

Catalog 2018/2019

Bioprocess products



»Heal, Fuel, and Feed the World.«

Stephen Sherwin

Bioprocess engineers develop and produce a multitude of products and ingredients available today. Their applications are diverse, and the products can be found in pharmaceutical, chemical, and nutrition industries. Stephen Sherwin, former chairman of BIO association put it aptly: "Heal, fuel, and feed the world".

Our Eppendorf bioprocess solutions are successfully used in these industries and in applied research for decades. By exploiting the strong synergies in bioreactor technology and polymer manufacturing, Eppendorf has emerged as a global player and valuable resource to its customers. With an integrated portfolio comprising software, instruments, consumables, and services, we can satisfy the demands of bioprocess development through production. In that way and in line with our corporate mission, we contribute to the efforts of Eppendorf customers worldwide to improve human living conditions.

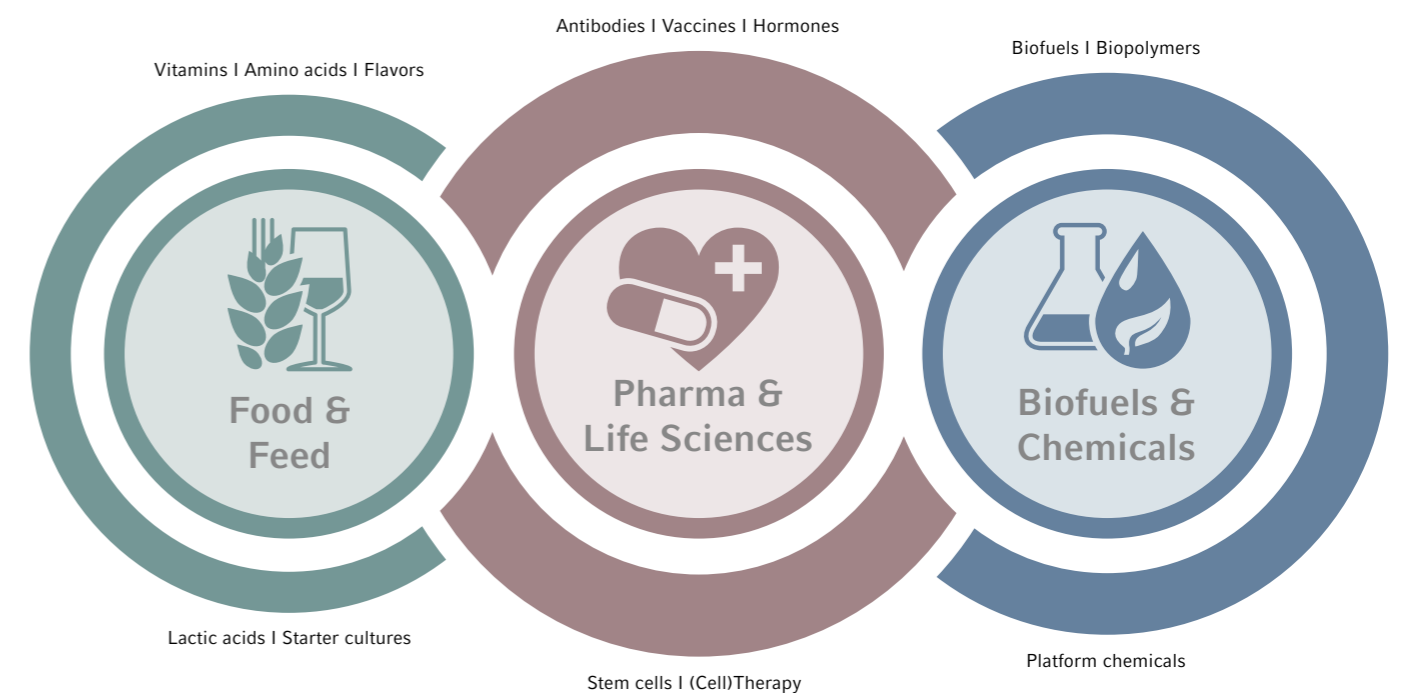


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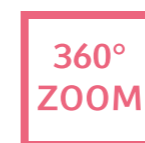


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Websites

Are you looking for more details?

