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Specification book

BioXplorer range

Elevate your bioprocessing capabilities with our adaptable and innovative BioXplorer range.



Product Range Overview

Specification point	BioXplorer 100	BioXplorer 400	BioXplorer 400XL	BioXplorer 400P
Number of independent bioreactors	8	4	8	4
Bioreactor material	Glass body, stainless steel lid	Glass body, stainless steel lid	Glass body, stainless steel lid	Stainless steel body and lid
Total volume	200 ml	500 ml	500 ml	500 ml
Minimum working volume	50 ml	120 ml	120 ml	120 ml
Maximum working volume	150 ml	400 ml	400 ml	400 ml
Pressure rating	N/A	N/A	N/A	Up to 10 bar
Stirrer drive	Magnetically driven captive impeller	Magnetically driven captive impeller / Overhead agitation (magnetically coupled)	Magnetically driven captive impeller / Overhead agitation (magnetically coupled)	Magnetically driven captive impeller / Overhead agitation (magnetically coupled)
Auto re-couple	Yes	Yes / N/A	Yes / N/A	Yes / N/A
Liquid additions	2 as standard, options for up to 2 additional liquid feeds	2 as standard, options for up to 2 additional liquid feeds	2 as standard, options for up to 2 additional liquid feeds	2 as standard, options for up to 2 additional liquid feeds / 2 as standard, option for 1 additional liquid feed
Gas additions	1 set of 8 mass flow controllers allowing independent control for each reactor as standard, option for 1 additional set	1 set of 4 mass flow controllers allowing independent control for each reactor as standard, option for 1 additional set	1 set of 8 mass flow controllers allowing independent control for each reactor as standard, option for 1 additional set	2 sets of 4 mass flow controllers allowing independent control for each reactor as standard, option for 2 additional sets
Standard options for MFC calibration	Air, oxygen as option	Air, oxygen as option	Air, oxygen as option	Air, oxygen, nitrogen, hydrogen, carbon monoxide, carbon dioxide or methane
Gas spargers	1	1	1	2
pH control	1-way control (2-way control optional)	1-way control (2-way control optional)	1-way control (2-way control optional)	1-way control (2-way control optional)
DO control	Gas/liquid flow rate, stirrer speed	Gas/liquid flow rate, stirrer speed	Gas/liquid flow rate, stirrer speed	Gas/liquid flow rate, stirrer speed (Optional)
ORP sensing	Non-standard option*	Non-standard option*	Non-standard option*	Optional
BioVIS*	Optional	Optional	Optional	Optional
Foam/Level detection	Optional	Optional	Optional	Optional

