

# 2019-2020 Catalogue

version 1.0



**Bioreactor / Fermentor**

# Winpact Mass Flow Controller

## FS-O-MF series

The gas composition 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 for reducing the input flow, for this reason, MFC is able to adjust the flow automatically and more accurately.

Besides this, overlay (headspace aeration) control is also useful for fermentation process. Winpact Mass Flow Controller also can sparge different gases into the reactor though the headspace and the sparger at the same time.

Now, Winpact Mass Flow Controller could be integrated into Winpact Fermentation system and achieve operational efficiency and creative stable environment in culture conditions.

### Features

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



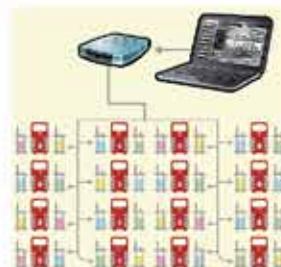
\*For more information, please contact your local distributors.

# Winpact Parallel System

## FS-05 Series

The Winpact Parallel Fermentation System is the ultimate and true parallel system for your parallel experiment. Whether you need to run two identical experiment or different experiment at the same time, the duo heating system allows you to run two thermostat heating, two dry heating or one thermostat and one dry heating simultaneously. The state of the art design is constructed with the upmost versatility for you to operate any vessel type and size in any combination you like. The remote software can control up to 16 vessels for true parallel operation.

- Duo heating system, thermostat and dry heating combined in one
- True Parallel System, 1 controller controls 2 vessels
- Interchangeable 5 types of autoclavable glass vessel
- Control up to 16 systems from a single interface
- Compatible with microbial and cell culture applications
- Intuitive user interface for short learning time
- Ethernet communication with Winpact SCADA software, and IP addressing
- Compatible with vessel volume from 0.5L to 20L
- Full selection of optional devices available
- Auto vessel angle control mechanism for solid state vessel
- Solid state vessel performs 0°- 90° rotation, and 120° for harvest



Remote control software connects up to 16 systems (total 32 vessels) at the same time via PC



Newly developed Winpact interface for easy operation



\*0°- 90° rotation,  
120° for harvest



FS-05

- ① Single wall dish bottom vessel, 1L
- ② Double jacketed dish bottom vessel, 3L
- ③ Single wall air lifter vessel, 5L
- ④ Double jacketed air lifter vessel, 5L
- ⑤ Single wall dish bottom vessel with heating blanket, 5L
- ⑥ Single wall plain bottom vessel with heating base unit, 10L
- ⑦ Double jacketed dish bottom vessel, 500ml
- ⑧ Solid state, 5L



## Winpact One System FS-06 Series

The most versatile, price and space saving fermentation system is now available from our Winpact fermentation product line-the Winpact One Fermentation System.

Winpact One is not only compact in size but also provides all the necessary tools as a standard instrument. The duo heating system allows you to choose any vessel type up to 10L for whichever application needs. The optional expansion module allows you to add additional devices to enhance the capability of the system. All necessities such as temperature, anti-foam, pH and DO probe are included in standard package.

- Duo heating system, thermostat and dry heating combined in one
- Most versatile and compact system on the market ((WxLxH) 250x510x500mm)
- Interchangeable 5 types of autoclavable glass vessel
- Control up to 16 systems from a single interface
- Compatible with microbial and cell culture applications
- Intuitive user interface for self-explanatory time with multi-language support
- Ethernet communication with Winpact SCADA software, and IP addressing
- Expansion module available for system upgrade for optional devices

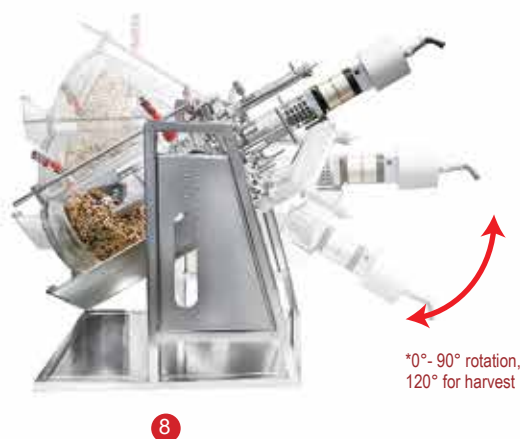


## Winpact Evo System FS-07 Series

Winpact Evo System is a one-side version of Winpact Parallel System yet offers cutting edge software. It retains all the features from FS-05 such as duo heating system, 16-system control from a remote computer, 5 types of autoclavable glass vessel ranging from 0.5L to 20L. We also significantly enhanced the functionalities and capabilities of its newly developed controller, including the versatility to accommodate solid state system.

- Intuitive user-interface for learnable operation time with multi-language support
- Ethernet communication with Winpact SCADA software, and IP addressing
- Winpact EZScript software for advance fermentation process (optional)
- Control up to 16 systems from a single interface on external PC
- Duo heating system, thermostat and dry heating all combined in one
- Compatible with microbial and cell culture applications
- Interchangeable 5 types of autoclavable glass vessel
- Auto vessel angle control mechanism for solid state vessel
- Solid state vessel performs 0° - 90° rotation, and 120° for harvesting

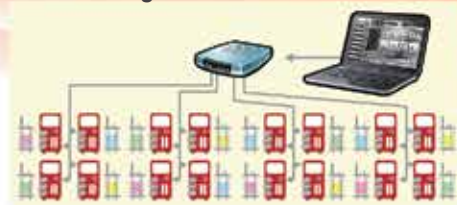
(FS-V-SA05P)



\*For more information, please contact your local distributors.



