



Bio-Chrome India

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- 1-User friendly, while providing advanced instrument and automation
- 2-Coast effective and premium quality of components, which eases maintenance and enhance fast delivery
- 3-Modularity derived from the plug and play concept, which allows for expansion of additional functionalities in the future
- 4-Interchangeable 3-types of borosilicate vessels in a range of volumes for different uses
- 5-Precise and adaptable agitation module with simple maintenance
- 6-A simple effective and easy to maintain temperature control system
- 7-Customizable gas module with advanced control system
- 8-ISO 9001-2015, CE, GMP qualified Certification



**MICRO CONTROLLER
BASED FERMENTER**



**PLC TOUCH SCREEN
BASED FERMENTER**



MSME
MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्योग



Laboratory Autoclavable Fermentors/Bioreactors

Laboratory Basic Fermenter/ Bioreactor Total volume Starts from 1L up to 15L

Working volume range 70% of total volume

Model:- Biochrome Series - 1L (A), 2L (A), 3L (S), 5L (A), 7L (A), 10L (A), 15L (A)

Automated Control Panel: System will be provided with 7 inches (12 Inches) PLC colored touch screen based controller with graphic display and control for all the parameters and consisting of following pH/DO/Temp/ Foam control and display/Agitation speed measurement and control with USB serial communication port for data logging. Data can be saved and transferred to PC with the help of Software.

Micro Controller based PID Panel: System is provided with PID Micro controller based control panel with alphanumeric display and control for all the parameters and consisting of following pH/DO/ Temp./ Foam/ RPM and Agitation with USB serial communication port for data logging.

Material of construction of Vessel:

Borosilicate single walled glass vessel with Round Bottom and SS-316L Top plate

Jacketed double walled borosilicate glass vessel with Round Bottom and SS-316L Top plate

Drive motor is mounted to the top plate. Vessel is made as per standards to comply with the requirements of pressure vessel and for bio process equipment.

Borosilicate glass vessels suitable for aerobic Microbial culture, cell culture and tissue culture

Borosilicate glass vessels suitable for anaerobic microbial culture, cell culture & Tissue culture

Top Flange/ Plate:- Made up of SS-316L and having sensor ports for pH/DO/Antifoam/ Temperature and Nozzles for Acid/ Base/ Antifoam/ Air/ Sample Harvesting etc. and port for Inoculation and Exhaust Condenser. The top plate is having Lifting Handles for easy handling of Fermenter vessel. Inner contact parts made up of SS-316L, Gaskets are of EPDM, silicone 'O'rings.

D/H Ratio - 1 : 2.5

Motor/Drive: Magnetically coupled / Direct Coupled with single mechanical seal, Top Driven PMDC motor with tacho-generator feedback having 0 to 1500 RPM and 2 Kg.cm Torque.

Drive: Top Driven having Magnetically coupled drive with Highly Temperature stable magnets (Removing the need of Seal, thus preventing the contamination through Direct coupling)

Agitation speed: 20-1200 rpm

Speed Control: Variable speed control within 50 to 1200 RPM for microbial cell culture fermentation and 20 to 500 RPM for Cell culture, control accuracy of ± 1 RPM.

Impeller, Baffles and Foam Breaker: Material of construction: SS-316L

Impellers:- Rushton turbine type impellers 3 nos and each impeller has 6 blades.

Marine impellers and Pitched Paddle Impeller for cell culture and tissue culture also available on demand basis.

Baffles:- Four numbers Baffles provided for breaking the vortex for proper mixing. Baffles are removable Type.

Aeration: Through Glass Metered needle valve Rotameter which can control 0 to 15 LPM with Ring type air Sparger with inbuilt air pump.

Sparger: Ring sparger for air sparging inside vessel

Sparger Type:- Ring type air sparger with fine pin holes provided towards bottom of the vessel for uniform distribution of Air/ Gas.

Heating and cooling for Temperature Control:- Inbuilt heating element of 50 watt for efficient temperature increase. Cooling SS coil provided for the circulation of chilled/cold water inside the vessel for lowering the temperature below ambient (Chilled water from External source required)

TEMPERATURE CONTROL: PID control having controlling Range from 4 to 70°C and controlling accuracy of $\pm 0.1^\circ\text{C}$ and Measurement Range from 0 to 100°C.

Temperature Sensor: Pt 100 RTD

Condenser:- 0.22 micron PTFE filter for out gas and air filtration. Water inlet and out let for circulation of cold water to maintain the reaction volume or cool down the vapors going out with exhaust gases.

pH MEASUREMENT AND CONTROL: The pumps can also be run in Manual mode. The pH controlling system is complete with pH Probe, Transmitter and pH cable along with Dosing Bottles. The system is having Auto pH Calibration with 2 point or 3 points calibration i.e. either using 2 Buffers or 3 buffers and provided with Uncalibration option. Integrated fixed speed Peristaltic Pump 2 no for addition of acid and base.

pH-Measuring Range:- 0 to 14, Control Accuracy: - ± 0.1 Ph

DO2 Measurement:- Online Polarographic DO₂ probe with SS housing and transmitter Sterilizable at 121.0C at 15 Psi Pressure for 15 minutes. Range: 0 to 100% via PID control. Cascading control of DO through speed (RPM) and recording through control panel with out put of 4 to 20 mA.

