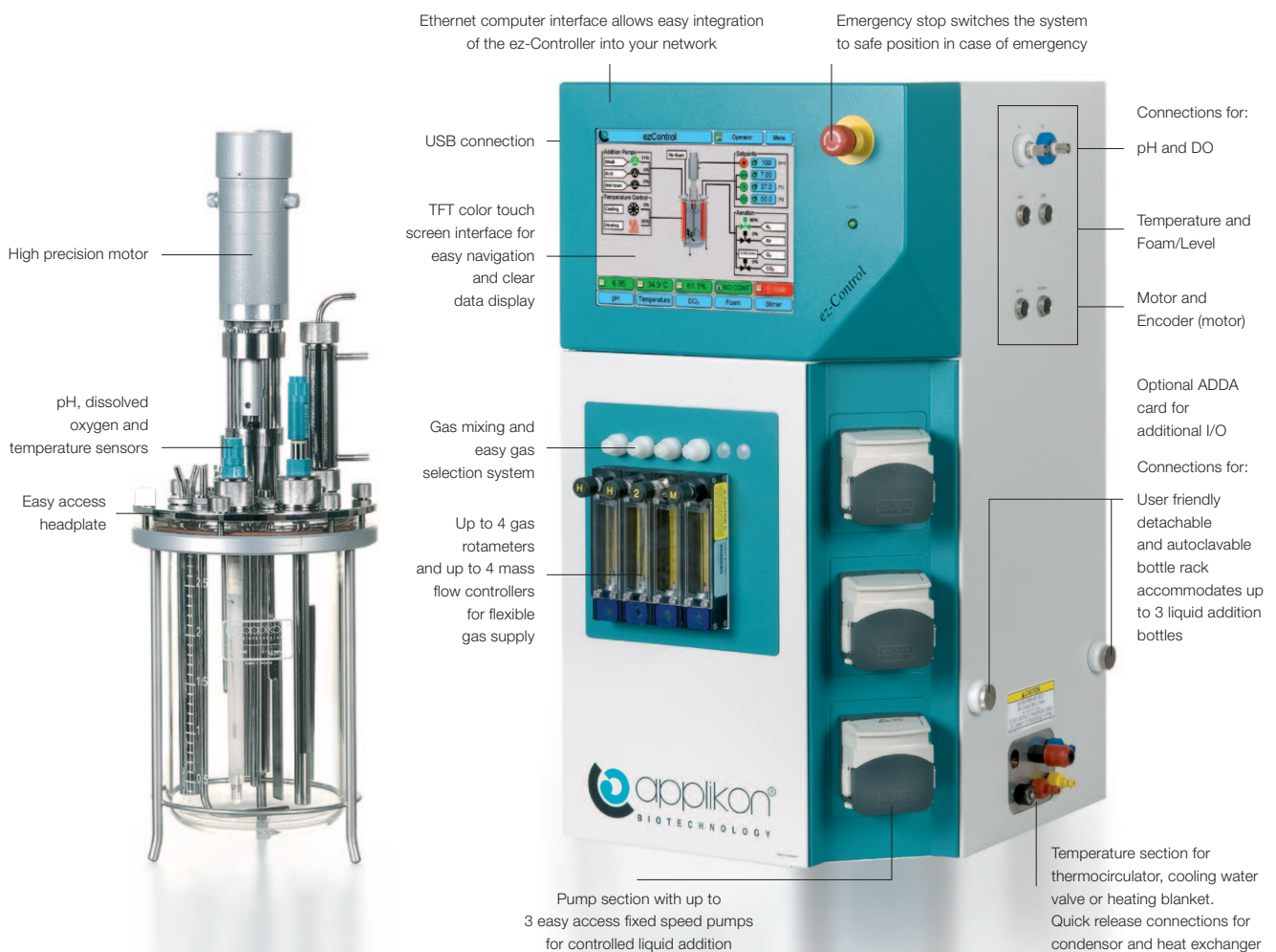


BioBundle, complete cultivation systems

A BioBundle is a complete bioreactor system, equipped with all necessary components and is ready to use “out-of-the-box”. No detail is overlooked: the system is complete with silicone tubing, sample bottles and a “starter kit” including spare parts. The BioBundle is easy to set-up, requires no special skills or tools, easy to learn and easy to operate. BioXpert Lite Software for data acquisition is included. Select one or more of the optional add-on packs to customize your BioBundle. The BioBundle provides a unique