Do you miss further information or simply wish additional details?

On our catalog pages you will find URLs with icons showing you what kind of materials (brochure, website, 360 degree views, and much more) we offer for viewing or downloading.



Eppendorf Services

At Eppendorf Services, we are committed to providing sincere, reliable services and tools to help you maintain premium performance, and maximum safety of your Eppendorf instruments and your workflows. This includes a comprehensive range of carefully designed service solutions performed by our dedicated bioprocess service teams worldwide.

With our services we complement our bioprocess portfolio with Technical and Application Support, Training, and Maintenance Services.

Supporting You



Application Support



Seminars and Training



Technical Support



Maintenance and Certification



Knowledge Base

A comprehensive collection of bioprocess-related application notes, FAQs, and videos can be found on our website under Knowledge Base and Applications.

Bioprocess Performance Plans

Technologically demanding products require first-class service to ensure that the results they produce are optimized. Customers can rely on Eppendorf Service for superior support for their bioprocess products, beginning with startup of the system. The services range from technical support and troubleshooting to delivery of replacement parts on short notice and customer-specific maintenance programs.

Preventive Maintenance

As with all complex technical systems, Eppendorf bioprocess equipment should be maintained regularly to keep all parts in good working order. This maintenance avoids cost-intensive down times and contributes to preservation of value. We recommend a complete preventive maintenance once a year. Additionally, we encourage users to execute certain maintenance actions prior to every run or in regular cycles (e.g. every month). We will be happy to advise.



Technical and Application Support

You can expect the highest standards of support for your products and applications from Eppendorf. Our team of specialists is pleased to help you with advice and assistance for all kinds of questions regarding our bioprocess products and their applications.

Eppendorf Training Center

In addition to support during installation, we highly recommend training for all new bioprocess customers. In addition to this initial training, Eppendorf also offers individual training adapted to the user's requirements like training of new employees or advanced/refresher training for employees already having experience with the bioprocess systems in place. The structure and methods of the training can be tailored to the customer's requirements from a general overview to a very detailed session on specific products or issues. Training in small groups makes it possible to provide individual guidance.

www.eppendorf.com/epServices

Bioprocess Solutions for Various Industries and Applications: Discover Our New Website

Information on bioprocessing are now available in a central location: Find research examples, application notes, and white papers on topics like bioprocess development, stem cell cultivation, scale-up, and many more. Get to know our customers working in biopharmaceutical, biochemical, and food/feed laboratories. Get engaged in webinars, see our training offering and do not miss any news and events related to bioprocessing.

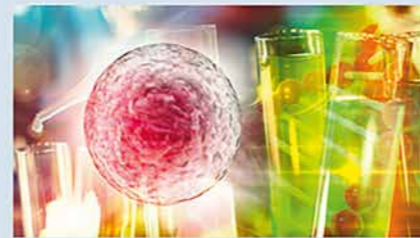
Addressing Our Customers' Challenges



Vaccines
There is a rising demand for development of new vaccines. Eppendorf bioprocess equipment helps companies in setting up flexible processes, optimized to balance costs and time-to-market.



Antibodies/hormones
Improved cultivation techniques such as perfusion and new possibilities in data handling and automation enhance development of antibodies, therapeutic proteins and active ingredients.



Stem cells
Stem cell-based technologies are promising approaches for therapy and drug discovery. For commercialization, researchers are evaluating standardization of their cultures and efficient scale-up.

www.eppendorf.com/bioprocess



The Eppendorf App



Searching for the Right Spare Part? Have a Look at the Eppendorf App!

In the Eppendorf App, you find optimized product information tailored to mobile devices, as well as helpful tools for your daily laboratory work. We now extended the catalog functionality of the app, offering you a better overview of the components of your bioprocess product. Like this, you will find your spare parts and accessories more easily. Lots of products can be found in that way already – and we will be expanding the app with more!

www.eppendorf.com/app

Do You Want to Know More About Scale-Up?

Today's bioprocess professionals need to stay on top of many things: Scale-up parameters and equipment capabilities, control strategies and automation, validation requirements and documentation to name a few. New fields of applications like stem cell technology are evolving into powerful tools of the future.

