



BioBundle Systems

***Complete cultivation systems for microbial and cell culture applications
From the industry leader in Autoclavable Bioreactor Systems***

 **applikon**[®] **A STEP AHEAD**
BIOTECHNOLOGY

BioBundle Cultivation Systems

These are the fastest, easiest and most economical bioreactors to get your cultivation projects up and running. Complete and ready to assemble, pre-packaged BioBundle systems include everything you need for a wide range of applications.

Uncompromising quality and performance

Every BioBundle system is made of the finest materials available and built to the highest standards. All materials in contact with the medium are constructed of either 316L stainless steel, EPDM, silicone rubber, PTFE or borosilicate glass.

Your choice of sizes

BioBundle stirred tank bioreactors are available in 1-liter, 3-liter, 7-liter or 15-liter total volume sizes for microbial or cell culture, including bacteria, yeasts, fungi, mammalian cells and plant cells.

The Appliflex bundles are available in 10-liter, 20-liter and 50-liter total volume.



Single use or re-useable

The bundles are available as a standard autoclavable stirred tank version and as a single-use Appliflex version. The measurement and control in both cases are done by the ez-Control. The single-use system is suited for cell culture and the stirred tank systems are available in cell culture and in microbial culture set-up.

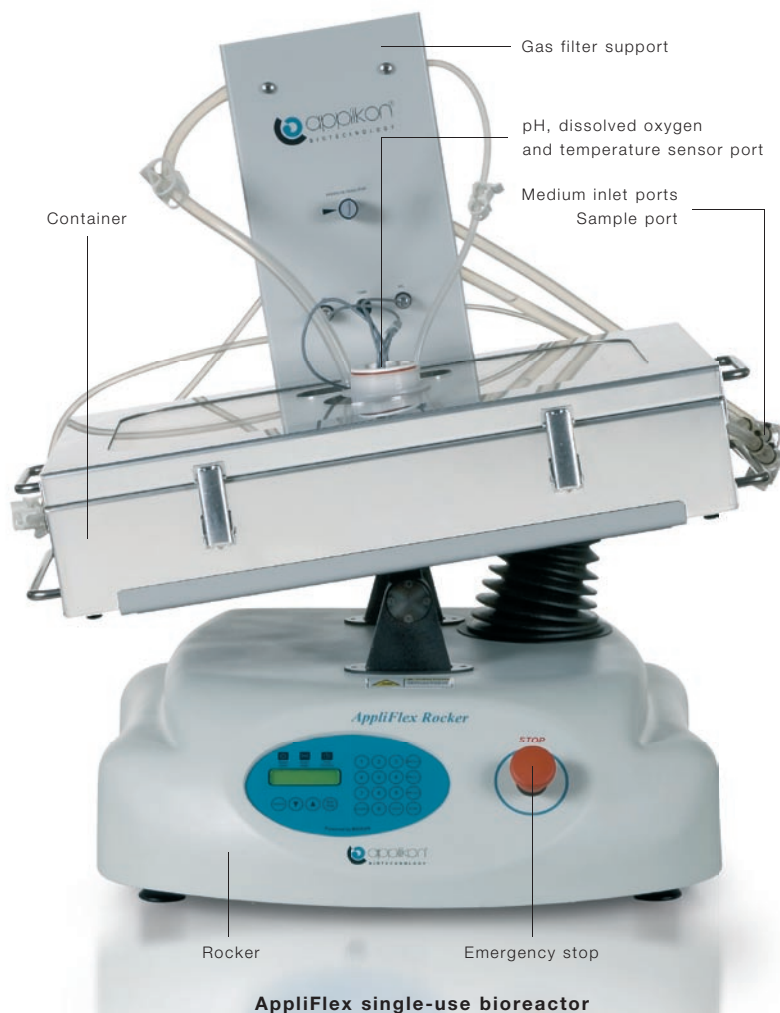
Save time and money

Affordable

By prepackaging BioBundle systems, Applikon realizes significant cost savings, which are passed on to you.

Complete

BioBundle systems are shipped with everything you need to start, including an autoclavable glass or single-use bioreactor, sensors, controller, pumps, flow meters, filters, valves, tubing, clamps, accessories and complete instructions. All you have to add is media and cells.