* Further details can be found on the instrument specific page

BioXplorer 100

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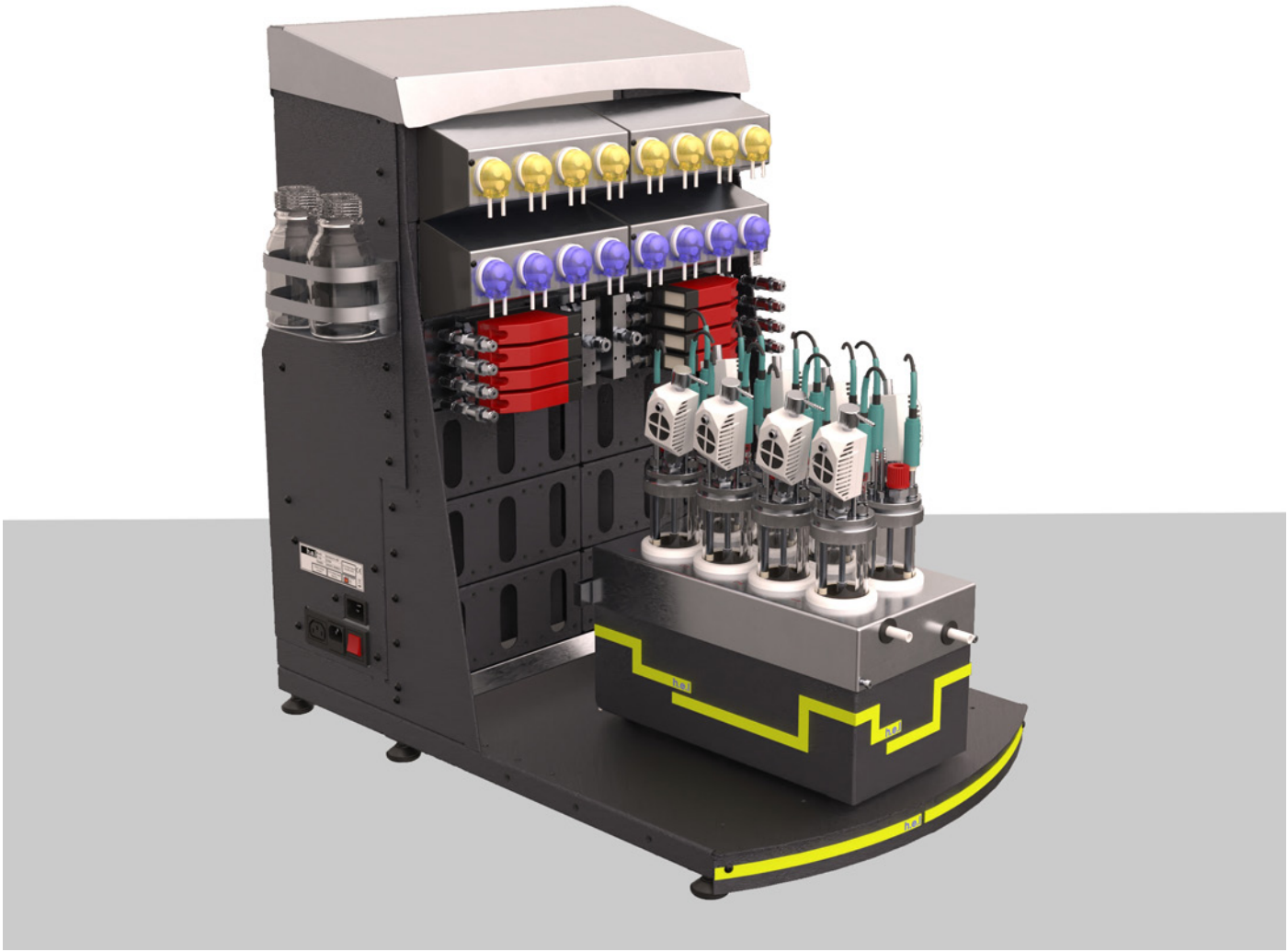
Specification point	BioXplorer 100
Number of independent parallel bioreactors	8
Bioreactor material	Glass body, stainless steel lid
Total volume	200 ml
Minimum working volume	50 ml
Maximum working volume	150 ml
Pressure rating	N/A
Sterilization	Autoclavable bioreactors (including sensors)
Temperature range	0 - 130°C (1)
Temperature resolution	0.1°C
Stirrer drive (3)	Magnetically driven captive impeller
Stirrer speed	250 - 1500 rpm
Auto re-couple	Yes
Standard impellor(s)	Single 26 mm diameter Rushton
Liquid additions with independent control for each bioreactor	2 as standard, options for up to 2 additional liquid feeds
Liquid pump performance	Peristaltic pumps delivering 50 ul/min - 4.5 ml/min
Gas additions	1 set of 8 mass flow controllers allowing independent control for each reactor as standard, option for 1 additional set
MFC performance	Calibrated MFCs - flow rate: 10 - 1000 nml/min
Standard options for MFC calibration	Air, oxygen as option
Gas spargers	1
Exhaust gas	Peltier cooled condenser
Manual sampling	Optional
Liquid removal line	Optional
pH sensing	0 - 14
pH control	1-way control (2-way control optional)
Polarographic DO sensing	Standard
DO control	Gas/liquid flow rate, stirrer speed
ORP sensing	Non-standard option (5)
BioVIS - Understand cell density trends without taking samples	Optional

Specification point	BioXplorer 100
Foam/level detection	Optional
Control PC and software	Window® PC with WinISO control software preinstalled: • Fully independent control of all reactors • Advanced control strategies for stirring and liquid and gas additions based on feedback from sensors, time-based profiles or event detection • Real-time display and logging of all reaction parameters • Easy export of data in a range of formats including .csv
System dimensions (h x d x w) (6)	780 mm x 670 mm x 660 mm