Become an expert in bioprocessing.
Join us at www.eppendorf.com/bioprocess-experts



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Handling Solutions



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Recent Application Notes



Comparing Culture Methods in Monoclonal Antibody Production

The objective of the research project presented in this publication was to determine if the three primary methods of production for a typical biosimilar (batch, fed-batch, and perfusion) may be simply and easily executed using a single, benchtop bioprocess control system to allow confident process decisions that are scalable to full production. We compared two perfusion processes. For the fed-batch and perfusion cultivations, we used stirred-tank single-use bioreactors. Published in BioProcess International, March 2017.

www.ependorf.com/publicationBPI2017



Setup of a Microbial Hyaluronic Acid Production Process Using the BioFlo 120 Bioprocess Control Station

Researchers at Praj Industries, India used the BioFlo 120 bioprocess control station to produce hyaluronic acid (HA) in *Streptococcus zooepidemicus* at bench scale. In this application note we describe how they set up, monitored, and controlled critical process parameters, and thus present an impression of the controller's integrated, touchscreen-accessible software.

www.ependorf.com/appnote337

High-Density Vero Cell Perfusion Culture in BioBLU 5p Single-Use Vessels

Vero cells are anchorage-dependent cells that are widely used as a platform for viral vaccine production. In this study, we cultivated Vero cells in perfusion mode in BioBLU 5p Single-Use Vessels controlled with a BioFlo 320 bioprocess control station. We achieved the very high Vero cell density of approximately 43 million cells per mL, demonstrating great potential for Vero-cell-based vaccine production using Fibra-Cel packed-bed vessels.

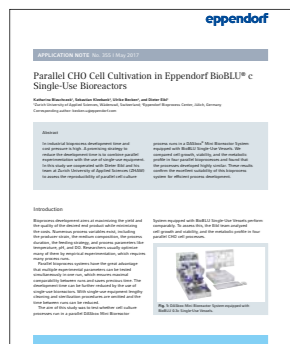
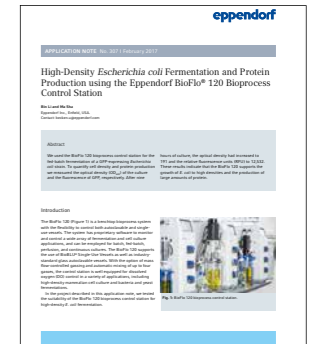
www.ependorf.com/appnote359



High-Density Escherichia coli Fermentation and Protein Production using the Eppendorf BioFlo 120 Bioprocess Control Station

We used the BioFlo 120 bioprocess control station for the fed-batch fermentation of a GFP-expressing *Escherichia coli* strain. To quantify cell density and protein production we measured the optical density (OD₆₀₀) of the culture and the fluorescence of GFP, respectively.

www.ependorf.com/appnote307



Parallel CHO Cell Cultivation in Eppendorf BioBLU c Single-Use Bioreactors

The application note describes parallel CHO cell culture processes in the DASbox Mini Bioreactor System equipped with BioBLU 0.3 Single-Use Vessels. Parallel experimentation combined with single-use equipment can be of high interest for customers, because it can reduce process development time and costs.

www.ependorf.com/appnote355



Push-Button Simplicity: Automatic Fermentation with the BioFlo 120 Auto Culture Mode

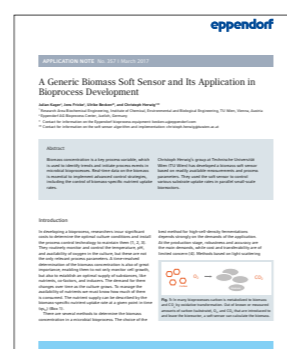
The Auto Culture modes, standard on the BioFlo 120 bioprocess control station, offer push-button automatic process control for some of the most common microbial (*E. coli*) and mammalian (Chinese Hamster Ovary, CHO) cultures. For this application note, an *E. coli* batch fermentation was conducted using an Auto Culture mode.

www.ependorf.com/appnote310

A Generic Biomass Soft Sensor and Its Application in Bioprocess Development

Researchers at the Technical University Vienna developed a soft sensor to gain real-time data on biomass in fermentation processes. Integration with an Eppendorf bioprocess control system allowed the control of various substrate uptake rates.

www.ependorf.com/appnote357



Systems



Solutions that grow with you

From the parallel mini bioreactor system for early stage bioprocess development, the benchtop and parallel bioreactor systems for the laboratory scale to the sterilize-in-place solutions for production: Eppendorf offers users from industry and research extensive bioprocess solutions from a single source and meets the highest quality demands.

