

M SERIES

STANDARD PILOT
STERELIZATION IN
PLACE SOLUTIONS



SOLARIS
BIOTECH SOLUTIONS



M SERIES

The M series includes standard SIP fermenters/bioreactors available in a range of six different volumes from 30 up to 200 litres, with a wide range of options and accessories.



Pilot Scale Process development



Scale up and scale-down studies



Production



Standard industrial equipment

Wheeled skid

Applications

Top agitation, accurate brushless motor. Single mechanical seal. Double mechanical seal, with automatic lubrication through steam condensate loop available in option.

Feedings: autoclavable 4-inlets SALAS valve, or re-sterilizable 4-group diaphragm valves (steam bridge)

Double jacket (side/bottom). Increased heat transfer efficiency. It ensures optimal temperature control and sterilization even at minimum volumes.

Multiple sensors options: pH, dO₂, Redox, Total and Viable Cell density, Conductivity, dCO₂

Gravimetric flow control (option): feed rates controlled through weight measurement.

Non-SIP sampling and harvest valves are included in the standard configuration. Steam SIP lines can be added in option. Manual or automatic sterilization.



Stainless-steel industrial PCS, with a selectable number of peristaltic pumps, choosing between Watson Marlow WM 114, WM 313 and WM 520.

TK connection rather than TC ensures a better cleanability and easier sterilization.

21,5" coloured touch screen industrial HMI
LEONARDO: smart controller designed to provide an high level of automated management of the fermentation/cultivation processes Customizable PID or factory default.

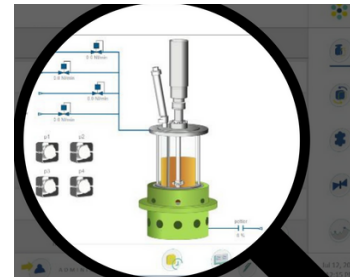
Different gas mixing strategies with up to 5 TMFC or solenoid valves.

CIP system options: n. of removable spray balls or integrated system (recirculating pump + n. of removable spray balls + software automation). N. of spray balls depending on vessel volume.

N.2 heat exchangers and recirculating pump

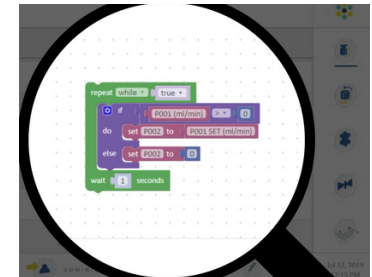
Leonardo

- Innovative SCADA software LEONARDO: a smart and user-friendly controller designed to provide a high level of automated management of the fermentation/cultivation processes
- Full version included in the equipment supply
- Data extraction in .csv format
- Remote access via PC, tablet or smartphone, with QR code scanning or dedicated portal
- Remote control



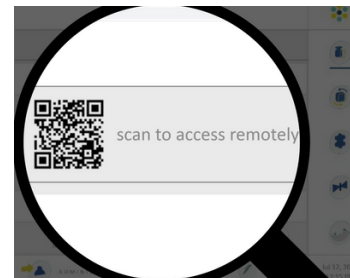
Synoptic

- real time 3D view
- parallel control
- manual control



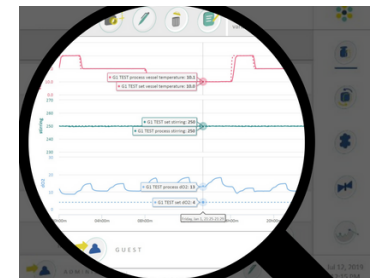
Logic Parser

- customized logic functions
- parallel logic blocks and functions



Remote Control

- unlimited number of profiles editor
- unlimited number of devices to be associated



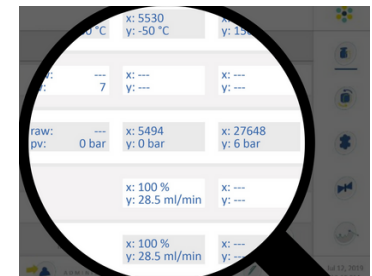
Trends

- custom acquisition time
- up to 6 values simultaneously display
- automatic graph comparison



Workflow

- custom phase manager
- parallel visualization
- cascade settings
- peristaltic pumps function assignable from software



Calibration

- up to three-point calibration
- simultaneous calibration values for parallel work

Vessel						
Solaris Code	M Serie 30	M Serie 50	M Serie 75	M Serie 100	M Serie 150	M Serie 200
Total Volume (liters)	30	50,00	75,00	100,00	150,00	200,00
Ratio D/H	1:3,0	1:3,0	1:3,0	1:3,0	1:3,0	1:3,0
Min. Working Volume (L)	7,50	12,50	18,50	25,00	37,50	50,00
Max. Working Volume (L)	22,50	37,50	56,50	75,00	112,50	150,00
Max. temperature	0-152 °C					
Operating pressure	Up to 4 bar					
Design	Stainless Steel Jacketed Vessel					
Materials	Parts in contact with the culture AISI 316 L - other parts AISI 304					
Finishing	-					

