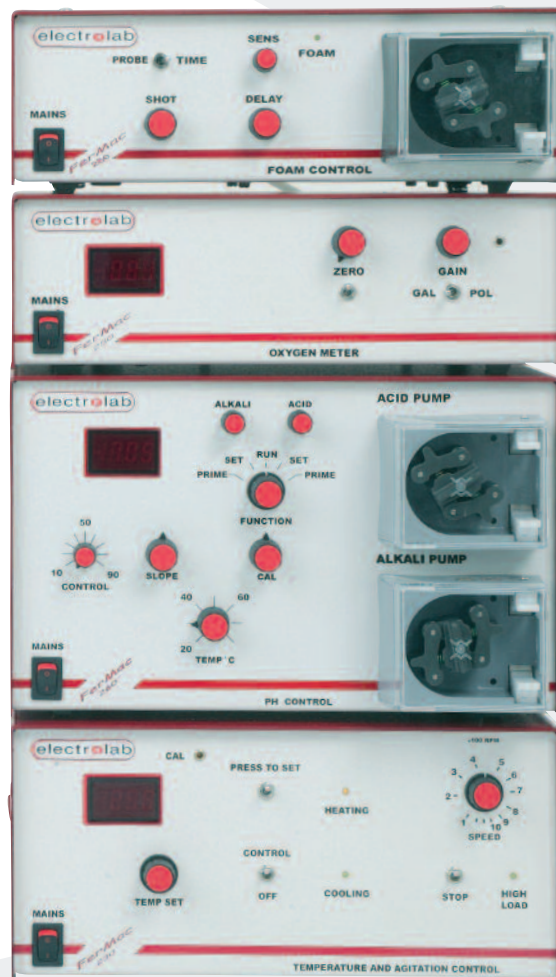
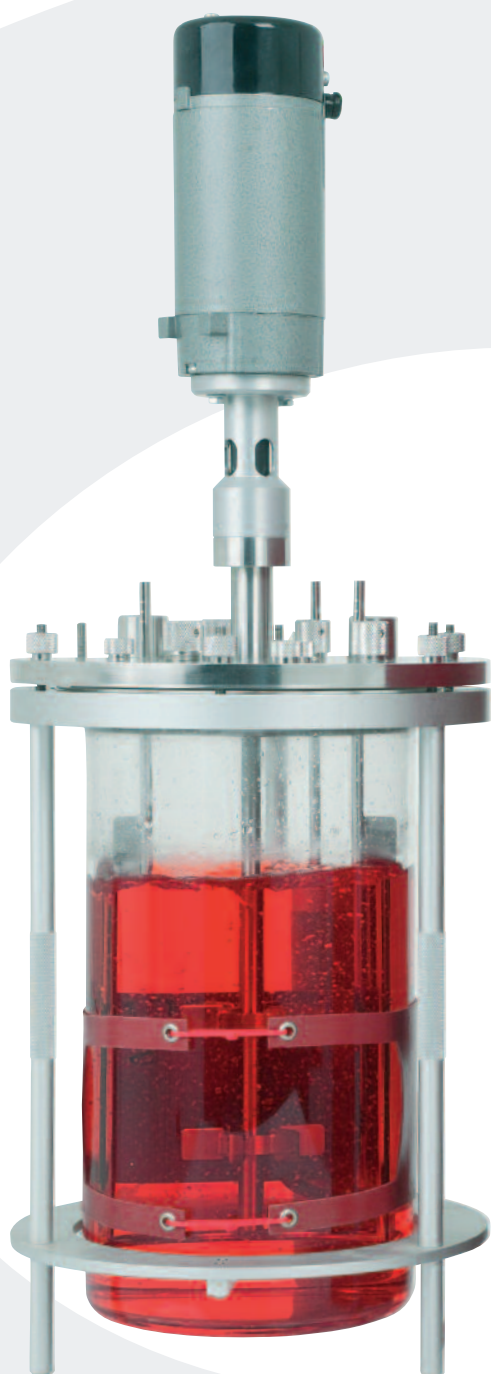


The FerMac 200 Series – Flexible enough to grow with you





*Whether you're a beginner  
in fermentation or a specialist  
- in an industrial laboratory  
or university - the Electrolab  
FerMac 200 will always  
be the right choice for you.*