- > DASbox Mini Bioreactor System **16 - 19**
- > DASGIP Parallel Bioreactor Systems **20 - 23**
- > BioFlo 120 **24 - 29**
- > BioFlo 320 **30 - 35**
- > New Brunswick BioFlo/CelliGen 510 **36 - 37**
- > New Brunswick BioFlo 610 **38 - 39**
- > New Brunswick BioFlo Pro **40 - 41**



Model	DASbox® Mini Bioreactor System	DASGIP® Parallel Bioreactor Systems
Page	16	20
Working volume ranges ¹⁾	60 – 250 mL	0.2 – 3.8 L
Single-use vessels	■	■
Glass vessels, autoclavable	■	■
Stainless-steel vessels, SIP		
Interchangeable vessels	■	■
Bacteria/yeasts/fungi	■	■
Plant cells/algae	■	■
Mammalian/animal cells	■	■
Stem cells	■	■
Insect cells	■	■
Number of parallel units	Up to 24	Up to 16
Controller ²⁾	DWC	DWC
Touchscreen controller		
BioCommand®		
DASware®	■	■
Gas mixing options	4-gas (air, N ₂ , O ₂ , CO ₂)	4-gas (air, N ₂ , O ₂ , CO ₂)
Gas flow control ³⁾	TMFC	R or TMFC
Exhaust analysis	■	■
Optical density measurement	■	■
Validation		

¹⁾ Realized using multiple vessels ²⁾ Controllers: DWC = DASware control, RPC = Reactor Process Controller, PLC = Programmable Logic Controller, BCS=BioFlo Control Software ³⁾ R = Rotameter, TMFC = Thermal Mass Flow Controller ⁴⁾ OD measurement possible via third-party equipment
 ■ = standard

i For more information go to www.eppendorf.com



Model	BioFlo®120	BioFlo® 320
Page	24	30
Working volume ranges	0.4 – 40 L	0.4 – 40 L
Single-use vessels	■	■
Glass vessels, autoclavable	■	■
Stainless-steel vessels, SIP		
Interchangeable vessels	■	■
Bacteria/yeasts/fungi	■	■
Plant cells/algae	■	■
Mammalian/animal cells	■	■
Stem cells	■	■
Insect cells	■	■
Number of parallel units		Up to 8
Controller ²⁾		BCS
Touchscreen controller	■	■
BioCommand®	■	■
DASware®	■	■
Gas mixing options	4-gas (air, N ₂ , O ₂ , CO ₂)	4-gas (air, N ₂ , O ₂ , CO ₂)
Gas flow control ³⁾	R or TMFC	TMFC
Exhaust analysis	■	■
Optical density measurement	■ ⁴⁾	■ ⁴⁾
Validation		



Model	BioFlo®/CelliGen® 510 Fermentor/Bioreactor
Page	36
Working volume ranges ¹⁾	10.75 – 32 L
Single-use vessels	
Glass vessels, autoclavable	
Stainless-steel vessels, SIP	■
Interchangeable vessels	
Bacteria/yeasts/fungi	■
Plant cells/algae	■
Mammalian/animal cells	■
Stem cells	■
Insect cells	■
Number of parallel units	
Controller ²⁾	RPC/PLC
Touchscreen controller	■
BioCommand®	■
DASware®	
Gas mixing options	4-gas (air, N ₂ , O ₂ , CO ₂)
Gas flow control ³⁾	TMFC
Exhaust analysis	■
Optical density measurement	■ ⁴⁾
Validation	■

¹⁾ Realized using multiple vessels ²⁾ Controllers: DWC = DASware control, RPC = Reactor Process Controller, PLC = Programmable Logic Controller, BCS=BioFlo Control Software ³⁾ TMFC = Thermal Mass Flow Controller ⁴⁾ OD measurement possible via third-party equipment
 ■ = standard