1. For BioXplorer 100, BioXplorer 400 and BioXplorer 400XL, the upper temperature limit for data acquisition from standard DO probes is 40 °C, contact your local H.E.L Group representative to discuss alternative DO probes for use at elevated temperatures. The lower temperature limit requires integrated circulator option.
2. For BioXplorer 400P, the upper temperature limit for data acquisition from standard pH probes and optional ORP probes is 130°C. The optional DO probe measures at temperatures above 135°C. The lower temperature limit requires integrated circulator option.
3. Stirrer drive option must be defined at point of sale.
4. Four bioreactors fed, via distribution valve, by each high pressure metering pump. Max pump flow rate of 80 ml/ml delivers effective max flow rate in range of 15-20 ml for each bioreactor.
5. Please contact your local H.E.L Group representative to discuss availability of non-standard options.
6. Height may be extended from 780 mm to 880 mm and depth may be extended from 670 mm to 770 mm dependent on system options and configuration. Dimensions for core system only; PC and optional circulator excluded.
7. High pressure metering pumps for optional 3rd and 4th liquid feeds sit on a separate plinth (d x w 250 mm x 220 mm); typically placed to adjacent to the core system.

BioXplorer 400

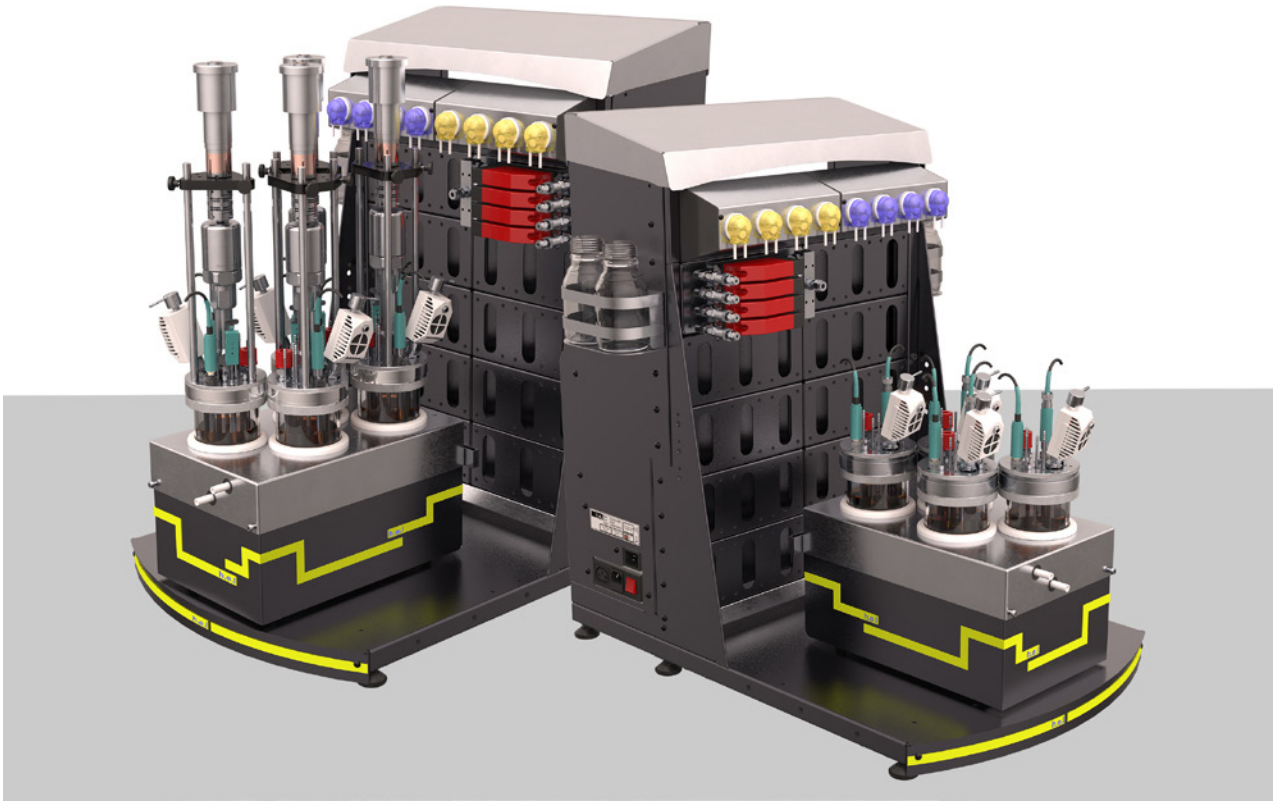
See the BioXplorer 400 in your own laboratory – scan this QR code on your mobile device.

