bionet®
ENGINEERING

Bioprocess Lab and Pilot Equipment

F0

F1

F2

F3

M1

M2

MARTA & ROSITA

F1

Bioprocess Lab and Pilot Equipment

VALUE PROPOSITION

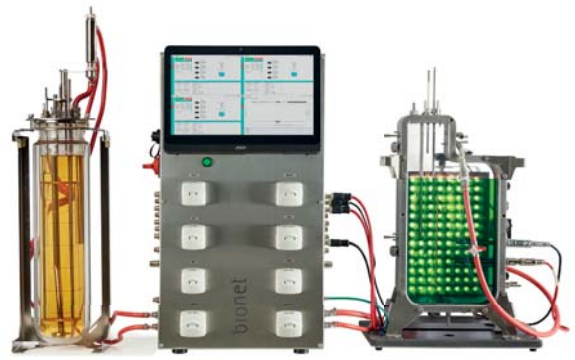
The F1 series include autoclavable bench scale bioreactors/fermenters designed to meet the challenging and widely diverse R&D requirements and small-scale biomolecules production by using microbial and animal cells for biopharmaceutical-, food-, agricultural- and other biotechnological applications.

Though a serially produced and standardized model, to combine the highest technological solutions for the common market demands, it is well thought for its expansion and customization towards a range of special requirements.

KEY BENEFITS

FLEXIBILITY

Several models (single vs. twin) and application versions (microbiology, cell culture, airlift, photobioreactor) within the F1 vessels.

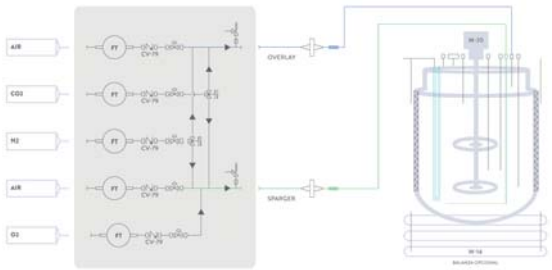


A CONFIGURABLE DESIGN

A modular design, that allows for the expansion of hardware and software capabilities in the form of advanced modules that follow the plug and play concept.

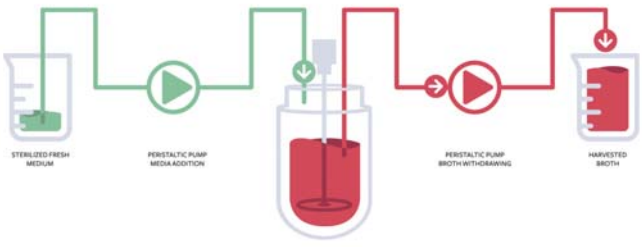
ADVANCED GAS MODULE

• An Advanced Gas Module, for the automatic mixing of up to 4 gases and their inlet via both sparger and overlay. The plugging of this module will enable software capabilities such as the acidification of the broth (i.e. pH control) via acid or CO2, and the use of N2 as an actuator in the DO cascade.



CONTINOUS PROCESS MODULE

• The continuous process module, for the extraction and renewal of media, and the perfusion module for extraction, renewal and separation of biomass from smaller molecular components.



ENHANCING KNOWLEDGE

The availability of spare electronics and software flexibility for the integration of a variety of additional instrumentation and the integration of their measurements into advanced control strategies.

• Example of instruments which can be added beyond the standard configuration are: Optical Density, Viable Cells, Dissolved CO2, Exhaust gas composition, Redox, Weight and many others.

• Most of these instruments have a corresponding ROSITA SW module. These specific SW modules allows the user to select parameter as part of your control strategies and gives additional calculated information (e.g. OTR or OUR) in real time.

GMP COMPLIANT

The F1 is BIONET's option for those who look for a bench scale unit which can be can be designed, built and qualified under GMP guidelines to allow the validation of your processes.

• Our GMP approach is structured so it can be adapted to your specific project and regulatory needs. The upgrade from a standard unit to a GMP one will affect many issues on the design and construction: Technologies, Calibrations, Documentation, Qualification and SW (including ER under CFR 21 c 11).

GMP
CERTIFIED

AUTOMATION

Its inseparable friend is ROSITA, Bionet's proprietary automation software for laboratory use, which allows for a sophisticated and tight automatic control over the processes and provides the user with ways to visualize, analyse and manage the data.

• F1 can be also supplied with MARTA SW in GMP enviroments.