Anti foam measurement & Control: Antifoam electrode with cable BNC connector type. SS-316L type, sterilizable & conductive type. Anti foam agent will added through a fixed speed peristaltic pump.

Batch/Fed-batch Culture: One extra peristaltic pump fitted on the control panel for the addition of feed or substrate for fed-batch and continuous culture

Sampling and inoculation system: Easily to draw sterile sample from bioreactor vessel without removing the head plate. ZERO DED sampling.

Autoclave Dimensions(W x H x D): 220 x 459 (527 with condenser) x 212 for 1L,2L,3L

Autoclave Dimensions(W x H x D): 276 x 595 (663 with condenser) x 257 for 5L,7L

Autoclave Dimensions(W x H x D): 286 x 650 (718 with condenser) x 277 for 10L

Chiller Circulator:

Temperature Range : 4°C to below ambient.

Temperature Indication : Digital

Refrigeration System Type: Non CFC

Compressor Rating: 2 TR

Insulation: Polystyrene

The size of storage Tank:-5L and 10L

MOC:-SS304 for contact parts and MS Powder Coated for non contact parts

Pump: Centrifugal, On/Off Control available.

AIR COMPRESSOR:-

Provided with a0.5 HP/1 HP oil less air compressor

Output Pressure : 2-3 Kg/cm², 5-6 Kg/cm²

Flow Rate : 3 lpm/5 lpm/7 lpm/10 lpm/15 lpm

Fitted with Pressure gauge/ pressure switch to automatically Switch ON/OFF with safety valves and 0.22 micron air filter.

DATA LOGGING SOFTWARE: System support for effective documentation and control of parameters with USB Port on the Control Panel to save the data in the PC with data logging software. The Data also gets automatically saved in the Inbuilt Storage memory of control panel.

SCADA Software Features:-

Batch Type data

Initializing a batch

Data acquisition

Set point control

Time profiling control

Manual data entry in batch information

Output in graphics or text mode , Remote controlling features

Alarms/Indicators

Data export to convenient windows based program

Powerful graphic and plotting modules for data analysis

Additional Ethernet port for local remote access from any user within the LAN and external remote access from outside the client's site via safe VPN tunnel.

EXPANDABLE

Gas Mixing Module:Customisable gas module up to 4 gas inlets and gas mixing combinations (air, O₂,N₂, CO₂) on demand basis.

Mass Flow Controller: Imported type mass Flow controller for mixing of single and multi gases on demand basis.

PARALLEL REACTOR:-Parallel reactors and any kind of customizzble reactors are available on demand basis.

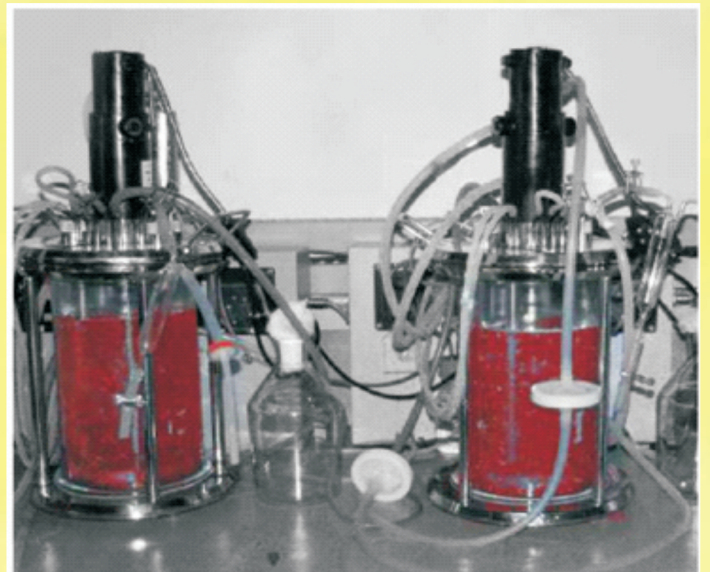
Light Source for photo bioreactor(Illumination Systems)

White light with Intensity measurement and control.Mounting arrangement for the above lamp.

Provided with illumination for efficient and proper control of growth, having variable intensity control with online Light Intensity measurement system with Lux meter.

LED lamp producing light in the range of 470-630 nm wavelength & up to 5000 lux intensity.

Alternative lamps can also be used by the end user, as per requirement.



dd/mm/yy
HH:MM:SS

PROCESS STATUS

<p>TEMPERATURE</p> <p>123.4</p> <p>pH</p> <p>12.3</p> <p>DO2%</p> <p>123.4</p> <p>RPM <input checked="" type="checkbox"/></p> <p>1234</p>	<p>ELAPSED TIME</p> <p>12:12</p>	<p><input checked="" type="checkbox"/> HEATING</p> <p><input checked="" type="checkbox"/> COOLING</p> <p><input checked="" type="checkbox"/> ACID</p> <p><input checked="" type="checkbox"/> BASE</p> <p><input checked="" type="checkbox"/> FEED</p> <p><input checked="" type="checkbox"/> ANTIFOAM</p>
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45° Disc Rushton Impeller



Pitched Blade Impeller



Marine Type Impeller



3 Segment Blade Impeller



Helical Ribbon Impeller