Magnetic agitation

Overhead agitation

Specification point	BioXplorer 400	
Number of independent parallel bioreactors	4	
Bioreactor material	Glass body, stainless steel lid	
Total volume	500 ml	
Minimum working volume	120 ml	
Maximum working volume	400 ml	
Pressure rating	N/A	
Sterilization	Autoclavable bioreactors (including sensors)	
Temperature range	0 – 130˚C (1)	
Temperature resolution	0.1˚C	
Stirrer drive (3)	Magnetically driven captive impeller	Overhead agitation (magnetically coupled)
Stirrer speed	250 – 1500 rpm	20 – 2000 rpm
Auto re-couple	Yes	N/A
Standard impellor(s)	Single 26 mm or 38 mm diameter Rushton (both supplied)	2 x 26 mm or 2 x 38 mm diameter Rushton (2 of both diameter supplied)
Liquid additions with independent control for each bioreactor	2 as standard, options for up to 2 additional liquid feeds	
Liquid pump performance	Peristaltic pumps delivering 50 ul/min – 4.5 ml/min	
Gas additions	1 set of 4 mass flow controllers allowing independent control for each reactor as standard, option for 1 additional set	
MFC performance	Calibrated MFCs – flow rate: 10 – 1000 nml/min	
Standard options for MFC calibration	Air, oxygen as option	
Gas spargers	1	
Exhaust gas	Peltier cooled condenser	
Manual sampling	Optional	
Liquid removal line	Optional	
pH sensing	0 – 14	
pH control	1-way control (2-way control optional)	
Polarographic DO sensing	Standard	

Specification point	BioXplorer 400
DO control	Gas/liquid flow rate, stirrer speed
ORP sensing	Non-standard option [5]
BioVIS – Understand cell density trends without taking samples	Optional
Foam/level detection	Optional
Control PC and software	Window® PC with WinISO control software preinstalled: • Fully independent control of all reactors • Advanced control strategies for stirring and liquid and gas additions based on feedback from sensors, time-based profiles or event detection • Real-time display and logging of all reaction parameters • Easy export of data in a range of formats including .csv
System dimensions (h x d x w) [6]	780 mm x 670 mm x 660 mm



1. For BioXplorer 100, BioXplorer 400 and BioXplorer 400XL, the upper temperature limit for data acquisition from standard DO probes is 40 °C, contact your local H.E.L Group representative to discuss alternative DO probes for use at elevated temperatures. The lower temperature limit requires integrated circulator option.
2. For BioXplorer 400P, the upper temperature limit for data acquisition from standard pH probes and optional ORP probes is 130°C.
   The optional DO probe measures at temperatures above 135°C. The lower temperature limit requires integrated circulator option.
3. Stirrer drive option must be defined at point of sale.
4. Four bioreactors fed, via distribution valve, by each high pressure metering pump. Max pump flow rate of 80 ml/ml delivers effective max flow rate in range of 15–20 ml for each bioreactor.
5. Please contact your local H.E.L Group representative to discuss availability of non-standard options.
6. Height may be extended from 780 mm to 880 mm and depth may be extended from 670 mm to 770 mm dependent on system options and configuration. Dimensions for core system only; PC and optional circulator excluded.
7. High pressure metering pumps for optional 3rd and 4th liquid feeds sit on a separate plinth (d x w 250 mm x 220 mm); typically placed to adjacent to the core system.