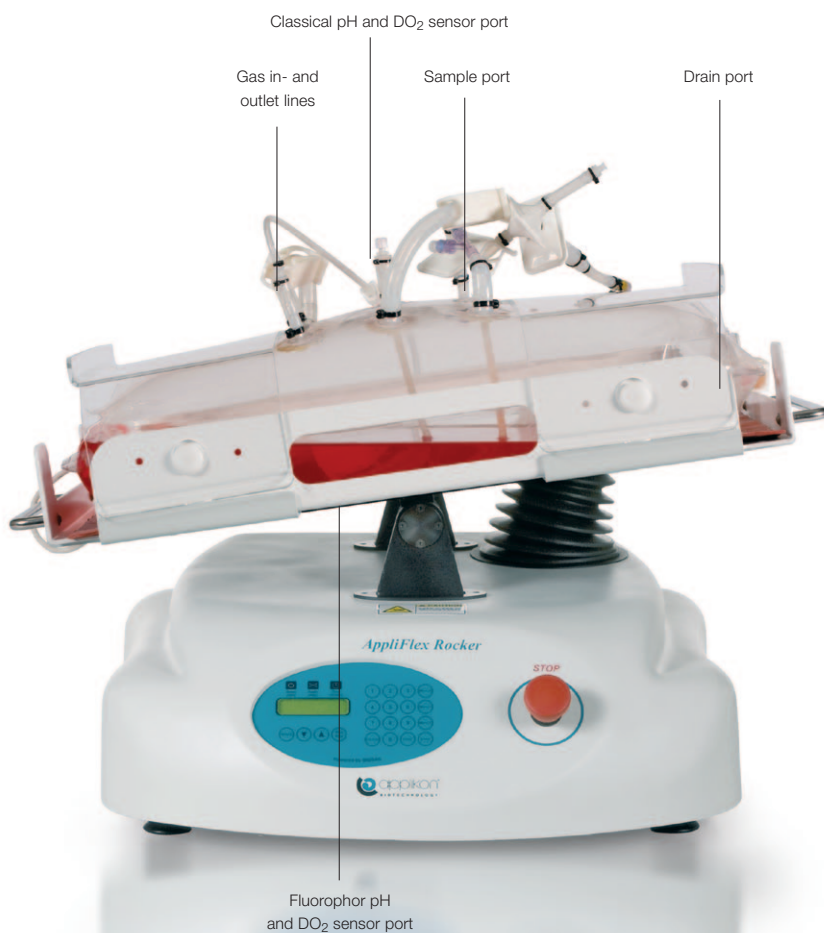


Autoclavable glass bioreactor

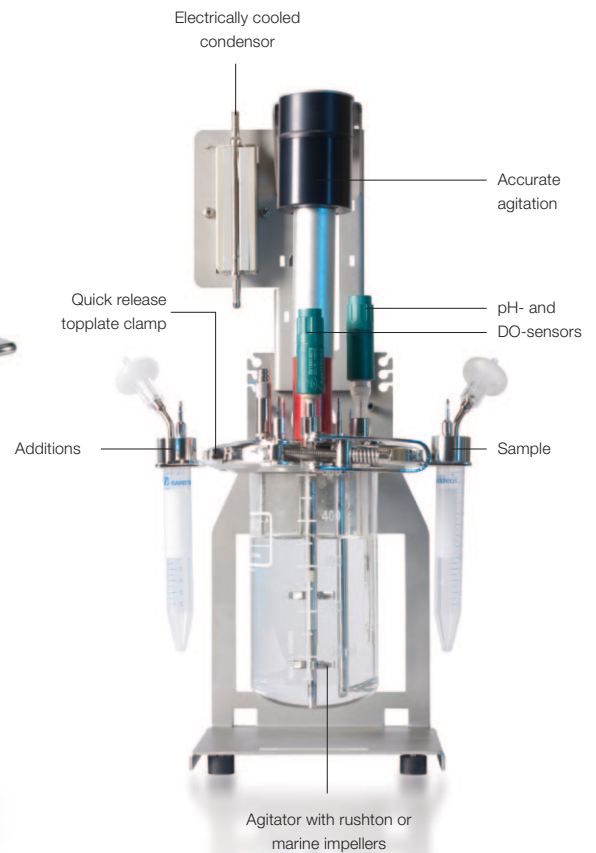
ez-Control

combination of ease of use and sophistication, reducing the time to start-up a process. The system is equipped with the intelligent and powerful process controller: easy and intuitive to operate, such that the user manual might not be needed.

The process controller has control loops for pH, Temperature, Dissolved Oxygen, Foam/Level and agitation and can apply a combination of digital and analog outputs for process control. Actuators such as rotameters, solenoid valves, mass flow controllers, pumps, thermocirculator and others can be controlled. The operator can set P-I-D values, dead-band for pH control, cascade control strategies, and dose monitors for liquid additions. The advanced auto-tuning adaptive control system is part of every bundle and takes the guessing out of PID controller setting. The system can automatically and continuously calculate the best controller settings for every process.



