control.		
	Drive	Removable top brushless motor		
Agitation	Speed Range	0, 1 – 60 rpm		
	Resolution	1rpm		
	Control Mode	Manual or programmable 15-step PID control.		
	Impeller	1. Broken type: FS-A-IM305	FS-A-IM306	FS-A-IM307
		2. Anchor type: FS-A-IM408	FS-A-IM406	FS-A-IM409
		3. Spiral type: FS-A-IM507	FS-A-IM506	FS-A-IM508
		(Select one from the above type, and only anchor impeller can be used with pH and DO probes) *Note: Customized impellers are available. **In pH and DO measurement condition, the minimum medium volume is 4L and water content is more than 50%, tilting angle not over 30 degree. ***The measure value of pH and DO may not accurate when using in solid-state culture condition. ****pH and DO probe is not within the scope of warranty when using in solid-state vessel.		
Vessel Swing	Angle Range	Normal operation: 0°~90°, adjustable time interval		Vessel stand with fixed angle 30°
		Harvest mode: 0°/ 120°		N/A
	Control Mode	Programmable control		N/A

PC remote controlling software connects up to 16 systems



Duo Heating Control: FS-05 / FS-06 / FS-07 serie

- These Winpact controllers can operate with a variety of vessels
- Compatible with microbial and cell culture applications
- Intuitive user-interface for fast learning curve with multi-language support
- Ethernet communication with Winpact SCADA software, and IP addressing

Control multi-vessel systems on one page.



Controller Specification

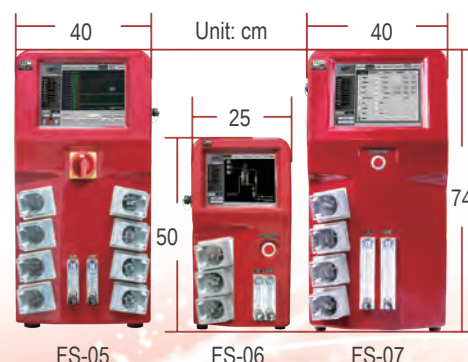
Controller	Duo Heating Control (FS-05, FS-06, FS-07)					
Vessel	Double Jacketed (FS-V-A series)	Single Wall (FS-V-B series)	Air Lifter (FS-V-C series)	Single Wall with Heating Blanket (FS-V-B series)	Single Wall with Heating Base Unit (FS-V-D series)	Solid State (FS-V-SA series)
Agitation Motor	Brushless motor	Brushless motor	N/A	Brushless motor	Brushless motor	Brushless motor
Impeller*	*Rushton-type; Pitched-blade	*Rushton-type; Pitched-blade	N/A	*Rushton-type; Pitched-blade	*Rushton-type; Pitched-blade	Broken type; Anchor type; Spiral type
Temp Range	5 °C above coolant to 60°C	5 °C above coolant to 60°C	Double Jacketed: 5°C above coolant to 60°C Single Wall: without temp control	5°C above coolant to 60°C	5°C above coolant to 90°C	5°C above coolant to 60°C
Vessel Size	500ml - 10L	1 - 10L	5L only, single wall or double jacketed	1 - 20L	3 - 10L	3L, 5L, 10L
Speed Range	*Rushton type 30-1800 rpm(0.5, 1L); 30-1200 rpm(3, 5L); 30-1000 rpm(10L) Pitched blade 30-300 rpm	*Rushton type 30-1800 rpm(1L); 30-1200 rpm(3, 5L); 30-1000 rpm(10L) Pitched blade 30-300 rpm	N/A	*Rushton type 30-1800 rpm(1L); 30-1200 rpm(3, 5L); 30-1000 rpm(10L); 30-700 rpm(15, 20L) Pitched blade 30-300 rpm	*Rushton type 30-1200 rpm(3, 5L); 30-1000 rpm(10L) Pitched blade 30-300 rpm	1-60rpm *The minimum speed varies from 1-5 rpm depending on actual medium density.
Heating	Built-in heat exchanger			Heating blanket	Heating base unit	Built-in heat exchanger
Cooling	External chiller, automatic cooling water valve					
Aeration	L-shape or ring sparger	L-shape or ring sparger	Micro-sparger	L-shape or ring sparger	L-shape or ring sparger	Center-located sparger
Grounding Port	No need	No need	Yes	No need	No need	No need
Application	Excellent for temperature sensitive and shear-force sensitive cells such as mammalian and insect cell culture	Great for aerobic or anaerobic microbial culture; suitable for plant cell and photosynthesis cell culture	Excellent for shear-sensitive cells; ideal for plant cells, fungal cells, algae cell and photosynthesis cell culture	Ideal for rapid temperature change aerobic and anaerobic microbial (bacteria and yeast) fermentation	Excellent for aerobic and anaerobic microbial (bacteria, yeast) culture, such as E.coli	Special for the culture of microbial in substrates with low water levels condition , generally suitable for fungi, such as filamentous fungi

*For FS-V-A, FS-V-B and FS-V-D series, the standard impeller is Rushton type; Pitched blade is available for cell culture upon request.

