



BlackJar & BlackBox

SINGLE USE
FERMENTERS/
BIOREACTORS



SOLARIS
BIOTECH SOLUTIONS

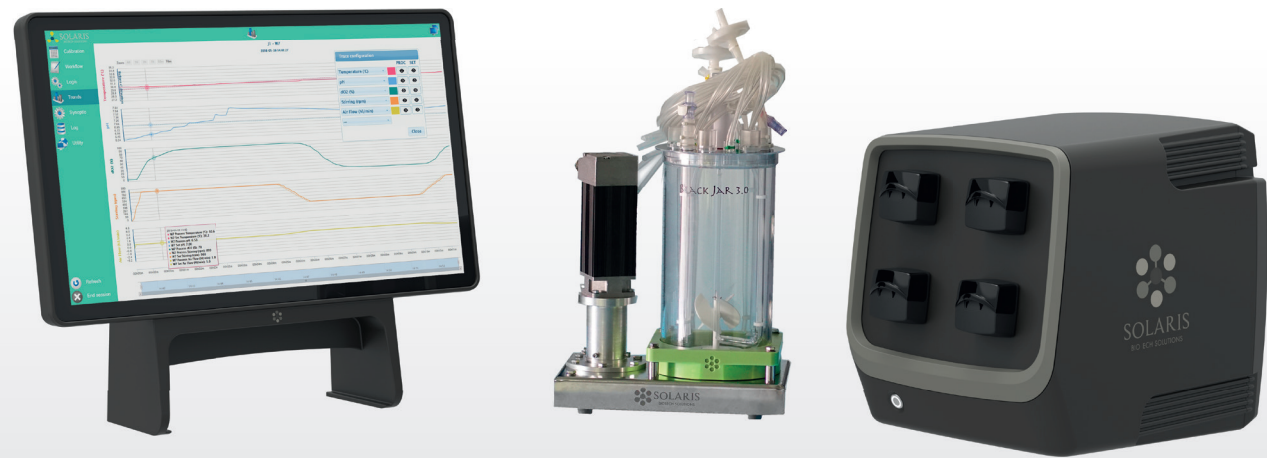
SINGLE USE FERMENTERS/BIOREACTORS

BLACKJAR & BLACKBOX

BlackJar vessels: configurable and customizable pre-sterilized single use ridged wall bioreactors and fermenters.

BlackBox - Solaris single use PCS, parallel process control platform.

The BlackBox PCS offers a versatile and powerful platform for single use systems. There are multiple configurations available for various process sensor outputs, thermoregulation and agitator connectivity, etc. BlackJar offers standard and customizable fermentation and cell culture configurations. BlackBox and BlackJar are compatible with any SU platform, but offer the most versatility in conjunction with each other.



Benefits

- Eliminate cross contamination risk
- Drastically shorten turnaround time between runs
- Integration of Hamilton digital communication as optional
- Flexible PCS I/O design for many vessel sensor configurations



BlackJar vessel series

BlackJar vessels are customizable, pre-sterilized, single-use, ridged wall bioreactor/fermenter vessels available in a range of sizes from 50 ml to 30 L.

Materials

Polycarbonate and Nylon materials

Sterilization and Validation

SU components are sterilized via high precision E-beam irradiated in dual polyester foil bags. Media contact materials are ISO10993, USP class VI.



Benefits

- Single Use bioreactor and fermenter vessels available in 500 ml, 3.2 L, 5.7 L, 30 L, and other total volumes.
- Option to fully customize head plate configuration, impellers, spargers, thermoregulation system, sensors, etc.
- Standard SU bioreactor (SUB) and SU fermenter (SUF) configurations available.
- Many PG 13.5 head plate ports.
- Optional customer preferred dO2 and pH single use sensors integrated and pre-sterilized.
- Single use optical dO2 solution available.
- Long silicon tubing for head plate inlets and outlets.
- Adaptation to any agitator motor.
- Head plate drive or magnetic bottom drive agitator options available.
- Adaptation to any thermoregulation system, electric or liquid jacket.
- Utilization of the best polycarbonate materials pre-sterilized via e-beam radiation.



