Winpact

(FS-07 series)

Winpact Evo Fermentation System

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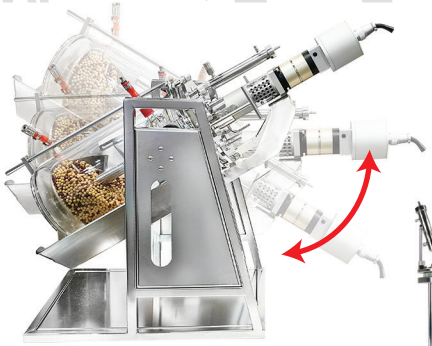

*0°- 90° rotation, 120° for harvest

7

1 2 3 4 5 6

(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 vessels 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**
- **5 interchangeable types of autoclavable glass vessels**
- **Auto vessel angle control mechanism for solid state vessel**
- **Solid state vessel performs 0°- 90° rotation, and 120° for harvesting**

1. Single wall dish bottom vessel, 1 L
2. Double jacketed dish bottom vessel, 3 L
3. Single wall air lifter vessel, 5 L
4. Double jacketed air lifter vessel, 5 L
5. Single wall dish bottom vessel with heating blanket, 5 L
6. Single wall plain bottom vessel with heating base unit, 10 L
7. Solid State, 5 L

*For more information, please contact your local distributors.
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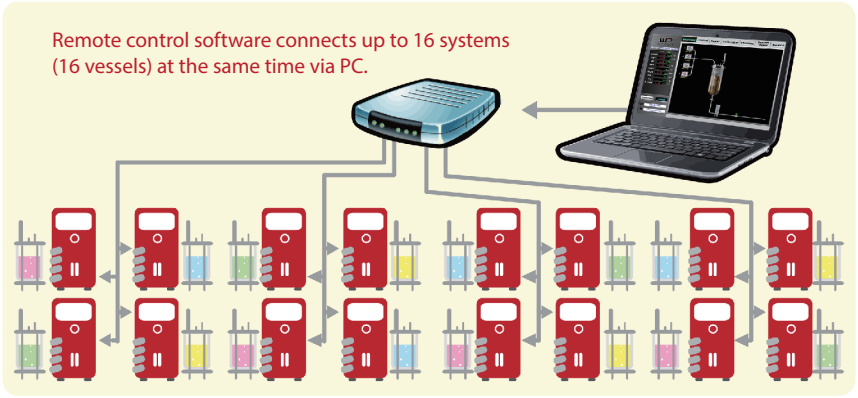
FS-07



System Specification

Controller	Duo heating system controller					
	Built-in rotameter					
	4 built-in pump heads					
Vessel	Double Jacketed Dish Bottom 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)	Air Lifter Vessel (includes glass body, head plate, draft tube, T-handling bar, 2 probe adaptors)	Single Wall Dish Bottom Vessel with Heating Blanket (includes glass body, head plate, T-handling bar, 2 probe adaptors and heating blanket)	Single Wall Plain Bottom Vessel with Heating Base Unit (includes glass body, head plate, T-handling bar, 2 probe adaptors and heating base unit)	Solid State (FS-V-SA05P)
	Rushton-type impellers		No impellers	Rushton-type impellers		Multi-Type
	Baffle assembled		Draft tube assembled	Baffle assembled		N / A
	Condenser assembled					
	Air sparger assembled		Micro sparger assembled	Air sparger assembled		
Agitation motor	Brushless motor		N / A	Brushless motor		Brushless motor
Probes	1x pH probe and 1x probe cable					Optional
	1x DO probe and 1x probe cable					Optional
	1x Temperature probe and 1x probe cable					
	1x anti-foam/level sensor and 1x probe cable					N / A
Start-up kit	Complete start-up kit includes silicone tubes, tube clamps, metal connector and autoclavable disc filters. Please see p.35 for details.					

Vessel Specification

Vessel	Double Jacketed (FS-V-A series)					Single Wall (FS-V-B series)				Air Lifter (FS-V-C series)
Working volume	500 ml	1 L	3 L	5 L	10 L	1 L	3 L	5 L	10 L	5 L
Total volume	1 L	1.5 L	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)			Solid State (FS-V-SA05P)
Working volume	1 L	3 L	5 L	10 L	15 L	20 L	3 L	5 L	10 L	5 L

*All vessels are made of borosilicate glass and 316L stainless steel for headplate and all fittings.