F1 DATA SHEET

● standard o optional

	F1 MB	F1 CC	F1 AL	F1 PBR
GENERAL				
Material	Vessel: Borosilicate glass	Vessel: Borosilicate glass	Vessel: Borosilicate glass	Vessel: Borosilicate glass PBR frame: SS 316
Total footprint on bench (H x W x D) mm)	716-844 x 854-920 x 616 (SINGLE) 766-844 x 1388-1520 x 616 (TWIN)	895-995 x 840 x 500 (SINGLE) 1120-1330 x 840 x 610 (TWIN)	765 x 960 x 620 (SINGLE) 765 x 1500 x 620 (TWIN)	765 x 990 x 620 (SINGLE) 765 x 1500 x 620 (TWIN)
Autoclave dimensions (H x W x D) mm)	459 (540 with condenser) x 220 x 212 (1L & 3L) 595 (680 with condenser) x 276 x 257 (5L & 8L) 650 (735 with condenser) x 286 x 277 (10L)	459 (540 with condenser) x 220 x 212 (2L) 595 (680 with condenser) x 276 x 257 (5L & 8L) 650 (735 with condenser) x 286 x 277 (10L)	696 x 236 x 204 785 x 236 x 204 (With Condenser)	650 x 180 x 400
Multibioreactor configuration	o (TWIN)	o (TWIN)	o (TWIN)	o (TWIN)
VESSEL				
Model	1 3 5 8 10	2 4 6	4	2
Maximum Working volumes (L)	1.3 3 5 8 10	2 4 6	4	2
Minimum working volume (L)	0.4 0.65 0.8 3.9 5.5	0.8 1.7 2.7	Depends on Draft Tube size	1.5
H/D ratio @ maximum working volume	1.63 1.63 1.63 2.4 2.6	1.8 1.8 1.9	5	2
Wall	Jacketed	Jacketed	Jacketed	Double chamber PBR frame
AGITATION				
Agitator	Top mounted Single mechanical seal	Top mounted Single mechanical seal	Airlift Effect	Arilift Effect
Impellers	Standard: 2x or 3x Rushton Optional: Marine/ Pitched blade; or customised	Standard: 1x Marine Optional: customised (upon demand)	-	-
Speed (rpm)	80-2000	80-500	-	-
Motorpower	0.37 kW	0.37 kW	0.37 kW	0.37 kW
GASSING MODULE				
Gas lines	Standard: 2 gas lines (Air and O2) Optional: *Flexible gas module *Advanced gas module	Standard: Advanced Gas Module (4x gas lines and 5x MFCs)	Standard: 2 gas lines and Flexible gas module (to choose which gas) Optional: *Advanced gas module	Standard: 2 gas lines and Flexible gas module (to choose which gas) Optional: *Advanced gas module
Gas inlet to vessel	Standard: Sparger Optional: Overlay accessory	Sparger and Overlay (accessories and simultaneous control)	Standard: Sparger Optional: Overlay accessory	Standard: Sparger Optional: Overlay accessory
Gas flow control and gas mixture	Automatic via MFCs	Automatic via MFCs	Automatic via MFCs	Automatic via MFCs
Gas flows				
If Air	0.2-18 slpm	0-750 sccm	0.2-18 slpm	0.2-18 slpm
If N2	0.2-18 slpm	0-750 sccm	0.2-18 slpm	0.2-18 slpm
If O2	0.1-9 slpm	0-750 sccm	0.1-9 slpm	0.1-9 slpm
If CO2	0.1-9 slpm	0-750 sccm	0.1-9 slpm	0.1-9 slpm
0.22 µm filter in gas lines	●	●	●	●
Condenser	●	●	●	●
Filter at exhaust gas	●	●	●	●
DOSAGE MODULE				
Pumps	Standard: 3x fixed speed Optional: Variable Speed Pumps and Continuous Processing Module (up to 5 extra pumps).			
TEMPERATURE CONTROL				
Cooling	Circuit with automatic valves from external chiller to vessel jacket.			
Heating	Electrical resistance	Electrical resistance	Electrical resistance	Electrical resistance
INSTRUMENTATION				
Basic instrumentation package	pH, DO, temperature, level	pH, DO, temperature, level	pH, DO, temperature, level	pH, DO, temperature, level
EXPANSION POSSIBILITIES				
Advanced Gas Module	o	●	o	o
Variable Speed Pump	o	o	o	o
Continuous Process Module	o	o	o	o
Perfusion module	o	o	o	o
Scales	o	o	o	o
Additional sensors (e.g. Optical Density, Exhaust CO2, etc)	o	o	o	o
Illumination system	o	o	o	o
AVAILABLE EXTRA ACCESSORIES	Bending accessory for Condenser, Additions kit, Sampling kit, Range of dip tubes, Range of turbines, Additional port plugs.			
GMP	o	o	o	o
SOFTWARE				
Installed SW	ROSITA	ROSITA	ROSITA	ROSITA
HMI	Integrated touch PC	Integrated touch PC	Integrated touch PC	Integrated touch PC
Remote access	o	o	o	o
UTILITY REQUIREMENTS				
Chilled water	140-1000 W (depending on volume and SINGLE vs. TWIN) 0.8 barg 6 L/min (SINGLE) 12 L/min (TWIN)			
Compressed air supply	2-3 barg	2-3 barg	2-3 barg	2-3 barg
Power Supply	230V AC 50 HZ 2 kw (SINGLE) 2.5 kw (TWIN)	230V AC 50 HZ 2 kw (SINGLE) 2.5 kw (TWIN)	230V AC 50 HZ 2 kw (SINGLE) 2.5 kw (TWIN)	230V AC 50 HZ 2 kw (SINGLE) 2.5 kw (TWIN)

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