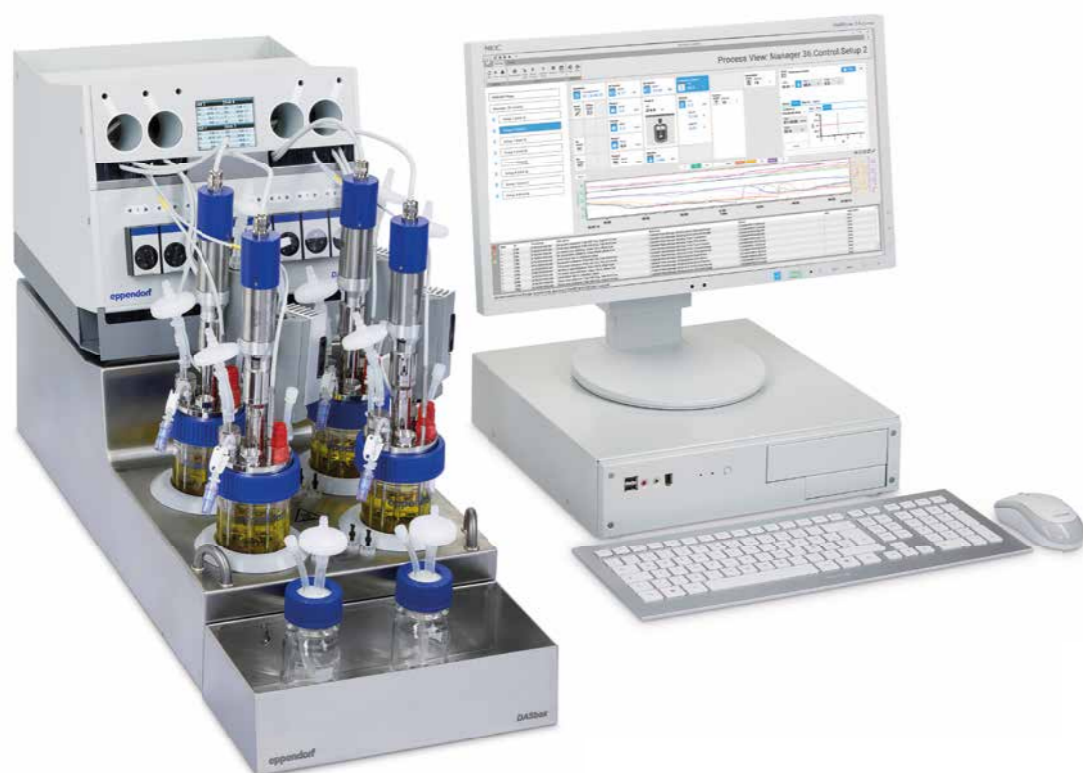
For more information go to www.eppendorf.com



Model	BioFlo® 610 Fermentor	BioFlo® Pro Fermentor
Page	38	40
Working volume ranges ¹⁾	13 – 100 L	45 – 1,200 L
Single-use vessels		
Glass vessels, autoclavable		
Stainless-steel vessels, SIP	■	■
Interchangeable vessels		
Bacteria/yeasts/fungi	■	■
Plant cells/algae	■	■
Mammalian/animal cells		
Stem cells		
Insect cells	■	■
Number of parallel units		
Controller ²⁾	RPC	PLC
Touchscreen controller	■	■
BioCommand®	■	■
DASware®		
Gas mixing options	2-gas (air, O ₂)	2-gas (air, O ₂)
Gas flow control ³⁾	TMFC	TMFC
Exhaust analysis	■	■
Optical density measurement	■ ⁴⁾	■ ⁴⁾
Validation	■	■

¹⁾ Realized using multiple vessels ²⁾ Controllers: DWC = DASware control, RPC = Reactor Process Controller, PLC = Programmable Logic Controller, BCS=BioFlo Control Software ³⁾ TMFC = Thermal Mass Flow Controller ⁴⁾ OD measurement possible via third-party equipment
 ■ = standard

DASbox® Mini Bioreactor System



Description

The DASbox is a unique mini bioreactor system suitable for microbial and cell culture as well as stem cell applications. It is designed as a 4-fold system with up to twenty-four parallel operating bioreactors. With working volumes of 60 – 250 mL the DASbox is the optimal tool for advanced process development and Design of Experiments (DoE) applications. All critical process parameters can be precisely controlled. Liquid-free temperature control and exhaust condensation satisfy users with easy handling.

