

Dry Heating System with Single Wall Dish Bottom Vessel and Heating Blanket

Description

This system is designed to cover a wide range of applications such as microbial and cell culture. Based on the cell types, customers are able to choose between different impellers and motor speeds. The blanket heating method provides a precise and sophisticated temperature control. Similar to other systems, a controlled fermentation process can be easily done using the manual or automatic mode from touch screen interface. Compared to pricy SIP systems, we offer large vessel volumes (15 and 20 liter) as an economical and alternative option for your scale-up process. The FS series gives you a high yield, great reproducibility and performance of your fermentation process.



Features

- **Large culture volume** (15 and 20 liter) to facilitate your scale-up process
- **Interchangeable impeller options** provide flexibility and high yields for different cell types
- **Colorful touch screen and Graphical user interface** for easy operation
- **Real-time trend data recording** ensures best fermentation performance
- **2-stage DO cascade** for precise DO(Dissolved oxygen) level control
- **Ethernet remote control** ability allows you navigate and operate your fermentation process from desktop
- **No additional software required**
- **Low voltage DC brushless motor**
- **Quick connectors** for easy operation
- **4 built-in assignable and programmable peristaltic pumps** for automatic pH, Antifoam and Feeding control
- **Full accessories** are offered as a standard package

Application:

Ideal for aerobic and anaerobic microbial (Bacteria, Yeast), temperature sensitive and shear-force sensitive (Mammalian, Insect) cell culture.

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INNOVATIVE CULTIVATION SOLUTIONS

Dry Heating System with Single Wall Dish Bottom Vessel and Heating Blanket includes:

Controller	Dry Heating System Controller
	Built-in rotameter
	4x built-in pump head
Vessel	Single wall dish bottom vessel with heating blanket (includes glass body, head plate, T handling bar, 2 probe adaptors)
	3 pcs of adjustable Ruston-type impeller
	Baffle assembly
	Condenser assembly
	Air sparger
Motor	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 Foam/Level Sensor and 1x Foam/Level Sensor cable
Start-up Kit	Please see Page 43



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Specification

Vessel	Working volume(Liter)	3L	5L	7L	10L	15L	20L
	Total volume(Liter)	3.8	6.8	8.9	12.5	18	24.4
Control unit	Material	Borosilicate glass / 316L stainless steel for headplate and all fittings					
	Control panel	10.4" Color Touch-screen Interface					
	Communication port	Remote control through Ethernet (SCADA)					
		Data export through USB port RS-485 port for system extension					
	Program storage	Up to 59,994 process programs					
	Log data storage	Up to 10 process monitoring data files					
	Cabinet material	ABS front panel and painted iron housing					
	Dimension	Footprint: W x D = 400 x 500 mm (15.75" x 19.69") Height = 740 mm (29.13")					
Rated voltage	110V or 220V ; 50/60 Hz						
Aeration	Inlet gas flow-meter	0, 1 – 10 LPM		0, 2 – 20 LPM		0, 4 – 50 LPM	
	Sparger	Orifice ring					
	Baffle	Removable 316L stainless steel baffles					
Temperature	Heating	Heating blanket					
	Cooling	Cooling coil					
	Range	5°C (41°F) above coolant up to 60°C (140°F)					
	Resolution	0.1°C					
	Probe	Platinum RTD probe (Pt 100)					
	Control mode	Programmable 15 steps PID control					
Agitation	Drive	Removable top brushless motor					
	Speed range	Two agitation motor types: a. For fermentation and cell culture: 30 – 1200 rpm b. For shear-force sensitive cell culture line: 5 - 300 rpm (optional)					
	Resolution	1 rpm					
	Impeller	Two impeller types: a. For fermentation: 3 pcs of adjustable Rushton-type impeller b. For shear-force sensitive cell culture: 2pcs of adjustable Pitched-bladeimpeller (optional) Note: Customized impellers are available					
	Control mode	Programmable 15 steps PID control					
pH	Range	2 -14pH					
	Resolution	0.01 pH					
	Probe	Gel-filled electrode; Autoclavable					
	Control mode	PID, One point control with adjustable head band					
DO	Range	0 – 200%					
	Resolution	0.1%					
	Probe	Polarographic DO sensor; Autoclavable					
	Control mode	Cascade function to response to a. Increase or decrease agitation speed b. Oxygen enrichment module (optional) c. Start substrate feeding program					
ORP	Measurement range	-/+ 2000 mV					
	Resolution	1 mV					
	Probe	Gel-filled electrode; Autoclavable (optional)					
Foam	Probe	316L stainless steel with insulated teflon tube; On/Off control					

