

## CLF Series

### Compact series in small scale production, education and research

CLF series is a compact, flexible, easy to handle, multifunction and upgradable bioreactor designed for meeting demanding requirements in both research and process development. unrivaled for scale-down and scale-up modelling of various culture processes.

The operation are controlled by inclusive color LCD touch screen monitor powered by SOLDAS-BIO software. The CLF series are able to links to data-logging and control software via serial connection or ethernet. The graphical operation screen is self explanatory and simple to operate. The CLF series integrated software control measurement and multiple parameter such as temperature, agitation, pumps, pH, DO, etc. Special configurations or modifications of CLF series are available on request, providing ultimate flexibility for the user.

Available in bacterial and cell culture versions, CLF series is supplied as a package with everything necessary to take the next step in capacity and control. For example, the basic bacterial package gives you pH control, feeding, sampling and software for data-logging straight out of the box.

The control system provides all the necessary parameters for a wide range of applications. Common handling issues with standard bench-scale bioreactors have been addressed with interchangeable vessel from 1.5L to 14L, different type of vessel (single wall, double wall, etc) which are removable and autoclavable. The CLF series also offer several ready to use packages and customization request due to price demand.

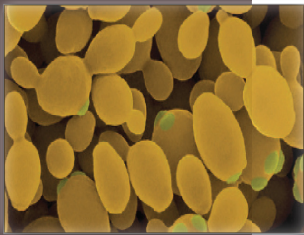
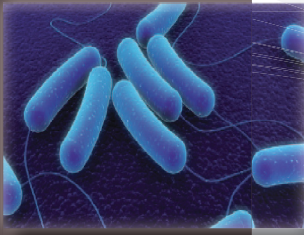


### Ideal For

- Microbial culture growth  
(bacteria, yeast and fungi)
- Cell culture growth (Optional Package)  
(animal, insect and plant cell)
- Transition from shake | tissue culture flask
- Small scale protein expression
- Education and research

*\*The images is for Illustration purposes only*

OVERVIEW



## CLF- Basic

### Compact series offer several features to bring flexibility to the user

#### Key of Features

##### Base unit:

- Compact, autoclavable laboratory fermentor | bioreactor system
- Inclusive 12" color LCD touch screen graphical user interface
- Multiple choices of heating system ( heating block, jacketed vessel, etc )
- Interchangeable single wall vessels with 1.5L, 3L, 5L, 7L, 10L and 14L working volume
- Multiple choice of vessels type (single wall, double wall, etc)
- Integrated TCP/IP, USB host interface for host, printer, stick memory, etc
- Interchangeable impeller provide flexibility and high yields for different cell types
- Stainless steel construction easy cleaning and anti-corrosion
- Removable and autoclavable vessel
- Have better compactibility compare to other series

##### Control:

- The system is powered by inclusive powerful color LCD touch screen graphical user interface
- All the measurements and digital controls are controlled by SOLDAS-BIO software
- Adjustable P.I.D values for temperature, pH and pO<sub>2</sub>
- Individual gas flow rate adjustment
- Capability to engage different fermentation mode such batch, fed-batch, and continuous
- Carry out digital calibration for all pumps via SOLDAS-BIO software
- Real time trend data recording and trend display via SOLDAS-BIO software
- Inclusive standard configuration for the system

##### Standard measurement and control parameters:

- Agitation speed
- Temperature
- pH
- pO<sub>2</sub>
- Antifoam / Level
- Feed
- Oxygen supplementation (optional)
- Gas mixing (optional)
- Substrate (optional)
- CO<sub>2</sub> (optional)



## SPECIFICATIONS

## Lab Fermenter [CLF-Series]

## Culture Vessel

Vessel configuration	1.5L	3L	5L	7L	10L	14L
Total volume	1.5L	3L	5L	7L	10L	14L
Working volume	0.45-1L	0.9-2.1L	1.5-3.5L	2.1-4.9L	3-7L	4.2-9.8L
Material	Borosilicate glass (vessel)   SS 316L (top plate)					
Headplate ports	pH   DO   Anti-foam/ Level   Temperature   3/4 way addition   Sampling   Inoculation   Air Inlet   Cooler   Agitator   Exhaust					
Accessories	Exhaust condenser   Sparger   Cold finger   Heating block					
Design	Single-wall or jacketed glass vessel with stainless steel head					

## Agitation System

Drive motor	High torque magnetic DC motor, 60 W
Agitation speed	100 ~ 1250 rpm
Driving type	Top driven, Mechanical seal, Direct Coupling
Drive coupling	Direct coupling, easily uncoupled for removal of vessel
Impeller	2x6 blades Rushton turbine (bacterial) / 1x3 blades segment (cell)
Baffle	Vertical three / four plates (removable)

## Aeration System

Standard	Air aeration
Microbial (optional)	Air aeration with O <sub>2</sub> supplementation
Cell (optional)	4-gas mixing system (Air, N <sub>2</sub> , O <sub>2</sub> , CO <sub>2</sub> for sparger gassing)
Outlet design	Hose tube OD 10mm
Flowmeter	Air callibrated 5 lpm with needle valve and regulator
Inlet Filter	0.2 µm (interchangeable and autoclavable filter)
Sparger / Material	Ring sparger (microbial)   µ-sparger (cell culture)   / SS 316L
Accuracy	± 5% FS

## Peristaltic Pump

Pump Head	Watson Marlow 102R
Motor speed	14.4 rpm ~ 20 rpm
Silicone tube size	0.5 ~ 4.8mm
Max. Flow rate	0.3 ml/min (0.5mm)   0.72 ml/min (0.8mm)   3.07 ml/min (1.6mm)   11.3 ml/min (3.2mm)   22.9 ml/min (4.8mm)
Pump / Control	4 Pumps / On/Off controlled

## pH Electrode

Electrode	Mettler Toledo or equivalent
Type	Gel filled, autoclavable
Range	2 ~ 12 pH
Size / Material	Ø12 / Glass
Control	P.I.D controlled

# SPECIFICATIONS

## Lab Fermenter [CLF-Series]

### DO Electrode

Electrode	Mettler Toledo or equivalent
Type	Polarographic, autoclavable
Range	0 ~ 100%
Size / Material	Ø12 / SS 316L
Control	P.I.D controlled

### Temperature Electrode

Electrode	BIOFORS
Type	PT100, autoclavable
Range	0 ~ 150°C
Size / Material	Ø4 / SS 316L
Control	P.I.D controlled

### Anti Foam Electrode

Electrode	BIOFORS
Type	Conductivity, autoclavable
Holder / Material	Ø6 / Teflon
Controls	Foam control

### Reagent Bottle

Reagent	Acid   Base   Anti-foam   Feed bottle
Bottle size	4 x 250 mL
Accessories	0.2 µm PTFE filter (25mm), silicone Tubing

### Exhaust Condenser

Type	Double tube water cooled vertical condenser
Material	SS 316L, autoclavable
Accessories	0.2 µm PTFE filter (62mm), silicone Tubing

### Requirement

Power supply	120 VAC or 230 VAC   50Hz   10A
Space dimension	850x600x550 (mm) ~ 1000x800x600 (mm); [1.5L ~ 14L]
Water	Controlled @ 2 barg   hose connector OD 10mm
Gasses	Controlled @ 1.5 barg , particle and oil free   hose connector OD 10mm
Drain	Gravity drain with zero backpressure required   hose connector OD 10mm
Laptop (optional)	Windows 7

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