AppliFlex single-use bioreactor

Powerful

Each BioBundle system includes the versatile ez-Control, which provides programmable control and optimization of system parameters and adapts easily to both autoclavable or steam-in-place vessels.

Easy

The BioBundle Systems are packaged for fast, trouble-free assembly. Setup requires no special skills or tools.

Integrated

Equipment required to operate the BioBundle system is housed in the ez-Control that organizes the work area for easy access and optimum performance.

Ready

BioBundle systems are available for immediate delivery. Call your nearest distributor for information.

ez-Control

Every Bio Bundle comes with an ez-Control system. This system controls pH, Temperature, Dissolved Oxygen, Foam/Level and Agitation. The color touch screen interface easily guides the user through operation of the controller. The adaptive control features allow the user to focus on the process while the controller keeps tight control on the important process parameters. The controller's unique design make it easy to use, provides a small footprint, is flexible and accurate thus giving it capabilities that are beyond any other laboratory process control system.

BioXpert Lite

The data acquisition and data presentation systems BioXpert Lite is supplied with every Bio Bundle system. BioXpert LITE version is used for process data acquisition and visualization through the Applikon ez-Control. The program runs in Windows NT, 2000, XP and Vista Operating System.

Up to 8 bioreactor systems can be monitored simultaneously. The program offers on-line and off-line data acquisition, alarm handling and logbook functions. All measured data can be displayed as synoptic, chart and table. Data can easily be exported to other programs, for example to Excel or Word.

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BioBundle Components

Each BioBundle system component is thoroughly tested and evaluated based on many years of successful usage in a wide range of applications. Below is a partial listing of the components included in the BioBundle system.



1 liter bioreactor



3 liter bioreactor

Components	1 liter	1 liter	3 liter	3 liter	7 liter
	Cell Culture BioBundle	Microbial BioBundle	Cell Culture BioBundle	Microbial BioBundle	Cell Culture BioBundle
Bioreactor headplate	6 ports ❖	6 ports ❖	18 ports	18 ports	18 ports
Vessel total volume	1.25 L	1.25 L	3.2 L	3.2 L	7 L
Vessel working volume	0.9 L	0.9 L	2.7 L	2.7 L	5.2 L
Vessel minimum working volume	0.35 L	0.35 L	0.47 L	0.47 L	2 L
Lipseal stirrer	■	■	■	■	■
Marine impeller	■		■		■
6-bladed turbine impeller		2 each		2 each	
Motor, speed controller, cable	100 W motor	100 W motor	100 W motor	100 W motor	100 W motor
Liquid addition bottle	1 each, 0.5 L	3 each, 0.5 L	1 each, 0.5 L	3 each, 0.5 L	1 each, 0.5 L
Filters	3 each	2 each	3 each	2 each	3 each
Sparger pipe		■		■	
Sparger pipe with porous nozzle	■		■		■
Septum holder			■	■	■
Stainless steel air outlet condenser	■	■	■	■	■
Air overlay pipe	■	■	■		■
Sample pipe	■	■	■	■	■
Heat exchanger	■	■		■	
Thermometer pocket	■	■	■	■	■
Reagent inlet assy. w/ 3 pipes	■	■	■	■	■
Baffles	2 each	2 each		3 each	
Blind plug for 6 mm ports			3 each		
Blind plug for 10 mm ports			2 each	2 each	6 each
Blind plug for 12 mm ports			2 each	2 each	2 each
Blind plug for G ³ / ₄ mm ports			1 each		1 each
Blind plug for 27 mm ports					
pH sensor, holder, cable	■	■	■	■	■
Dissolved O ₂ sensor, holder, cable	■	■	■	■	■
Temperature sensor	■	■	■	■	■
Level/foam sensor, cable		■		■	
ez-Control	■	■	■	■	■
Rotameter for air	100 mL/min	1 L/min	500 mL/min	5 L/min	1 L/min
Rotameter for oxygen	50 mL/min	500 mL/min	50 mL/min	1 L/min	100 mL/min
Rotameter for carbon dioxide	50 mL/min		100 mL/min		100 mL/min
Control valve for rotameter	2 each	1 each	2 each	1 each	2 each
Fixed speed drive, pump head, tubing	1 each	3 each	1 each	3 each	1 each
Heating blanket	■	■	■	■	■
Control valve for cooling water		■		■	
Startup kit	■ *	■ *	■ *	■ *	■ *
Tubing for liquid additions 7.5 meter	■	■	■	■	■
BioXpert Lite	■	■	■	■	■