AppliFlex



MiniBio

Modularity and configurability

Although the BioBundle has a pre-set configuration, the whole bioreactor system remains modular and configurable. With simple changes in configuration the BioBundle system can be modified for different applications in a cost-effective way! This applies to changes in process control strategies, in using extra gas or liquids, but also in changing the system into a microbial or cell culture set-up.

Compact design

The BioBundle is designed to occupy as small a footprint as possible. All accessories such as pumps and gas flow control valves are conveniently integrated in a compact console. The compact design reduces the need for expensive lab space.

Software for data acquisition and supervisory control

The BioBundle control system includes an Ethernet connection port to connect to a PC with software for data acquisition or SCADA such as the Applikon BioXpert packages.

BioXpert Lite (data acquisition) is included in this BioBundle. Multiple bioreactors can be connected to one PC for data acquisition.

Optional BioXpert packages are BioXpert 2 and BioXpert W7: SCADA of multiple bioreactors, including cGMP production applications.

Cost Saving

The BioBundle is a pre-packed system. The assembling of the BioBundles in series provides a cost saving which is for the benefit of the customer.

Summarising

Over all some of the benefits Applikon bioreactors provide include:

- dependable and reliable operation = greater productivity and yield
- modular design = less cost in the future
(being able to use same equipment for different applications)
- less downtime due to maintenance = greater economy in operation, higher yield to cost ratio
- simple operation = less operator training required

Specifications

	MiniBioBundle Cell Culture	MiniBioBundle Microbial	BioBundle Cell Culture	BioBundle Microbial	AppliFlex BioBundle
Control system	my-Control	my-Control	ez-Control	ez-Control	ez-Control
Total Volume	250ml, 500 ml, 1000ml	250ml, 500 ml, 1000ml	1L, 2L, 3L, 5L, 7L, 15L, 20L	1L, 2L, 3L, 5L, 7L, 15L, 20L	10L, 20L, 50L
Working Volume	200ml, 400ml, 800ml	200ml, 400ml, 800ml	0.9L, 1.7L, 2.7L, 3.2L, 5.4L, 12L, 16L	0.9L, 1.7L, 2.7L, 3.2L, 5.4L, 12L, 16L	5L, 10L, 25L
Agitator	Lipseal with marine impeller	Lipseal with Rushton impellers	Lipseal with marine impeller	Lipseal with Rushton impellers	Mixing by rocking motion
Aeration	Air supply via sparger	Air supply via sparger	Air and Oxygen supply via sparger	Air and Oxygen supply via sparger and overlay	Air and Oxygen supply via overlay
Exhaust gas	Optional gas outlet condenser	Gas outlet condenser	Gas outlet condenser	Gas outlet condenser	
Sampling	Sample pipe included	Sample pipe included	Sample pipe included	Sample pipe included	Sample line included
	Sample system optional	Sample system optional	Sample system optional	Sample system optional	Sample system optional
pH	Measurement via pH sensor control via liquid alkali pump and CO ₂ gas supply	Measurement via pH sensor control via liquid alkali or acid addition pump	Measurement via pH sensor control via liquid alkali pump and CO ₂ gas supply	Measurement via pH sensor control via liquid alkali and acid addition pump	Measurement via pH sensor control via liquid alkali pump and CO ₂ gas supply
Temperature	Measurement via Pt-100	Measurement via Pt-100	Measurement via Pt-100	Measurement via Pt-100	Measurement via Pt-100
	Heating only via heating blanket	Heating and cooling via Peltier system	Heating only via heating blanket	Heating via heating blanket cooling by cold water in heat exchanger	Heating only via heating blanket
Dissolved Oxygen	Measurement via DO ₂ sensor control via Air and O ₂ gas supply	Measurement via DO ₂ sensor control via Air supply and agitation speed	Measurement via DO ₂ sensor control via Air and O ₂ gas supply	Measurement via DO ₂ sensor control via Air and O ₂ supply and agitation speed	Measurement via DO ₂ sensor control via Air and O ₂ gas supply
Foam	Option	Measurement via Foam sensor control via anti-foam addition pump	Option	Measurement via Foam sensor control via anti-foam addition pump	
Level	Option	Option	Option	Option	
Liquid additions	4 fixed in topplate and 1 septum port	4 fixed in topplate and 1 septum port	3 ports in triple inlet and one inoculum port.	3 ports in triple inlet, one inoculum port and septum port.	One inoculum and alkali inlet.
	One liquid storage system included	Two liquid storage systems included	One liquid storage system included	Three liquid storage systems included	One liquid storage system included
Start-up kit	Included	Included	Included	Included	Included
BioXpert Lite software	Included	Included	Included	Included	Included