Stirring	
Drive	Brushless Motor, Top Direct Assembly
Impellers	Select from: Rushtons impellers, Marine impellers, Pitched blade

Thermoregulation	
Control	PID Control - Accuracy 0,1 °C Jacket steam / cooling source

Gas Control & Gas Mixing	
Sparger and overlay Gas Control	TMFC
Gas Mixing (Air, CO ₂ , O ₂ , N ₂)	n.1 TMFC + n.4 solenoid valves, n° of TMFC
Sparger type	Select from: Toro type (ring), sintered microbubbling both provided with 0,2 µm filter
Gas Out	Condenser and 0,2 µm filter (both optional)

Options	
Double Mechanical Seal	
Vessel empty sterilization	
Peristaltic pumps (WM 114, WM 313, WM 520)	
Accessories (chiller, steam generator, feed bottles)	
Resterilizable addition System: Steam bridge (manual or automatic)	
Manual or automatic SIP harvest & sampling valves	
Gravimetric flow control (feed rate controlled through weight measure)	
CIP system: removable spray balls or integrated system (recirculating pump and n.2 removable spray balls + software automation)	

Temperature	
Sensor	PT100
Control system	Measuring resident in Leonardo software
Control range	0 - 150 °C

pH	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo software
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 or gas (CO ₂)

dO₂	
Sensor	Digital Optical sensor
Control system	Measuring resident in Leonardo software
Control range	0,05 - 300% air saturation
Operation temperature	-10 - 130 °C
Pressure range	0 - 12 bar
Actuator	Cascade to RPM, gas Control, feedings, ect

Antifoam/Level	
Sensor	Solaris sensor (fixed or adjustable lenght)
Control	Measuring resident in Leonardo software

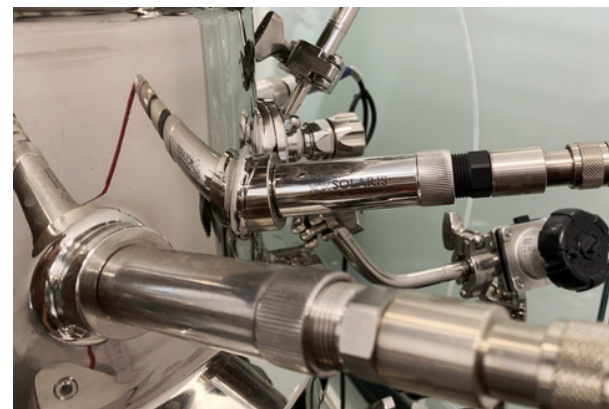
Redox (ORP)	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo software
Control range	± 2000 mV
Operation temperature	-10 - 130 °C
Pressure range	≤ 6 bar

Conductivity	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo software
Control range	1 - 3000 µS/cm
Operation temperature	0 - 130 °C
Pressure range	0 - 20 bar

dCO₂	
Sensor	Analog sensor
Control system	Measuring resident in Leonardo software
Control range	0,00-200% saturation
Operation temperature	-20.0-150 °C
Pressure range	0 - 4 bar

Cell density	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo software
Pressure range	0-3 bar (option 1) 0-10 bar (option 2)
Option 1	Total cell density (NIR-absorbance)
Option 2	Viable cell density (based on capacitance)

Weight	
Sensor	n.3 load cells
Control	Measuring resident in Leonardo software



APPLIED TO DIFFERENT INDUSTRIES



Biotech

Molecular biology , Biochemistry , Cell biology, Embryology , Genetics, Microbiology.



Pharma

Antibiotics, Antitumorals, Human Vaccines, APIs, Hormones, Non-addictive Pain Killers, Monoclonal Antibodies.



Food & Beverage

Meat/cheese/wine starters, Meat Preservatives, Cellular Agriculture, Flavors, Plant-based substitutes for meat products, Low Carb Drinks, Fermented Drinks.



Nutraceutical

Dietary supplements, Food additives.



Cosmeceutical

Bioactive ingredients, Hyaluronic Acid, Q10 Coenzyme.



Biomaterials

Biopolymers, Bioplastics.



Chemical & Petrochemical

Additives, Reagents, Refined commodities, Olefins.



Bioremediation

All microorganisms (bacteria, fungi, yeasts, algae) with the ability to modify toxic species.



Agriculture

Biofertilizers, Biopesticides, Algae Fertilizer.



Animal health & Nutrition

Veterinary vaccines, Animal feeding and supplements.



Probiotics

Lactobacillus, Bifidobacterium, Lactic acid bacteria.



Biofuels

Biodiesel, Bioethanol.