

Interchim Innovations

Interbiotech - BioScience Innovations

K05E

DELETED ProductLine – [Please inquire](#) for alternative

Cell Expansion Bioreactor & systems

[CellMax Bioreactors](#)

[CellMax DUO pump](#)

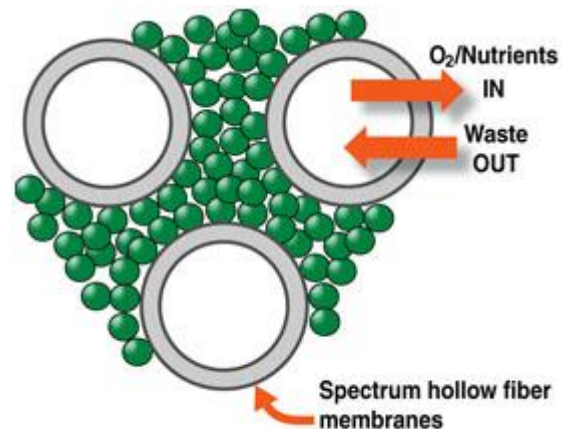
[CellMax Quad pump](#)

[Zymax bioreactors](#)

CellMax Hollow Fiber Bioreactors

CellMax Hollow Fiber Bioreactors are a **low cost alternative to conventional cell culture methods**. Unlike traditional cell culture procedures, T-flasks, roller bottles, and two compartment bioreactors, CellMax Hollow Fiber Bioreactors provide a three dimensional space for in vitro cell culture. Hollow fibers are tubular membranes with pore sizes ranging from 10 kD to 0.3 μ m. Cells grow on and around the large surface area provided by the network of hollow fibers. When perfused with culture media, the hollow fibers allow **oxygen and nutrients to be supplied** to the cells while **metabolic waste products are eliminated**. The process **increases the accumulation of the cell-secreted growth factors** required for optimal growth. Due to the system's efficient delivery of media and removal of waste, the process **uses less culture media** than other methods. Cultures can be sustained for **6 months or more** while maintaining high production yields and titers.

An important feature of the CellMax Bioreactor is the Clave Aseptic Access Ports which **reduce the risk of cell culture contamination**, while provide **easy access to the ICS** (Intra Capillary Space) for monitoring glucose and lactic acid levels. They also provide easy access to the ECS (Extra Capillary Space) for Cell Inoculation or Protein Harvest.



Bioreactor Cartridge Components and Features

- 4 Membrane Chemistries including:
 - Regenerated Cellulose (RC)
 - Polysulfone (PS)
 - Polypropylene (PP)
 - Polyethylene (PE)
 - ProNectin® F coated PE and PP for enhanced cell adherence.
- Surface areas ranging from 100 cm² to 1,6 m²
- Animal Derived Component Free
- Fully Assembled with Flowpath and Preflushed
- Irradiated and Ready to Use
- 100% Integrity tested
- Clave® Aseptic Access Ports

See next page for 'Selection guide' and 'Ordering information'

- Designed for the full range of Cell Culture applications the CellMax Bioreactors feature:

Applications:

- Monoclonal Antibody Production
- Recombinant Protein Production
- Retroviral Vector Production
- Stem Cell Expansion
- Endothelial Cell Shear Stress Research
- In Vitro Pharmacology Studies
- Lymphocyte Expansion
- Blood Brain Barrier Modeling
- Bioartificial Liver, Pancreas and Kidney Devices

CellMax Hollow Fiber Bioreactor Selection Guide:

Selection of a bioreactor is based on a variety of factors, such as cell line, cell culture application, and performance requirements.

Adherent cells for collection of secreted products: => RC or PS membranes

Cells seeded in the ECS will grow on the surface of the membrane and allow secreted products to concentrate into the ECS media. Depending on the size of the secreted product, select an appropriate MWCO to prevent the protein from permeating through the hollow fiber pore.

Suspension cells for collection of secreted products: => RC membrane

The Regenerated Cellulose (RC) membrane is typically preferred. The hydrophilic surface prevents the secreted product from binding to the membrane. This ensures higher titers during harvests and efficient use of the membrane to supply nutrients and eliminate metabolic waste.

Adherent cells for shear stress and gas diffusion: => PP or PE membrane

The hydrophobic membrane allows gas to diffuse freely while preventing passage of peptides and proteins, similar to epithelial tight junctions. The large lumen allows you to seed the cells onto the inner capillary surface (inner side of the hollow fiber) and to measure effects of media flow on the adherent cells. These membranes can be coated to enhance cell adhesion and are offered pre-coated with ProNectin F.