BioXplorer 400XL

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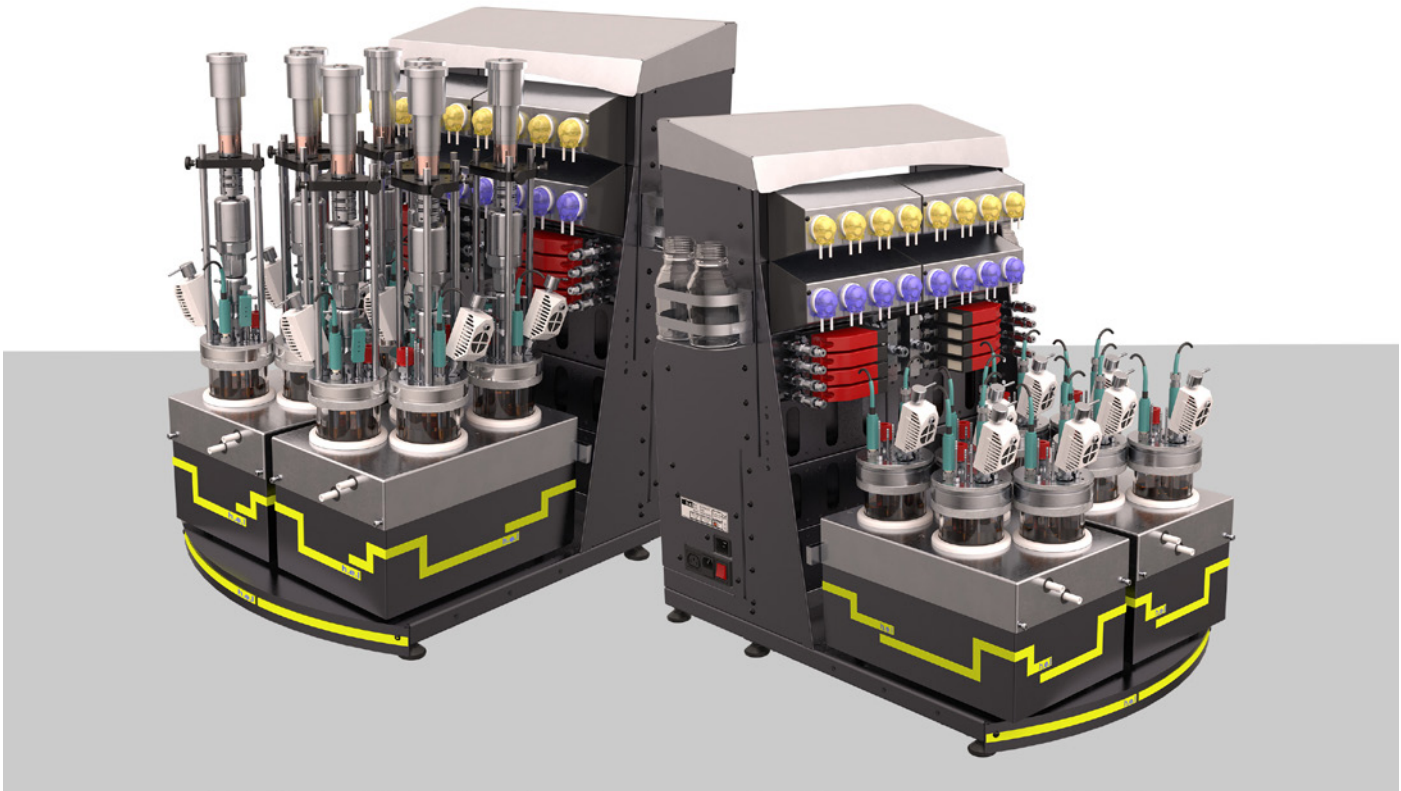
Magnetic agitation

Overhead agitation

Specification point	BioXplorer 400XL	
Number of independent parallel bioreactors	8	
Bioreactor material	Glass body, stainless steel lid	
Total volume	500 ml	
Minimum working volume	120 ml	
Maximum working volume	400 ml	
Pressure rating	N/A	
Sterilization	Autoclavable bioreactors (including sensors)	
Temperature range	0 – 130°C (1)	
Temperature resolution	0.1°C	
Stirrer drive (3)	Magnetically driven captive impeller	Overhead agitation (magnetically coupled)
Stirrer speed	250 – 1500 rpm	20 – 2000 rpm
Auto re-couple	Yes	N/A
Standard impellor(s)	Single 26 mm or 38 mm diameter Rushton (both supplied)	2 x 26 mm or 2 x 38 mm diameter Rushton (2 of both diameter supplied)
Liquid additions with independent control for each bioreactor	2 as standard, options for up to 2 additional liquid feeds	
Liquid pump performance	Peristaltic pumps delivering 50 ul/min – 4.5 ml/min	
Gas additions	1 set of 8 mass flow controllers allowing independent control for each reactor as standard, option for 1 additional set	
MFC performance	Calibrated MFCs – flow rate: 10 – 1000 nml/min	
Standard options for MFC calibration	Air, oxygen as option	
Gas spargers	1	
Exhaust gas	Peltier cooled condenser	
Manual sampling	Optional	
Liquid removal line	Optional	
pH sensing	0 – 14	
pH control	1-way control (2-way control optional)	
Polarographic DO sensing	Standard	