In addition to using industry standard glass bioreactors the DASbox can be equipped with Eppendorf BioBLU 0.3 vessels, all fully instrumented single-use mini bioreactors.

Applications

- > Process development in cell culture and microbiology
- > Controlled cultivation of stem cells
- > Design of Experiments (DoE)
- > Media optimization
- > Clone and cell line screening, strain characterization

Product features

- > Parallel set-up of up to 24 bioreactors
- > Excellent scalability and reproducibility in both microbial and cell culture applications
- > Supports industry standard glass bioreactors (DASbox Mini Bioreactor) as well as BioBLU 0.3 Single-Use Vessels
- > Small working volumes save on the amount of cell material, media and supplements required
- > Extremely compact system with a footprint of only 7.5 cm (3 in) benchspace per vessel
- > Individual temperature control with liquid-free heating and cooling (Peltier)
- > Liquid-free Peltier exhaust condenser with easy handling by automatic slide in activation and slide out deactivation mode
- > LC display with key process parameters and integrated alarm function simplifies monitoring
- > Fully mass flow-controlled gas mixing with individual gas mixture from air, N₂, O₂, and CO₂, each directable either to headspace or sparger
- > Standard sensors for precise measurement and control of temperature, pH, DO, level and ORP (redox potential); optical pH sensors available
- > Precise miniature variable speed pumps, continuous flow rates down to 0.3 mL/h
- > Sealed magnetic overhead drives for single-use vessels and direct overhead drives for autoclavable vessels; up- or downflow selectable
- > Optional pull-out system for enhanced accessibility of bioreactors and control unit

For more information go to www.eppendorf.com

Technical specifications subject to change.



Parallel operation of up to 24 bioreactors makes the DASbox a perfect fit for process development.



The DASbox can be operated with BioBLU 0.3c and 0.3f Single-Use Vessels for cell culture and microbial applications.

Ordering information

Description	Order no.
DASbox® Mini Bioreactor System for Cell Culture Applications, max. 5 sL/h gassing	
4-fold system	76DX04CC
8-fold system	76DX08CC
16-fold system	76DX16CC
24-fold system	76DX24CC
4-fold system for single-use vessels	76DX04CCSU
8-fold system for single-use vessels	76DX08CCSU
16-fold system for single-use vessels	76DX16CCSU
24-fold system for single-use vessels	76DX24CCSU
DASbox® Mini Bioreactor System for Microbial Applications, max. 25 sL/h gassing	
4-fold system	76DX04MB
8-fold system	76DX08MB
16-fold system	76DX16MB
24-fold system	76DX24MB
4-fold system for single-use vessels	76DX04MBSU
8-fold system for single-use vessels	76DX08MBSU
16-fold system for single-use vessels	76DX16MBSU
24-fold system for single-use vessels	76DX24MBSU



Suitable vessels for the DASbox can be found on pages 58 - 59.

Your local distributor: www.eppendorf.com/contact
Eppendorf AG · Barkhausenweg 1 · 22339 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