Ordering Information: Hollow Fiber Bioreactor Modules

Part #	Type	Membrane	MWCO	Area (cm ²)	ID (µm)	OD (µm)	ESC (ml)	
FI9930-430-011	RC	Cellulosic	30 kD	1700	200	216	12	
FI9980-430-021	RC	Cellulosic	30 kD	10.000	200	216	60	
R47060-400-004	RC	Cellulosic	20 kD	16.000	192	200	100	
FI9930-430-013	PS	Polysulfone	30 kD	1300	200	320	12	
FI9940-430-023	PS	Polysulfone	30 kD	10.000	200	320	60	
FI9950-430-010	PS	Polysulfone	10 kD	1700	200	280	12	
FI9950-430-020	PS	Polysulfone	10 kD	11.000	200	280	60	
U36760-410-025	PP	Pre-coated Polypropylene	0,2 µm	100	480	630	1,5	
R47030-400-025	PP	Polypropylene	0,2 µm	100	480	630	1,5	
R47020-420-007	PP	Pre-coated Polypropylene	0,5 µm	423	480	430	7	
R47010-400-007	PP	Polypropylene	0,5 µm	423	480	630	7	
R47000-420-015	PE	Pre-coated Polyethylene	0,3 µm	123	380	430	2,3	
R46980-400-014	PE	Polyethylene	0,3 µm	123	380	430	2,3	
R46980-400-012	PE	Polyethylene	0,3 µm	1.500	380	430	12	

Part #	CellMax Accessories	
T33370-100-020	Reservoir Cap, 33 mm	for glass round bottles (500ml & 1L)
T33380-100-025	Reservoir Cap, 38 mm	for plastic square bottles (500ml & 1L)
T33390-100-035	Reservoir Cap, 45 mm	for new Gibco bottles

CellMax modules can be used with [CellMax DUO pump](#) or [CellMax Quad pump](#)

CellMax DUO System

Pump System for 2 CellMax® Hollow Fiber Bioreactors

The CELLMAX DUO System features a two position pump station and supporting media bottle holders. The system accommodates two CellMax Hollow Fiber Bioreactors and media bottles allowing two independent cell cultures to be grown simultaneously. The system is compact and **can be used in standard humidified, temperature controlled CO₂ incubators**. All surfaces can be wiped down with a dilute alcohol solution for easy transfer into standard tissue culture hoods.

The pump operates by depressing the tubing of each hollow fiber bioreactor which causes the culture media to flow from the media bottles and circulate through the bioreactors. This mode of action **reduces the risk of particulates shedding** from the tubing wall and interfering with cell growth. The silicone bioreactor tubing is **gas permeable** which allows CO₂ to diffuse out, maintaining the pH of the culture media.

The Cellmax Duo system design allows **adjustable flow rates from 5-120 mL/min** for each bioreactor. The special push bar design enables the users to start a culture at a low flow rate at one pump station, while maintaining a high flow rate on the opposite pump station. An optional perfusion kit gives the user the ability to create recirculation flow in the Extra Capillary Space (ECS) reducing micro environmental conditions which maybe harmful to the cell cultures.



Practical

- Fits standard Media Bottles
- Adjustable Flow Rates
- Compact design minimizes space requirement

Economical

- Operates within a standard CO₂ incubator
- Uses disposable Hollow Fiber Bioreactors

Reliable

- Cool Running motor does not interfere with incubator temperature
- Efficient Pump design and media delivery extends culture life space requirement



A detachable power cord links the pump base to a peripheral Electronic Control Unit (ECU). The ECU has a magnetized rear surface for easy attachment to the outside surface of an incubator. The ECU contains an 11 position variable speed potentiometer for flow rate control.

Specifications:

Dimensions:	10x13x6,5 inches
Power:	100-240 VAC, 50/60 HZ, Input 0.8A
Flow Rates:	5-120 mL/min
Drive Motor:	Brushless DC Motor
Operating Temp:	20-42°C, 100% Relative Humidity CO ₂ Incubator
Motor Cable:	Insulated Cat5 Tray Cable with Connector
	CE marked

Applications:

Monoclonal Antibody Production
 Recombinant Protein Production
 Retroviral Vector Production
 Stem Cell Expansion
 Endothelial Cell Shear Stress Research
 In Vitro Pharmacology Studies
 Lymphocyte Expansion
 Blood Brain Barrier Modeling
 Bioartificial Liver, Pancreas and Kidney Devices

