

CELLERAX Laboratory Scale Fermenter 2X7 Technical Information

TECHNICAL DATA SHEET

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Scope of supply

This technical proposal describes a CELLERAX LS-2X7. For supervisory control and data acquisition CELLINA 1.44 is included. The system consists of two 7 l fermenter/bioreactor (total volume), bench-top, pre- assembled unit, supplied with all necessary tubes, valves and instruments, automation, control panel (HMI). The system is designed for aerobic cultivations/fermentations, closed aseptic operations. The control is based on a SCADA control system.

CELLERAX LS-2X7	
VESSEL	
Total Volume	7,0 L
Working Volume	5, 0 L
Ratio D/H	1:3,0
Max temperature	135°C
Operating pressure	< 0,5 bar(g)
Head plate Ports (11)	n.1 port, Gas Sparger Input n.1 port, Gas out/Condenser n.1 port, Sampling/Harvesting n.1 port, Temperature Sensor n.1 port, Agitation Group n.1port, multi addition 4 Nozzles n.1 port, Baffle supporting n.1 port, Foam sensor n.3 ports, Sensors (Pg13.5)
Design	Borosilicate Glass Jacketed Vessel with conical bottom
Materials	Vessel: Borosilicate 3.3 Glass Contact parts: AISI 316 L
DIMENSIONS FOR AUTOCLAVE	
Height	544 mm
Diameter	280 mm
AGITATION	
Drive	Brushless Motor Direct Assembly
RPM	1-1200 RPM, Accuracy 1RPM
Impeller	Select from: Rushton impeller, Marine Impeller, Pitched Blade
THERMOREGULATION	
Control	PID Control for Heating and Cooling, Accuracy: 0.2

AERATION	
Gas control Gas mixing (AIR, O ₂)	2 TMFC for each vessel + 2 Solenoid Valve
Sparger	Ring Type
PERISTALTIC PUMPS	
Boxer 9QX, speed 0 - 107 rpm, volumetric flow to 45 ml/min, application assignable from software	Nutrition-1: variable speed Nutriton-2/Acid: variable speed Base: fix speed Antifoam: fix speed
HMI and SOFTWARE	
HMI	Touch Panel HMI , 15" Color Monitor
Software	CELLERAX, CELLINA Software Control V. 1.44
Data Extraction	Through USB port
Graphs Trends, Real time displaying	Yes
Alarms Management	Yes
Events Recording	Yes
Multi passwords Levels	Yes
OTHER ACCESSORIES	
Sterile Sampling system / Harvest Tube	Yes

TEMPERATURE	
Sensor	PT100
Control range	0 - 45°C
pH	
Sensor	Digital Hamilton sensor – EasyFerm
Control range	0 - 14
Operation temperature	0 - 130°C
Pressure range	0 - 6 bar
Actuator	Cascade to peristaltic pumps for the addition of acid/base solutions
DO	
Sensor	Digital Hamilton sensor – VisiFerm
Control range	0,05 - 200% air saturation
Operation temperature	0 - 130°C
Pressure range	0 - 12 bar
Actuator	Cascade to Agitation, Gas Control, and feedings.
ANTIFOAM LEVEL	
Sensor	CELLERAX Foam sensor

Utilities and Service Connections:

Utilities	Connection	Requirement
Electrical	Universal Power Supply From 100 up to 240 V Cable & Plug	
Facility Water (Inlet)	Quick Connection	1,0-2,0 bar(g) 14,5-29,0 PSI(g)
Process Gas	Quick Connection	1,5-2,0 bar(g) 21,75-29,0 PSI(g)
Exhaust	Quick Connection	Open
Water Out (Drain)	Quick Connection	Close Loop

PCS - Process Control System:

General characteristics

CELLERAX is fitted with a Process Control System based on a software CELLINA 1.44 and Siemens S7 1200 PLC.

The HMI is a Delta 15” touch screen for the unit.

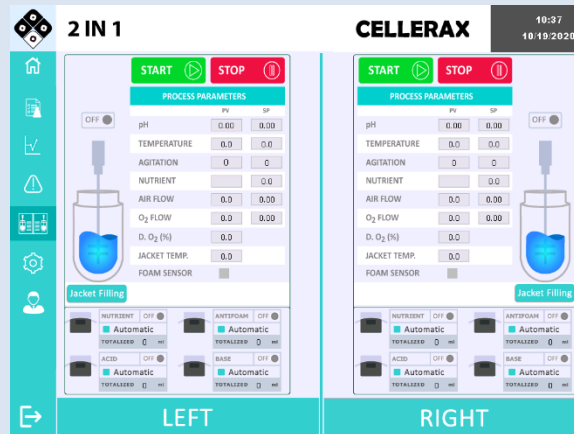
CELLINA 1.44 USER-FRIENDLY SOFTWARE

The software is the user’s best friend in experimental design planning and performing trial runs, as well as analyzing and optimizing media and parameters for cultivation. The graphical user interface enables you to select the software functions intuitively.

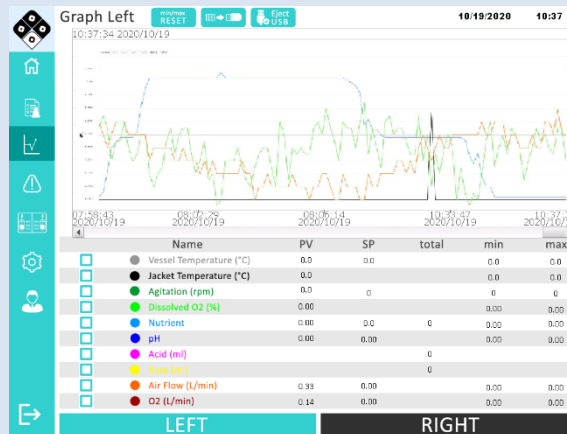
Data extracted are compatible with Window Excel. This software can be developed in compliance with the need of customer.

- Home with Multi-level password protection.

- Synoptic page with manual operation of all the actuators (pumps, valves etc.), parallel synoptic comparison between units



- Continuous trend graphs representation to track, and export data on up to 2 process and set point variables.



- Cascade and profile programs
- Parallel set point settings
- Parallel Parameters Calibration
- Pumps Configurator
- Parameters calibration.
- PID setting
- USB connection for free data extracting.
- Remote control for after sale assistance. 100% assistance from our office via the localized PC of the customer.
- Possibility of saving up to recipes for repeat usage.

Do it on your needs....

CELLINA has been developed via the collaboration of Sharif University and Shahid Beheshti university graduates in our company. The power of engineering was coupled with the science of fermentation process and resulted in a software that can support all of your needs. Furthermore; customer-oriented development of the software is our point of distinction with other company...