Winpact Controller Selection Guide

Model	FS-05	FS-06	FS-06 + FS-06EPM*	FS-07
Product Name	Winpact Parallel	Winpact One	Winpact One	Winpact Evo
Heating System	Duo heating			
Working Volume Range	500ml - 20L	500ml - 10L	500ml - 10L	500ml - 20L
Autoclavable Glass Vessels	Yes			
Interchangeable Vessels	Compatible with all types of vessel, except for 5L solid state which is only usable with FS-05 and FS-07			
Number Of Vessels Controlled Per Controller	2	1	1	1
Number Of Vessels Controlled Via Remote Software	Max 32	Max 16	Max 16	Max 16
Touchscreen Controller	10.4"	8"	8"	10.4"
Number Of Peristaltic Pumps	8	3	3	4
Gas Mixing Options	Available	No	Available, *	Available
Oxygen Enrichment	Available	No	Available, *	Available
Mass Flow Controller	Available	No	No	Available
Off Gas Analyzer	Available	No	No	Available
ORP Probe	Available	No	Available, *	Available
Lighting Module	Available	No	Available, *	Available
External Pump	4 max.	1 max.	2 max.	2 max.
Solid State	Available	No	No	Available

* Optional expansion module (FS-06-EPM) needed.



	Vessel type	Double Jacketed Dish Bottom Vessel (FS-V-A series)					
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Working volume **	500ml	1L	3L	5L	10L	
	Total volume Δ	1L	1.5L	3.8L	6.8L	12.5L	
	Vessel type	Single Wall Dish Bottom Vessel (FS-V-B series)					
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Working volume **	1L	3L	5L	10L		
	Total volume Δ	1.5L	3.8L	6.8L	12.5L		
	Vessel type	Air Lifter Vessel (FS-V-C series)					
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Working volume **	5L single wall			5L double jacketed		
	Total volume Δ	7L					
	Vessel type	Single Wall Dish Bottom Vessel With Heating Blanket (FS-V-B series)					
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Working volume **	1L	3L	5L	10L	15L	20L
	Total volume Δ	1.5L	3.8L	6.8L	12.5L	18.7L	23.7L
	Vessel type	Single Wall Plain Bottom Vessel With Heating Base Unit (FS-V-D series)					
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Working volume **	3L		5L		10L	
	Total volume Δ	3.7L		6.7L		13.1L	
	Vessel type	Solid State (FS-V-SA series)					
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Working volume **	3L		5L		10L	
	Total volume Δ	3.8L		6.8L		12.5L	

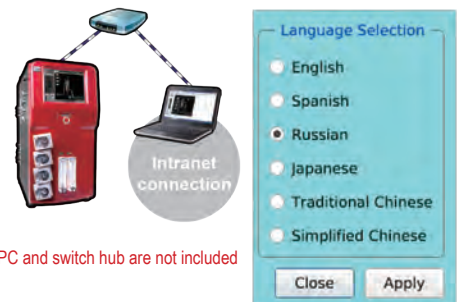
** Suggested Max.

*10L solid state vessel is fixable angle 30° only

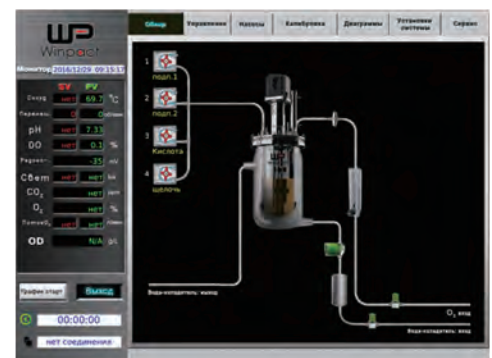
Δ Total volumes are approximate and may vary slightly.

• Winpac **EZScript software for advanced fermentation processes

** Winpac EZScript is a command software specifically designed with user-define programming capability to optimize and control of your process.



*PC and switch hub are not included



Multi-language operation interface (Russian language)



Charting

Real-time data recording and exporting



System Setup

Set up for optional devices



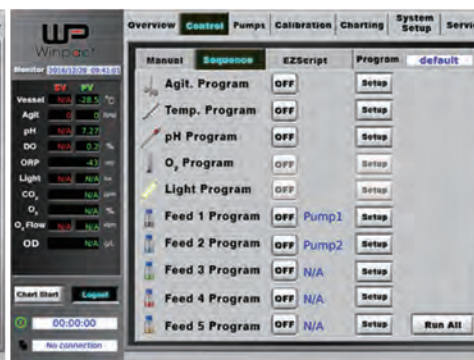
Calibration

Easy sensor calibration with assisted menu



Control / Manual

Manual operation, sequence or EZScript control (optional) of each parameter.



Control / Sequence



Pumps

Control speed, direction, total volume and flow rate

*Please visit our website at www.majorsci.com for more product selection and detailed information.

Optional Devices and Accessories



pH Probe



DO Probe



Dissolved Carbon Dioxide (DCO₂) Sensors



Cell Density Sensors



ORP Probe



Temperature Probe



Winpack Humidifier
FS-O-HMD (solid state only)



CO₂ / O₂ Off Gas Analyzer



Gas Mixing Station



Gas Mixing Station with Mass
Flow Controller



Gas Inlet Control Module



Mass Flow Controller



Lighting Module



External Pump



Brushless Motor



Headplate Stand



Feeding Bottle Loading Port



Fermentation Bottle Holder



Motor Shaft Protection Cap



Stainless Steel Supporting Foot



Composite Handle



Vessel Stand



Consumable Kit

Other Optional Devices:

- Antifoam Probe
- Impellers
 - Rushton 6 Blade Impeller
 - Pitched Blade Impeller
 - Foam Breaker
 - Broken Type Impeller (solid state only)
 - Anchor Type Impeller (solid state only)
 - Spiral Type Impeller (solid state only)
- Sampling Devices
 - Triport Sampling Device
 - Dual Ports Sampling Device
 - Ball Valve Sampling Device
 - Pneumatic Sampling Device
- EZScript Software
- Optical Density Sensor Modules
- Quad Loading Port
- Stainless Steel Condenser
- Protective Cover for Sterilization (solid state only)



*Please visit our website at www.majorsci.com for more product selection and detailed information.
*Please contact Major Science for more information on other optional devices.

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