Specification point	BioXplorer 400XL
DO control	Gas/liquid flow rate, stirrer speed
ORP sensing	Non-standard option [5]
BioVIS – Understand cell density trends without taking samples	Optional
Foam/level detection	Optional
Control PC and software	Window® PC with WinISO control software preinstalled: • Fully independent control of all reactors • Advanced control strategies for stirring and liquid and gas additions based on feedback from sensors, time-based profiles or event detection • Real-time display and logging of all reaction parameters • Easy export of data in a range of formats including .csv
System dimensions (h x d x w) [6]	780 mm x 770 mm x 660 mm



1. For BioXplorer 100, BioXplorer 400 and BioXplorer 400XL, the upper temperature limit for data acquisition from standard DO probes is 40 °C, contact your local H.E.L Group representative to discuss alternative DO probes for use at elevated temperatures. The lower temperature limit requires integrated circulator option.
2. For BioXplorer 400P, the upper temperature limit for data acquisition from standard pH probes and optional ORP probes is 130°C. The optional DO probe measures at temperatures above 135°C. The lower temperature limit requires integrated circulator option.
3. Stirrer drive option must be defined at point of sale.
4. Four bioreactors fed, via distribution valve, by each high pressure metering pump. Max pump flow rate of 80 ml/ml delivers effective max flow rate in range of 15–20 ml for each bioreactor.
5. Please contact your local H.E.L Group representative to discuss availability of non-standard options.
6. Height may be extended from 780 mm to 880 mm and depth may be extended from 670 mm to 770 mm dependent on system options and configuration. Dimensions for core system only; PC and optional circulator excluded.
7. High pressure metering pumps for optional 3rd and 4th liquid feeds sit on a separate plinth (d x w 250 mm x 220 mm); typically placed to adjacent to the core system.

BioXplorer 400P

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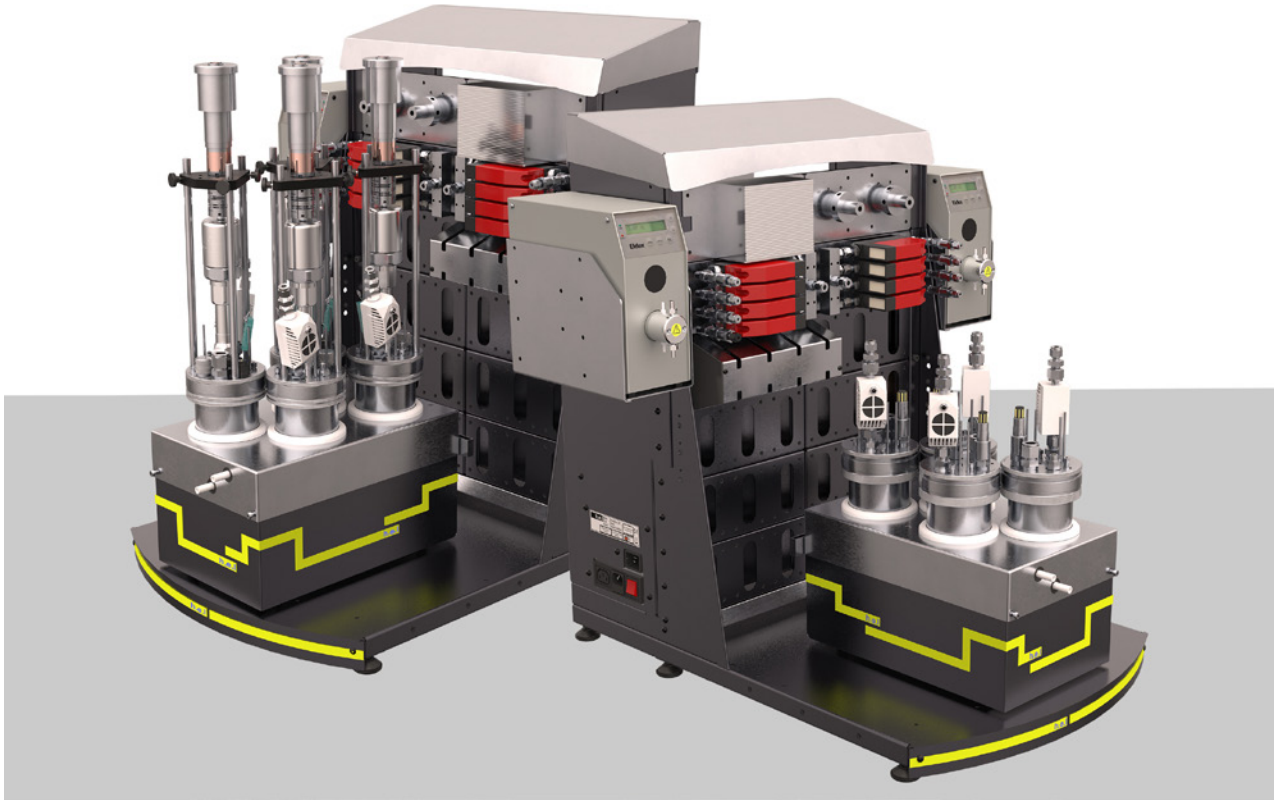
Magnetic agitation