SINGLE USE FERMENTERS/BIOREACTORS

BlackBox Data sheet

PCS	
Cabinet	S Cube -Black Satin Stainless Steel h 350mm; l 350mm, d 350mm
Stirring	
Drive	Brushless Motor, 0-500 rpm for cultivation or 0-2.000rpm for fermentation (top direct or MST coupling)
	Magnetic stirred table (MST)
Aeration	
Gas control	n.1 TMFC
Gas mixing (AIR, N2, CO2, O2)	numbers of TMFC (up to 5, sparger/overlay)
Off-gas filter heater	
Numbers of TMFC (up to 5)	
Off-gas filter heater	
Thermoregulation	
Temperature sensor Pt100 (length depending from SUB/SUF size)	
PID Control for Heating and Cooling, Accuracy: 0.1°	
Heating blanket	
Re-Usable-Jacket with electrical heaters	
Sensors Inputs	
Input for Hamilton VisiFerm dO ARC 220 mm digital sensor (no sensor included)	
Input for Polarographic/Ampheometric analogue dO probe (BNC and K8 connectors; no sensor included)	
Input for analogue electrolyte-based pH (BNC and K8 connectors; no sensor included)	
Input for digital electrolyte-based pH (no sensor included)	
Input for level sensor (no sensor included)	
Input for foam control (no sensor included)	
Pumps	
N.4 Watson Marlow peristaltic pumps, fixed speed	
External additional peristaltic pumps	
Weight	
Input for Weight measurement	
Digital balance 0,1 gr. accuracy	
Communication	
n.4 Analog Input 0-10V and 0-20 mA/4-20 mA and n.4 Analog Output 0-10V and 0-20 mA/4-20 mA	
PC & Software	
HMI	From 1 to 24 units - 35x37xh36 cm- HMI with 24" monitor
Software	SCADA Solaris Software Control Leonardo 3.0
Solaris Logic Parser Software	
Solaris Fermentation Manager	
Data Extraction	Through USB port or Ethernet/Wi-Fi
Graphs Trends, On line displaying and Printing	
On line Parameters Calibration	
Alarms Management	
Events Recording	
Multipasswords Levels	

Controls

Gas Mixing	
	up to 5 TMFC's (sparger and overlay)
Redox (ORP)	
Sensor	Digital sensor
Sensitivity	57 to 59 mV/pH
Control system	Measuring resident in Leonardo 3.0 software
Control range	±2000 mV
Operation temperature	- 10 -130°C
Pressure range	≤ 6 bar
Conductivity	
Sensor	Digital sensor
Accuracy	±3%
Control system	Measuring resident in Leonardo 3.0 software
Control range	1 - 3000 µS/cm
Operation temperature	0 -130°C
Pressure range	0 - 20 bar
Stirring	
	Stirring through Magnetic Stirrer Table
dCO ₂	
Sensor	Analog sensor
Accuracy	±10% (pCO ₂ 10-900 mbar) ≥ ±10%(pCO ₂ > 900 mbar)
Control system	Measuring resident in Leonardo 3.0 software
Control range	0,00-200% saturation
Operation temperature	-20.0-150°C
Pressure range	0 - 4 bar
Cell density	
Sensor	Digital sensor
Accuracy	Mammalian cells in suspension ±5·10 ⁴ cells/ml - Fermentation ±0.05 g/l dry weight
Control system	Measuring resident in Leonardo 2.0 software
Pressure range	0-3 bar (option 1) 0-10 bar (option 2)
Operation temperature	0-60°C (option 1) 0-80°C (option 2) (max. sterilization temperature 135°C)
Option 1	Dencytee: Total cell density based on turbidity (Two ranges: 10 ⁴ to 10 ⁸ mammalian cells/ml - 0.5 to 100 g/L dry weight)
Option 2	Incyte: Viable cell density based on capacitance (Two ranges: 5x10 ⁴ to 8x10 ⁸ mammalian cells/ml - 5 to 200 g/L dry weight)
Weight	
Sensor	Digital Balance
Accuracy	±0.2 g
Control	Measuring resident in Leonardo 2.0 software
Peristaltic pumps	
WM 114	fixed speed, max. 60 rpm

Chiller

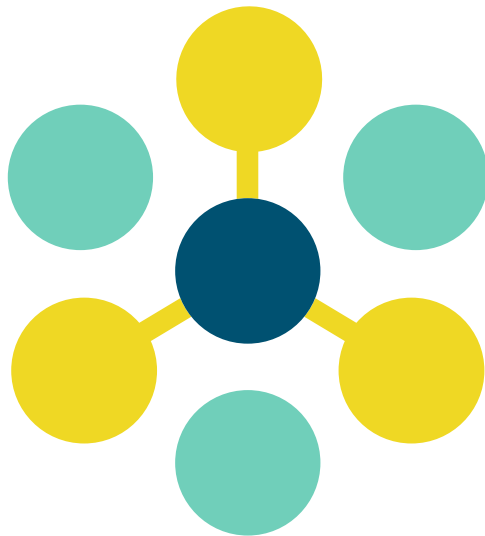
- Optionally the BlackJar can be equipped with a chiller for heat removal from your culture minimizing lab water usage
- Using this system you don't need a water supply line in your lab
- Cost-effective cooling of fermenters
- Easy operation
- Refregerant level monitoring



Chiller data sheet	
Working temperature range	-10°C / +40°C
Temperature stability	±0.5
Power consumption	0.7 kW
Filling volume range	2-8 L
Cooling output at 20°C measured with ethanol	0.25-0.60 kW
Cooling output at 10°C measured with ethanol	0.20-0.50 kW
Cooling output at 0°C measured with ethanol	0.15-0.36 kW
Cooling output at -10°C measured with ethanol	0.09-0.15 kW
Pump pressure max.	0.35-1.30 bar
Pump flow max.	16-35 L/min.

DEFAULT SET UP

OPTIONAL (EXTERNAL)



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