Peristaltic pump	Pump number	4 built-in pumps; One external pump (optional, RS-485 interface with relay output)
	Motor type	Precise stepping motor; minimum speed is 1 rpm
	Speed range	0 – 65 rpm
	Resolution	1 rpm
	Control mode	a. Programmable 15 steps feeding control; b. Pump can be assigned for Acid, Base, Antifoam and Substrate
Exhaust	Device type	316L stainless steel condenser
Utility requirement	Power supply	100-120V 50/60Hz or 210-230V 50/60Hz with electrical safety cutoff switch
	Water	2 Bar maximum (29 psi)
	Air	1 Bar maximum, must be dry, oil-free and filtered (14.5 psi)
	Autoclave	For sterilization

Ordering Information

Cat. No.	Description
FS-02-B03P-110/ 220V	Complete Dry Heating Fermentation System for 3L Single Wall Dish Bottom Vessel, 110V/ 220V
FS-02-B05P-110/ 220V	Complete Dry Heating Fermentation System for 5L Single Wall Dish Bottom Vessel, 110V/ 220V
FS-02-B07P-110/ 220V	Complete Dry Heating Fermentation System for 7L Single Wall Dish Bottom Vessel, 110V/ 220V
FS-02-B10P-110/ 220V	Complete Dry Heating Fermentation System for 10L Single Wall Dish Bottom Vessel, 110V/ 220V
FS-02-B15P-110/ 220V	Complete Dry Heating Fermentation System for 15L Single Wall Dish Bottom Vessel, 110V/ 220V
FS-02-B20P-110/ 220V	Complete Dry Heating Fermentation System for 20L Single Wall Dish Bottom Vessel, 110V/ 220V

Controller (includes Dry Heating System Controller, Built-in rotameter and 4x built-in pump head)	
FS-02-110/ 220V	Winpact Dry Heating System Controller, 110V/ 220V
Vessels (includes Single wall dish bottom vessel with heating blanket, 3 pcs of adjustable Ruston-type impeller, Baffle assembly and Air sparger)	
FS-V-B03	3L Single Wall Dish Bottom Vessel
FS-V-B05	5L Single Wall Dish Bottom Vessel
FS-V-B07	7L Single Wall Dish Bottom Vessel
FS-V-B10	10L Single Wall Dish Bottom Vessel
FS-V-B15	15L Single Wall Dish Bottom Vessel
FS-V-B20	20L Single Wall Dish Bottom Vessel
External Heating Device	
FS-H103-110 / 220	Heating Blanket for 3L Single Wall Dish Bottom Vessel
FS-H105-110 / 220	Heating Blanket for 5L Single Wall Dish Bottom Vessel
FS-H107-110 / 220	Heating Blanket for 7L Single Wall Dish Bottom Vessel
FS-H110-110 / 220	Heating Blanket for 10L Single Wall Dish Bottom Vessel
FS-H115-110 / 220	Heating Blanket for 15L Single Wall Dish Bottom Vessel
FS-H120-110 / 220	Heating Blanket for 20L Single Wall Dish Bottom Vessel
Optional item	
FS-O-ORP-101	ORP monitoring kit, includes 120mm ORP probe, ORP probe cable, probe adaptor
FS-O-ORP-102	ORP monitoring kit, includes 225mm ORP probe, ORP probe cable, probe adaptor
FS-O-ORP-103	ORP monitoring kit, includes 325mm ORP probe, ORP probe cable, probe adaptor
FS-O-ORP-104	ORP monitoring kit, includes 425mm ORP probe, ORP probe cable, probe adaptor
FS-O-M3	Agitation Motor, 5-300rpm for 3, 5, 7, 10L Vessel
FS-O-M4	Agitation Motor, 5-300rpm for 15, 20L Vessel
FS-O-OE	O ₂ Enrichment Module, includes Oxygen Enrichment Valve and Adjustable Flow Meter