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7 liter bioreactor



15 liter bioreactor



Single-use bioreactor

7 liter	15 liter	15 liter	AppliFlex 10L	AppliFlex 20L	AppliFlex 50L
Microbial BioBundle	Cell Culture BioBundle	Microbial BioBundle			
18 ports	18 ports	18 ports	fixed configuration	fixed configuration	fixed configuration
7 L	15 L	15 L	10 L	20 L	50 L
5.2 L	12 L	12 L	5 L	10 L	25 L
2 L	2.5 L	2.5 L	1 L ♦	2 L ♦	5 L ♦
■	■	■			
	■				
2 each		2 each			
140 W motor	100 W motor ▼	1000 W motor	700W rocker	700W rocker	700W rocker
3 each, 0.5 L	1 each, 1 L	3 each, 2x1L, 1x0,5L	1 each, 1x0,5L	1 each, 1x0,5L	1 each, 1x1,0L
2 each	3 each	2 each	2 each (imbedded)	2 each (imbedded)	2 each (imbedded)
■	■	■			
	■				
■	■	■			
■	■	■			
■	■	■	fixed configuration	fixed configuration	fixed configuration
■	■	■	fixed configuration	fixed configuration	fixed configuration
■	■	■	■	■	■
■	■	■	fixed configuration	fixed configuration	fixed configuration
3 each		3 each			
1 each	6 each	1 each			
2 each	2 each	2 each			
1 each					
	1 each	1 each			
■	■	■	■ ●	■ ●	■ ●
■	■	■	■ ●	■ ●	■ ●
■	■	■	■ ●	■ ●	■ ●
■	■	■			
■	■	■	■ ✘	■ ✘	■ ✘
10 L/min	5 L/min	50 L/min	500 mL/min	1 L/min	5 L/min
5 L/min	500 mL/min	10 L/min	100 mL/min	100 mL/min	500 mL/min
	500 mL/min		100 mL/min	500 mL/min	1 L/min
1 each	2 each	1 each	3 each	3 each	3 each
3 each	1 each	3 each	1 each	1 each	1 each
■	■	■	■	■	■
■	■	■			
■ *	■ *	■ *	■ ◆	■ ◆	■ ◆
■	■	■	size 14, 25 and 18	size 14, 25 and 18	size 14, 25 and 18
■	■	■	■	■	■

▼ P100 motor includes a 6:1 gear reduction to provide higher torque capability

◆ Without pH/DO sensors ● Choice of single use or reusable ✘ With pressure safety



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❖ **The 1L bioreactor headplate contains the following non-removable components:**

- Thermometer pocket
- Inoculation pipe
- Air overlay pipe
- Sample pipe
- Sparger pipe
- Heat exchanger with two baffles

* **The startup kit for autoclavables consists of the following items:**

- 24 assorted o-rings for port assemblies
- 2 o-rings for stirrer assembly
- 5 rubber septa for septum holder

- 2 clamping rings for pH holder
- 6 lipseals for stirrer assembly
- Allen key, 1.5 mm
- Reducer, male-male, 1/8"- 3/16"
- 25 cable ties
- 2 headplate o-rings
- T-connector, 4.8 x 4.8 x 4.8 mm
- 3 reducers, male-male, 1.6 - 4.8 mm
- T-connector, 3.2 x 3.2 x 3.2 mm
- 6 tubing clamps
- 5 meter norprene food grade tubing size 25
- 5 meter norprene food grade tubing size 16

◆ **Start up kit for AppliFlex consists of the following items:**

- 2x4 kwik clamps for tubing fixation
- 25 Cable ties
- 4 CPC connectors 1/4" with blindstoppers
- 4 CPC connectors 3/8" with blindstoppers
- 25 Syringes for sampling
- 4x reducer male-male 1.6mm-4.8mm



Optional modules for Bio Bundles

Additional tubing pump pack

(cell culture bundles only)

The cell culture bundles are equipped with one fixed speed peristaltic pump for alkali. The additional tubing pump pack includes a built-in pump drive (for the ez-Control) and a pump head. This fixed speed pump can be used for acid addition or via the BioXpert 2 SCADA software for additions of other liquids.