Utility Requirement

Power source	100-120V / 210-230V, 50-60Hz with electrical safety cutoff switch
Water source	0.4-1 bar (5.8-14.5 psi); water supplied to fermentors should be at least 15°C below the set operating temperature
Air source	0.5-2 bar, must be dry, oil-free and filtered
Sterilization	Autoclave; size of the autoclave's inner chamber must be able to accomodate vessel with condenser attached

Specification

**The minimum speed varies from 1-5 rpm depending on actual medium viscosity.
*Gas flowrate may be affected by pressure, liquid volume, solution type and characteristic, filter.
For 15L & 20L glass vessel, we suggest to using optional capsule filter for reach the desired gas flowrate(2 vvm).

Control unit	Control panel	10.4" color touch-screen Interface (Resolution: 800 x 600 pixels)
	Communication port	Remote software control through Ethernet, up to 16 systems per PC
		Data export through USB port
		Analog AUX port for system extension
	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 L = 15.75" x 23.62" (400 mm x 600 mm); Height: 29.14" (740 mm)
	Rated voltage	110V~/220V~; 50/60 Hz, 10A
	Weight	Approx. 88.18 lb (40 kg)
Aeration	Inlet gas flow-meter	0, 0.4-5 LPM (0.5, 1 L); 0, 1-10 LPM (3, 5 L); 0, 2-20 LPM (10 L); 0, 4-50 LPM (15, 20 L)
	Sparger	L-shape (500ml, 1L); Ring sparger (3L and above); Micro-sparger (C type vessels); Center-located sparger (solid state)
	Baffle	316L stainless steel baffles; 0.5-3L vessel: fixed, unmovable; 5L and above vessel: removable
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	Built-in water module and external water circulator (optional)
	Range	- FS-V-A/ B / SA05P series: 5°C (41°F) above coolant up to 60°C (140°F) - FS-V-C series (Double Jacketed): 5°C (41°F) above coolant up to 60°C (140°F) - FS-V-C series (Single Wall): without temp control - 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-step PID control
Agitation	Drive	Removable top brushless motor (M3 for 0.5 L, 1 L; M2 for 3~20 L; M4 for solid state)
	Speed range	a. For Pitched blade impeller: 30-300 rpm b. For Rushton impeller: 30-1800 rpm(0.5, 1L); 30-1200 rpm(3, 5L); 30-1000 rpm(10L); 30-700 rpm (15, 20L) c. For Broken type/Spiral type/Anchor type impellers (only for FS-V-SA05 vessel): 1 – 60 rpm**
	Resolution	1rpm increment
	Impeller	2 impellers for 0.5 L &1 L vessel and 0.5-5 L Double Jacketed Vessel 3 impellers for 3 L vessel and above; for 10 L Double Jacketed Vessel Note: customized impellers are available upon ordering
	Control mode	Manual or programmable 15-step PID control
pH	Range	0 -14 (2-12 for maximum precision)
	Resolution	0.01 pH
	Probe	Gel-filled electrode, autoclavable
	Control mode	Manual/programmable 15-step PID control with adjustable deadband; pH Stat with smart feeding technology
DO	Range	0-200%, Control range: 0-100%, adjustable
	Resolution	0.10%
	Probe	Polarographic DO sensor; autoclavable
	Control mode	2-stage DO cascade response a. Increase or decrease agitation speed b. Supply external oxygen source (Gas Inlet Control Module required, optional device) c. Adjust DO level using gas mixing control (gas mixing station module required, optional device) Substrate feeding strategy; DO Stat with smart feeding technology
ORP(optional)	Measurement range	± 2000 mV
	Resolution	1 mV
	Probe	Gel-filled electrode: autoclavable
Foam / level	Probe	316 L 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	4 built-in pumps, 2 external pumps expandable: -1 external pump: MU-D series required (optional) -1 external pump: 4-20mA or DC 0-10V analog input
	Motor type	Precise stepping motor; minimum speed is 1 rpm
	Speed range	0, 1-65rpm
	Resolution	1 rpm
	Control mode	Manual or programmable 15-step 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

Optional Devices and Accessories

pH Probe

DO Probe

Temperature Probe

ORP Probe

Gas Inlet Control Module

Mass Flow Controller

Winpact Humidifer
FS-O-HMD (solid state only)

CO_2 / O_2 Gas Analyzer

Gas Mixing Station

Gas Mixing Station with Mass Flow Controller

External Pump

Brushless Motor

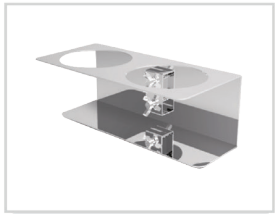
Lighting Module

Composite Handle

Vessel Stand

Headplate Stand

Feeding Bottle Loading Port



Fermentation Bottle Holder

Motor Shaft Protection Cap

Stainless Steel Supporting Foot

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)

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