## Duo Heating Control: FS-05 / FS-06 / FS-07 series



PC remote controlling software connects up to 16 systems

- These Winpact controllers can operate with all types 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

### Controller Specification

Control multi-vessel systems on one page.



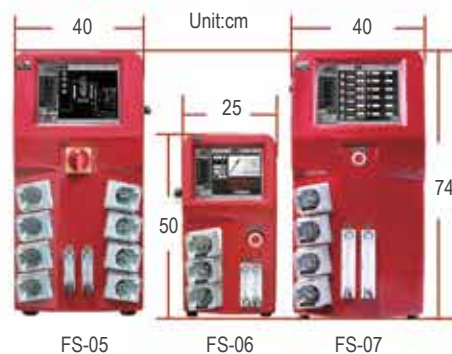
Controller	Duo Heating Control ( FS-05, FS-06, FS-07 )					
Vessel	Double Jacketed (FS-V-A series)	Single Wall (FS-V-B series)	Air Lifter (FS-V-C series)	Single Wall with Heating Blanket (FS-V-B series)	Single Wall with Heating Base Unit (FS-V-D series)	Solid State (FS-V-SA05P)
Agitation Motor	Brushless 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	5L only
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
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	Grounding port: shaft 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 vessels, except for 5L solid state which is only for FS-05 and FS-07 controller			
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
	Total Volume Δ	1.5L	3.8L	6.8L	12.5L	18.7L

	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-SA05P)				
	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings				
	Working Volume **	5L				
	Total Volume Δ	6.8L				

\*\* Suggested Max.

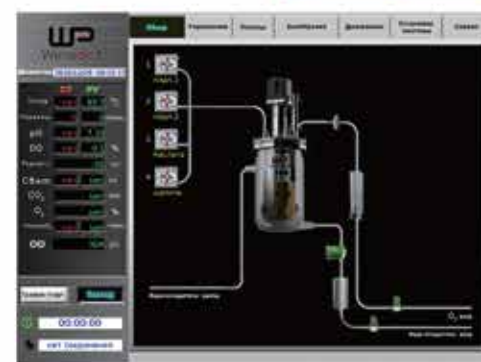
Δ Total volumes are approximate and may vary slightly.



No software purchase necessary  
Ethernet cable connection for remote control



\*PC and switch hub are not included



Multi-language operation interface (Russian language)

\* Winpac \*\*EZScript software for advanced fermentation process.

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



### Charting

Real-time data recording and exporting



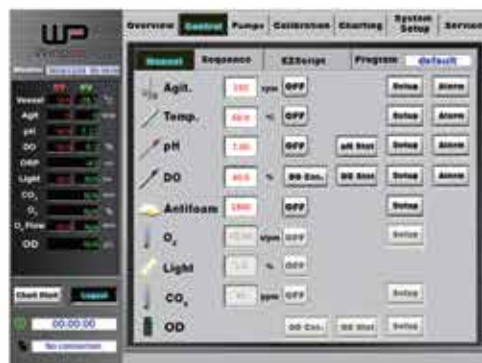
### System Setup

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

Application	Vessel	FS-V-A series	FS-V-B series	FS-V-C series	FS-V-B series	FS-V-D series	FS-V-SA05P
		Double Jacketed Dish Bottom Vessel	Single Wall Dish Bottom Vessel	Air Lifter Vessel	Single Wall Dish Bottom Vessel with Heating Blanket	Single Wall Plain Bottom Vessel with Heating Base Unit	Solid State
Mammalian Cell Culture		● ●	● ○	○ ○	● ○	○ ○	○ ○
Aerobic Microorganism Culture (Note 1)		● ●	● ●	● ●	● ●	● ●	○ ○
Micro-aerobic Microorganism Culture (Note 2)		● ●	● ●	○ ○	● ●	● ●	○ ○
Anaerobic Microorganism Culture (Note 3)		● ●	● ●	○ ○	● ●	● ●	○ ○
Fragile Cell Culture (Note 4)		● ●	● ○	● ●	● ○	○ ○	○ ○
Photosynthesis Cell Culture (Note 5)		● ○	● ●	● ●	○ ○	● ○	○ ○
Plant Cell Culture		● ○	● ○	● ●	○ ○	○ ○	○ ○
Insect Cell Culture		● ●	● ○	○ ○	● ○	○ ○	○ ○
Solid State / Semi-solid State		○ ○	○ ○	○ ○	○ ○	○ ○	● ●

● ● Excellent      ● ○ Good      ○ ○ Not recommended

Note:

1. Some bacteria; yeast; fungi

2. Facultative culture (i.e. some Lactobacillus; ethanol production)

3. Same as Note 2

4. This vessel is excellent for fragile cells, which easily sheared by any type of mechanical impeller

5. Plant; algae; cyanobacteria (blue-green algae)

## Optional Devices and Accessories



pH Probe



DO Probe



Temperature Probe



ORP Probe



Cell Density Probe



Methane Off Gas Analyzer



Gas Mixing Station



CO<sub>2</sub> / O<sub>2</sub> Off Gas Analyzer



Brushless Motor



Mass Flow Controller



Consumable Kit



External Pump



Lighting Module



Composite Handle



Vessel Stand



Headplate Stand



Feeding Bottle Loading Port



Fermentation Bottle Holder



Motor Shaft Protection Cap



Stainless Steel Supporting Foot

### Other Optional Devices:

- Antifoam Probe
- Impellers
  - Rushton 6 Blade Impeller
  - Pitched Blade Impeller
  - Foam Breaker Impeller
  - Broken Type Impeller (5L only)
  - Anchor Type Impeller (5L only)
  - Spiral Type Impeller (5L 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 Double Jacket 5 Liter Vessel Cover In Sterilization



\*Please contact Major Science for more information on other optional devices.