Ordering Information - CellMax DUO System:

Part No.	Description	Voltage	Flow Range(ml/min)	No. of Flow Speeds
JH4380-CMAX-EUR	Cellmax DUO System CE certified	120-220V	5-120	11

Part #	CellMax Accessories		
T33380-100-145	CellMax Starter Kit Supplies	for maintaining and harvest	art. capillary modules
T33370-100-020	Reservoir Cap, 33 mm	for 500ml & 1L glass	round bottles
T33380-100-025	Reservoir Cap, 38 mm	for 500ml & 1L plastic	squared bottles
T33370-010-006	Replac. ready-to-use Flow Path	for art. capil. module < 1 m ²	
T33380-010-007	Replac. ready-to-use Flow Path	for art. capil. module > 1 m ²	(increased oxygenation)

CellMax Quad System

Pump System for Four Independent & Simultaneous Cell Cultures

The CellMax Quad Hollow Fiber Bioreactor System is a unique system designed expressly for the culture of a variety of mammalian cell types simultaneously.

Featuring a positive pressure displacement pumping mechanism, the CellMax Quad has 12 precisely controlled flow rates and permits long term culturing in hollow fiber bioreactors. The wide range of available flow rates is especially useful for endothelial cell studies under conditions of defined shear stress.

The system comes complete with all components to simultaneously operate up to four separate, independent hollow fiber bioreactors. The system offers maximum flexibility and is ideal for either the simultaneous culture of several cell lines or for repeated studies of a single cell type in one convenient system.



- **Flexible Multiple Cultures:** Operates up to four separate independent cultures
- **Variable Flow rates:** Flow rates for each hollow fiber bioreactor can be independently controlled.
- **Simple:** Operates within a standard CO₂ incubator.
- **Ready-to-use:** Hollow fiber bioreactors supplied ready for cell culture.
- **Versatile:** Spectrum has a wide range of hollow fiber bioreactors and molecular weight permeabilities.

Ordering Information - CellMax QUAD System:

Part No.	Description	Voltage	Flow Range(ml/min)	No. of Flow Speeds
R46931 - CMQUAD-EUR	Cellmax Quad System	220V	0.75 - 30	4

Part #	CellMax Accessories
T33380 -100-145	CellMax Starter Kit Supplies for maintaining and harvest art. capillary modules
T33370 -100-020	Reservoir Cap, 33 mm for 500ml & 1L glass round bottles
T33380 -100-025	Reservoir Cap, 38 mm for 500ml & 1L plastic squared bottles
T33370 -010-006	Replac. ready-to-use Flow Path for art. capil. module < 1 m ²
T33380 -010-007	Replac. ready-to-use Flow Path for art. capil. module > 1 m ² (increased oxygenation)

Zymax® Hollow Fiber Bioreactors

three dimensional cell culture, for Large Scale Cell Culture Applications

The Zymax hollow fiber bioreactor offers the advantage of three dimensional cell culture growth for large applications. Originally designed as a replacement for the Hollow Fiber Bioreactor used with the Biovest CP-2500 system, Zymax bioreactors can be custom designed to fit other large Hollow Fiber Bioreactor Systems. Please contact Interchim for custom design solutions.



Standard Product Specifications and Options:

Housing: Clear polysulfone
Inlet/Outlet Port Connections: 1/2" Hose Barb (HB) or 1/4" Hose Barb (HB)
Side Port Connections: 3/8" Hose Barb (HB) or Luer Lock
Potting: Polyurethane
Surface Area: Up to 3,1 m2 (OD)

Membrane:	Fiber ID	Pore Size
Regenerated Cellulose (RC)	0,2mm ID	30kDa
Polysulfone (PS)	0,2mm ID	10kDa
Polysulfone (PS)	0,2mmID	30KDa

Ordering Information: please [inquire](#)

Related products & documents

Other filters: [DynaGard filters](#) and [MiniKap filters](#) for dead-end filtration
[Krosflo](#)® Tangential filtration modules and systems

[Selection Guide for Dialysis Products](#)

[Products HighLights Overview](#)

[BioSciences innovation catalogue](#)

Information inquire

Reply by Fax : +33 (0) 4 70 03 82 60 or email at interbiotech@interchim.com

I wish to receive the complete documentation about: _____

Name: _____ 2nd name: _____ Position: _____

Company/Institute: _____ Service, Lab: _____

Adress: _____

Zip code: _____ Town: _____

Tel _____ Fax _____ Email: _____