**electrolab**

## OUTLINE SPECIFICATION

|                            |  |                |                 |
|----------------------------|--|----------------|-----------------|
| <b>Vessels</b>             | <i>Borosilicate glass vessel with 316L stainless steel top plate, integral baffles and cooling coil.</i>   |                |                 |
|                            | <b>2 Litre</b>   | <b>5 Litre</b> | <b>10 Litre</b> |
| Working volume (Litres)    | 2  | 5              | 10              |
| Total volume (Litres)      | 2.7  | 6.4            | 12.5            |
| 6.3mm Ports                | 6  | 5              | 7               |
| 12mm Ports                 | 5  | 7              | 7               |
| <b>Agitation</b>           | <i>Direct drive with powerful 60 watt DC motor</i>   |                |                 |
| Speed Range (rpm)          | 50-1100  |                |                 |
| <b>Temperature Control</b> | <i>Using Pt100 sensor to measure vessel temperature &amp; low voltage (24V) wrap-around heating system with a cold finger heat exchange for cooling.</i>                   |                |                 |
| Range                      | 0-100 °C   |                |                 |
| Operating Range            | From 5 °C above cooling water to 50 °C   |                |                 |
| Heater                     | 60 watts   | 160 watts      | 250 watts       |
| <b>pH Control</b>          | <i>Using autoclavable pH electrode, controlled by addition of acid or base using 2 Watson Marlow peristaltic pumps</i>   |                |                 |
| Range                      | 0-14 pH  |                |                 |
| Operating Range            | 4-10 pH  |                |                 |
| <b>DO Measurement</b>      | <i>Using stainless steel polarographic electrode (supplied as standard) or glass galvanic electrode</i>  |                |                 |
| Range                      | 0-120%   |                |                 |
| <b>Foam Control</b>        | <i>Using either a conductivity probe with variable sensitivity, or timed addition using on/off timers. Supplied with Watson Marlow pump - maximum flow rate 6.4 ml/min</i> |                |                 |
| <b>Power</b>               | 230 volts, 50Hz OR 115 volts, 60 Hz  |                |                 |
| <b>Module Sizes (mm)</b>   | Width  | Height         | Depth           |
| 230 Agitator/Temp Module   | 265  | 127            | 240             |
| 260 pH Module              | 265  | 167            | 240             |
| 250 DO Module              | 265  | 87             | 240             |
| 280 Anti-foam Module       | 265  | 87             | 240             |

*To discuss your specific requirements, arrange a demonstration or obtain further information and pricing, contact us:*

# *The FerMac 200 Series*

*Appreciating that not all users require complex and therefore costly bioreactors, Electrolab introduces its new FerMac 200 Series in response to the demand for a simple, easy-to-use system.*

*The unique FerMac 200 is truly modular - each module is totally independent, having its own electrical supply, which allows you to start with a very simple system adding additional control modules as your requirements change or the budget allows.*



*With the lowest combination of purchase and maintenance cost in the industry, the FerMac 200 sets new standards. Although it has been designed with budget restraints in mind, it is made to the same exacting standards and with the same high quality materials as our more expensive units and incorporates many unique features.*

*Although supplied as individual modules, the system of mounting pillars allows units to be stacked neatly and securely, and the series of interconnecting cables means that only one electrical socket is required.*

## *FerMac 200 Vessel*

*The FerMac 200 vessel is designed exclusively for bacteriological use and is available with working volumes of 2, 5 and 10 litres. The full thickness top plate of 316L stainless steel has all ports machined within it so that O-ring seals are made on the sterile side of the*

*vessel, thereby helping to eliminate crevices and reduce carry-over contamination. An integrated twin baffle and cooling coil ensure that cleaning of the vessel is easy and quick.*





## Agitation

The FerMac 200 agitation system is equipped with a powerful direct drive DC motor, carefully designed with a locking system to ensure that the motor cannot be accidentally removed from the vessel. Uniquely, this locking system also tightens as the motor drives harder, preventing vibration and enabling the agitator to work with the most viscous of media. Agitation speed is easily set by a single control knob.



## Temperature

Temperature control is achieved using an industrial standard Pt100 sensor for stable measurement with the temperature displayed on an LED display. A single push switch changes the display to read the set point parameter.

The vessel is heated by a wrap-around silicone heater mat which operates at low voltage making it safe to use in the wet laboratory environment, and which can be washed if it becomes soiled. Cooling is on demand, operated by a valve mounted on a separate service plate, thus keeping water and electrics strictly segregated.



## pH

After temperature, the next most important parameter is pH. The FerMac 260 pH Control module has continuous display of the vessel pH which, with a single switch, will give you the control set point. Using industry standard Watson Marlow pumps, the FerMac 260 has the additional control feature of compensating for acid/base concentration during a run.

It is normally supplied with threaded pH electrodes which lock into the top plate to prevent accidental movement or damage.





## Oxygen

The FerMac 250 Oxygen Measurement module is able to accommodate both the standard stainless steel polarographic electrodes (normally supplied) and the cheaper glass galvanic electrodes

if required. There is a continuous read-out of DO on the LED display and it has the normal calibration controls for both zero and gain of the DO electrode.



## Anti-Foam

Foaming can be a problem with any fermentation. The FerMac 280 Anti-Foam module is designed to operate either with a conductivity probe or on a timed basis and, to add to its versatility, can also be used for either level control or as a feed pump.



# Associated equipment

With our experience of fermentation processes, we have developed a range of accessories which can help to add something extra to your FerMac 200.



The Electrolab low flow rate pump is specially designed for bioprocessing applications, providing a smooth flow of media and excellent reproducibility over extended periods of time.

The FerMac 368 Gas Analyser measures the oxygen and carbon dioxide in exit gas - two important parameters to give the best indication of growth within a fermentation vessel.



**electrolab**