Overhead agitation

Specification point	BioXplorer 400P	
Number of independent parallel bioreactors	4	
Bioreactor material	Stainless steel body and lid	
Total volume	500 ml	
Minimum working volume	120 ml	
Maximum working volume	400 ml	
Pressure rating	Up to 10 bar	
Sterilization	Autoclavable bioreactors (including sensors)	
Temperature range	0 – 135°C (2)	
Temperature resolution	0.1°C	
Stirrer drive (3)	Magnetically driven captive impeller	Overhead agitation (magnetically coupled)
Stirrer speed	250 – 1500 rpm	20 – 2000 rpm
Auto re-couple	Yes	N/A
Standard impellor(s)	Single 26 mm or 38 mm diameter Rushton (both supplied)	2 x 26 mm or 2 x 38 mm diameter Rushton (2 of both diameter supplied)
Liquid additions with independent control for each bioreactor	2 as standard, options for up to 2 additional liquid feeds	2 as standard, option for 1 additional liquid feed
Liquid pump performance	High pressure metering pumps delivering 0.04 ml/min – 80 ml/min (4)	
Gas additions	2 sets of 4 mass flow controllers allowing independent control for each reactor as standard, option for 2 additional sets	
MFC performance	Calibrated MFCs – flow rate: 5 – 500 nml/min	
Standard options for MFC calibration	Air, oxygen, nitrogen, hydrogen, carbon monoxide, carbon dioxide or methane	
Gas spargers	2	
Exhaust gas	Peltier cooled condenser	
Manual sampling	Optional	
Liquid removal line	Optional	
pH sensing	0 – 14	
pH control	1-way control (2-way control optional)	

Specification point	BioXplorer 400P
Polarographic DO sensing	Optional
DO control	Gas/liquid flow rate, stirrer speed (optional)
ORP sensing	Optional
BioVIS – Understand cell density trends without taking samples	Optional
Foam/level detection	Optional
Control PC and software	Window® PC with WinISO control software preinstalled: • Fully independent control of all reactors • Advanced control strategies for stirring and liquid and gas additions based on feedback from sensors, time-based profiles or event detection • Real-time display and logging of all reaction parameters • Easy export of data in a range of formats including .csv
System dimensions (h x d x w) [6]	780 mm x 670 mm x 740 mm [7]



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2. For BioXplorer 400P, the upper temperature limit for data acquisition from standard pH probes and optional ORP probes is 130°C.
   The optional DO probe measures at temperatures above 135°C. The lower temperature limit requires integrated circulator option.
3. Stirrer drive option must be defined at point of sale.
4. Four bioreactors fed, via distribution valve, by each high pressure metering pump. Max pump flow rate of 80 ml/ml delivers effective max flow rate in range of 15–20 ml for each bioreactor.
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About H.E.L Group

H.E.L Group's mission is to work together with chemistry, safety and biotechnology experts to engineer and unleash the full potential of the scientific community. To this end, H.E.L develops and manufactures innovative scientific instruments and software designed to optimize the efficiency, safety and productivity of key processes in chemistry and biology applications.

The H.E.L team of 70 includes highly skilled process and software engineers, based at their extensive research and manufacturing facilities in the UK, as well as sales and support offices around the world.

H.E.L has a long history of solving complex challenges for customers. For more than 30 years the Company has worked with businesses and laboratories globally, providing proprietary automated solutions for the pharma, biotechnology, chemical, battery and petrochemical sectors. H.E.L is accredited with ISO 9001 : 2015

- With a strong focus on the customer, our **service and support** enables our customers to keep working efficiently
- Our **wide range of customizable products** put the customer at the heart of what we do, with solutions designed around their needs

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