Fermac 200

Low-cost, modular, bacteriological fermenter equally suited to simple or more specialist applications in both educational or industrial environments.

- Choice of vessel size: 2, 5 or 10 litres
- Powerful, direct drive agitation system
- Pt100 temperature sensor for accurate temperature monitoring by separate controller
- Wrap-around, silicone heater blanket operates at low-voltage and is washable
- pH control module with acid/alkali peristaltic pump dosing and autoclavable, gel filled electrode
- Dissolved oxygen measurement module with stainless steel, autoclavable, polarographic probes

Vessels

Choice of 2, 5 or 10 litre borosilicate glass vessels with rigid frame. The 316L stainless steel top plate features 7 x 12mm and 5 x 6.3mm accessory ports for maximum versatility. O-ring seals are mounted on the sterile side of ports to assure sterility and avoid cross contamination. Removable twin baffle and cooling coil ensure cleaning of the vessel is quick and easy.

Agitation and temperature module

Agitation is provided by a vessel-mounted, powerful d.c. direct drive motor which is locked to the stirrer paddle so that it cannot be removed accidentally. Both agitation and temperature are controlled by the same module, which uses an industrial-grade Pt 100 sensor for stable measurement with temperature displayed on an LED readout. Cooling is on-demand, operated by a valve mounted on a separate service plate, thus separating water and electrics.

pH module

Provides continuous display of the vessel pH which can be switched to control set-point at any time. Dual peristaltic pumps separately dispense acid and alkali to allow acid/base compensation during the fermentation process. A threaded, autoclavable, gel filled electrode provides monitoring and locks firmly into the vessel top plate to prevent accidental movement or damage and provides monitoring.

Dissolved Oxygen module

Provides continuous readout of D.O. on the LED display via stainless steel, autoclavable, polarographic electrodes and includes calibration controls for both zero and gain of the D.O. electrode.

FA405 in use with FA406-08

Specifications

Vessels		Borosilicate glass vessel with 316L stainless steel top plate, integral baffles and cooling coil.		
		2 litre	5 litre	10 litre
Working volume	*litres*	2	5	10
Total volume	*litres*	2.7	6.4	12.5
Ports	*6.3mm dia.*	6	5	7
	12mm dia.	5	7	7
Agitation		Direct drive with powerful 60 watt d.c. motor		
Speed range	*rpm*	50 to 1100 — all models		
Temperature Control		Using Pt100 sensor to measure vessel temperature and low voltage (24V) wrap-around heating system with a cold finger heat exchange for cooling		
Display range	˚C	0 to 100 — all models		
Operating range	˚C	from 5 above cooling water to 50		
Heater	*watts*	60	160	250
pH control		Using autoclavable, gel filled pH electrode, controlled by addition of acid or base using separate peristaltic pumps		
Display range	*pH*	0 to 14 — all models		
Operating range	*pH*	4 to 10 — all models		
D.O. measurement		Using stainless steel, autoclavable, polarographic electrode (supplied as standard) or glass galvanic electrode		
D.O. range	%	0 to 120 — all models		
Module	*mm*	W x D x H — all models		
Temperature/agitator		265 x 240 x 127		
	pH	265 x 240 x 167		
	D.O.	265 x 240 x 187		

continued on next page

Fermac 200 continued

Fermac 200 Starter kits
Comprising vessels as indicated, Fermac 230 module with agitation and temperature only, supplied with support frame, top plate, heater blanket, Pt100 sensor, stainless steel condenser, cooling coil, air sparge tube, port blanking plugs, 3-way inlet, service plate, temp./agitator controller with drive motor and 2 x impellors, supply leads and instruction manual. For 230V 50Hz single phase supplies.

FA400-10 Fermac 200 Starter kit with 2 litre vessel
FA400-20 Fermac 200 Starter kit with 5 litre vessel
FA400-30 Fermac 200 Starter kit with 10 litre vessel

Fermac 200 Fermenter Systems
Standard systems incorporating FA400-series kits, but additionally including D.O. monitor with polarographic probe, pH controller with autoclavable electrode and acid/base peristaltic pumps, supply/sensor leads and basic instructions. For 230V 50Hz single phase supplies (separate supply required for each module).

FA405-10 Fermac 200 fermenter System with 2 litre vessel
FA405-20 Fermac 200 fermenter System with 5 litre vessel
FA405-30 Fermac 200 fermenter System with 10 litre vessel

Accessories
Fermac 280 Anti-foam module
Designed to operate with either a conductivity probe or on a timed basis and can also be used for either level control or as a feed pump. Overall W x D x H 265 x 240 x 87mm. For 230V 50Hz single phase supplies.

FA406-08 Anti-foam module

FerMac 368 Gas Analyser
Measures the oxygen and carbon dioxide in exit gas. Incorporates a flow meter and pump which ensures a constant flow of gas through the analyser independent of varying air sparge rates through the fermentation vessel. CO2 measurement (range 0 to 10%) is by I.R. absorption, O2 measurement (range 0 to 50%) by utilising an electrochemical sensor. Separate LED displays are provided and analogue outputs can be connected to existing fermentation equipment. Overall W x D x H 190 x 330 x 190mm. For 230V 50/60Hz single phase supplies.

FA406-11 FerMac 368 gas analyser

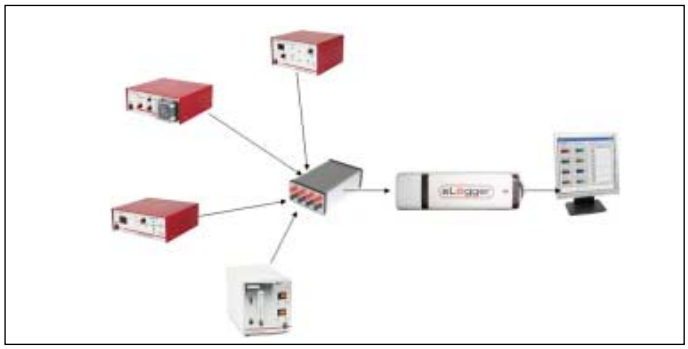
elogger
Fully programmable data logging unit with graphing capability for up to 8 inputs of 0 to 5 or 0 to 10 volts or 0 to 20 or 4 to 20mA d.c. Logging rate adjustable from 5 to 60 seconds or 1 to 60 minutes. The unit is connected to the users' PC by USB serial connection and to the input device by a terminal trip. Supplied with operating software on a USB memory stick.

FA406-14 elogger

FA400

FA406-11

FA406-08



FA406-14 in use (schematic)