DASbox® Mini Bioreactor System

Technical specifications				
Model	DASbox® Cell Culture	DASbox® Cell Culture Single-Use	DASbox® Microbiology	DASbox® Microbiology Single-Use
Application	Cell culture	Cell culture	Microbiology	Microbiology
Number of parallel units	Up to 24	Up to 24	Up to 24	Up to 24
Software	DASware control, other DASware optional	DASware control, other DASware optional	DASware control, other DASware optional	DASware control, other DASware optional
User Interface	Process computer with monitor	Process computer with monitor	Process computer with monitor	Process computer with monitor
Power supply	100 – 240 V, 50/60 Hz	100 – 240 V, 50/60 Hz	100 – 240 V, 50/60 Hz	100 – 240 V, 50/60 Hz
Typical power consumption (4-fold system without process computer)	168 W (at 230 V)/ 154 W (at 115 V)	168 W (at 230 V)/ 154 W (at 115 V)	168 W (at 230 V)/ 154 W (at 115 V)	168 W (at 230 V)/ 154 W (at 115 V)
Dimensions (W x D x H, 4-fold system without process computer)	30 x 70 x 49 cm (12 x 28 x 19 in)	30 x 70 x 49 cm (12 x 28 x 19 in)	30 x 70 x 49 cm (12 x 28 x 19 in)	30 x 70 x 49 cm (12 x 28 x 19 in)
Typical weight (4-fold system without accessories)	44 kg	44 kg	44 kg	44 kg
Bioreactors				
Vessels	Glass/single-use vessels	Glass/single-use vessels	Glass/single-use vessels	Glass/single-use vessels
Sterilization	Autoclavable	Pre-sterilized	Autoclavable	Pre-sterilized
Total volume	350 mL	380 mL	350 mL	380 mL
Agitation				
Drive	Direct overhead drives	Magnetic overhead drives	Direct overhead drives	Magnetic overhead drives
Speed ranges	20 – 2500 rpm	20 – 500 rpm	20 – 2500 rpm	20 – 2000 rpm
Impellers	Marine	Pitched-blade	Rushton-type	Rushton-type
Gassing				
Gas supply	TMFC; overlay and/or sparger	TMFC; overlay and/or sparger	TMFC; sparger	TMFC; sparger
Standard gas flow rates	0.04 – 5 sL/h, 0.04 – 3.5 sL/h CO ₂	0.04 – 5 sL/h, 0.04 – 3.5 sL/h CO ₂	0.2 – 25 sL/h, 0.2 – 18 sL/h CO ₂	0.2 – 25 sL/h, 0.2 – 18 sL/h CO ₂
Standard gas mixing	Air, N ₂ , O ₂ and/or CO ₂	Air, N ₂ , O ₂ and/or CO ₂	Air, N ₂ , O ₂ and/or CO ₂	Air, N ₂ , O ₂ and/or CO ₂
Feeding				
Feed lines per vessel	2 (standard)/ 4 (optional)	2 (standard)/ 4 (optional)	2 (standard)/ 4 (optional)	2 (standard)/ 4 (optional)
Standard feed rates (depending on tube diameter)	0.3 – 9.5 mL/h to 13 – 420 mL/h	0.3 – 9.5 mL/h to 13 – 420 mL/h	0.3 – 9.5 mL/h to 13 – 420 mL/h	0.3 – 9.5 mL/h to 13 – 420 mL/h
Monitoring and Control				
Temperature control	Liquid-free heating and cooling (Peltier)	Liquid-free heating and cooling (Peltier)	Liquid-free heating and cooling (Peltier)	Liquid-free heating and cooling (Peltier)
Standard temperature range (at 25° C room temp.)	10 – 60°C	10 – 45°C	10 – 60°C	10 – 45°C
pH control	CO ₂ /base, and other set-ups	CO ₂ /base, and other set-ups	Acid and/or base, and other set-ups	Acid and/or base, and other set-ups
DO control	Cascade (O ₂ concentration, gas flow rate), and other set-ups	Cascade (O ₂ concentration, gas flow rate), and other set-ups	Cascade (agitation speed, O ₂ concentration, gas flow rate), and other set-ups	Cascade (agitation speed, O ₂ concentration, gas flow rate), and other set-ups
ORP (redox) measurement	-	-	Optional (select redox or level)	Optional (select redox or level)
Level/foam	Optional	Optional	Optional (select redox or level)	Optional (select redox or level)
OD measurement	Optional (DASGIP OD4)	Optional (DASGIP OD4)	Optional (DASGIP OD4)	Optional (DASGIP OD4)
Exhaust condensation	Liquid-free (Peltier)	Liquid-free (Peltier)	Liquid-free (Peltier)	Liquid-free (Peltier)
Exhaust analysis	-	-	Optional (DASGIP GA4)	Optional (DASGIP GA4)

i For more information go to www.ependorf.com

Technical specifications subject to change.



Together with the DASware software solutions, the DASbox supports process development following the Quality by Design (QbD) approach.