Tubing pump upgrade pack

The standard pumpheads in the BioBundle are Watson Marlow 102 types. This option pack replaces the 102 pumphead with the new 313 pumphead. One upgrade pack is needed per pump.

Mass Flow Control package

The rotameters in the BioBundles can be replaced with mass flow controllers. This option pack is needed for every gas stream where the rotameter is replaced with a mass flow controller.

Gas selection block package

The gas selection block allows mixing and easy re-direction of individual gas flows to sparger or overlay without (dis-)connecting tubing.

Thermocirculator package

All BioBundles are supplied with single wall glass bioreactors. In case a jacketed bioreactor is needed the thermocirculator package offers a jacketed glass vessel and a thermocirculator for heating and cooling of the reactor contents.

Magnetically coupled stirrer

For long term cultures the magnetically coupled stirrer system offers superior sealing of the agitation shaft. This option pack replaces the lipseal stirrer with a magnetically coupled version.

Autoclavable bottle rack

The autoclavable bottle rack eases handling of liquid bottles. The rack attaches to the ez-Control and can be used to carry liquid addition bottles to and from the autoclave for sterilization.

Level or Foam control

The cell culture bundles do not include actuators and sensors for foam/level control. When a foam or level control system is needed for these cultures this option pack includes the sensor and the pump to enable this control loop in the ez-Control.

Sampling pack

The standard bundle comes with a sample pipe but without sample system to enable the operator to use their own preferred sample system. When a standard Applikon sample system is needed this sampling pack includes the sample system and sample bottles. The system attaches to the bioreactor topplate and is easily installed or retrofitted.

ADDA module

When the I/O functionality of the ez-Control is not sufficient for your process the AD DA module for ez-Control offers additional I/O possibilities.

One AD DA module offers:

- 8 Analog inputs (0-10 Vdc)
- 4 Analog output (4-20mA, 0-20mA, 0-5Vdc, 0-10Vdc)
- 8 Digital inputs (24Vdc)
- 8 Digital output (dry contact, maximum switchable 24Vdc 1A)

Each signal can be read or written by BioXpert (V2 or XP). Variable speed pumps and other devices can be directly connected to the AD DA module or in case a larger number of devices is connected one can use the optional AD DA mounting box.

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ADDA module with variable speed pump

This option pack combines the ADDA module with A variable speed pump (1-100 rpm or 0.1-380 ml/min) and all the necessary cables and connections.

The option pack is available with one and with two variable speed pumps.

Lifting brackets ez-Control

The ez-Control weighs approximately 35 kg's. The lifting brackets are metal holders, which can be connected to the left and right side of the ez-Control. Using the brackets two handles are created with which the ez-Control can be lifted and carried to its spot in the laboratory. After placement of the ez-Control the brackets should be removed from unit, since the left side connectors are also used to hold the bottle rack.

BioXpert version 2

BioXpert version 2 offers the capability for supervisory control to the functions of BioXpert Lite. Next to this the program supports additional equipment. BioXpert 2 supports drivers for all Applikon control systems and other brands of bioreactor controllers. Additional devices such as balances can be hooked-up to the program using a standard interface.

BioXpert version 2 offers supervisory control actions that are not present in BioXpert Lite. These control actions can be time based or process events based and can be used to automatically execute simple or more complex process changes.

Preventive maintenance contracts

Applikon BioBundles are supplied in perfect condition to guarantee optimum performance for your bio-process. To maintain the systems in this condition and to guarantee maximum availability of the systems Applikon offers preventive maintenance contracts. Contact you local Applikon distributor for details.



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