Lab space is critical - The DASbox requires only 7.5 cm (3 in) of bench space per bioreactor.

Accessories

Description	Order no.
DASbox® Overhead Drive, 20 – 2,500 rpm, with cable L 1.6 m	78525185
DASbox® Overhead Drive (Magnetic), 20 – 2,500 rpm, for BioBLU® 0.3, with cable L 1.6 m	78525186
DASbox® Autoclavable Carrier, for 4 vessels	76DXBKT4
DASbox® MP8 Multi Pump Module, without feed lines and addition bottles	76DXMP8
DASbox® Pull-Out System, for 1 base unit	76DXRAIL
DASbox® GA4 Exhaust Analyzing Module, O ₂ 1 – 50 %, CO ₂ 0 – 25 %, including accessories for 4 vessels	76DXGA4
DASbox® GA4 Exhaust Analyzing Module, O ₂ 0 – 100 %, CO ₂ 0 – 25 %, including accessories for 4 vessels	76DXGA4E

DASGIP® Parallel Bioreactor Systems



Description

DASGIP Parallel Bioreactor Systems for R&D and process development in both cell culture and microbiology allow for advanced bioprocess control and automation. Parallel processing, precise control of all relevant parameters, user-defined profiles and innumerable automation features result in accelerated and highly efficient process development. Our DASware software solutions support DoE, process historians and comprehensive data management. Configurable solutions address the unique requirements of microbial, phototrophic, mammalian and human cells, stem cell applications, as well as biofuel and biopolymer processes.

Applications

- > Research and development in cell culture and microbiology as well as phototrophic applications
- > Lab scale fermentation of aerobic and anaerobic bacteria, yeasts and fungi
- > Cultivation of mammalian, insect and human cell lines
- > Special applications such as stem cell culture or biofuel/biopolymer development

Product features

- > Parallel operation of up to 16 glass or single-use bioreactors
- > DASGIP Bioblock for advanced and user-friendly temperature control
- > Suitable for cell culture, microbial fermentation and phototrophic cultivation
- > Modular design of control units allows for flexible system configurations that meet the demands of specific applications
- > Control of agitation, pH, level and DO (including customizable cascade modes) in each bioreactor
- > Variable speed pumps for accurate liquid addition and operation in batch, fed-batch, continuous and cyclic perfusion mode
- > Optical absorbance measurement for online calculation of e.g. OD₆₀₀ or cell dry weight
- > TMFC individual gas mixing of air, N₂, O₂ and CO₂
- > Online calculation of OTR, CTR and RQ
- > DASware control Software for advanced process control
- > Compatible with DASware Software Suite for interconnectivity and bioprocess information management



The compact DASGIP Bioblock provides independent temperature control and can be operated with BioBLU 1 Single-Use Vessels.



With DASware control 5, DASGIP Parallel Bioreactor Systems can be operated with up to 16 vessels.

Ordering information

Description	Order no.
DASGIP® Parallel Bioreactor System for Cell Culture, max. 50 sL/h gassing	
4-fold system with Bioblock	76DG04CCBB
8-fold system with Bioblock	76DG08CCBB
16-fold system with Bioblock	76DG16CCBB
4-fold system with Bioblock, for single-use vessels	76DG04CCSU
8-fold system with Bioblock, for single-use vessels	76DG08CCSU
16-fold system with Bioblock, for single-use vessels	76DG16CCSU
4-fold system, benchtop	76DG04CC
8-fold system, benchtop	76DG08CC
16-fold system, benchtop	76DG16CC
DASGIP® Parallel Bioreactor System for Microbial Applications, max. 250 sL/h gassing	
4-fold system with Bioblock	76DG04M BBB
8-fold system with Bioblock	76DG08M BBB
16-fold system with Bioblock	76DG16M BBB
for 4 single-use Vessels	76DG04MBSU
for 8 single-use Vessels	76DG08MBSU
for 16 single-use Vessels	76DG16MBSU
4-fold system, benchtop	76DG04MB
8-fold system, benchtop	76DG08MB
16-fold system, benchtop	76DG16MB
DASGIP® Parallel Bioreactor System for Phototrophic Cultivation, max. 50 sL/h gassing, incl. LED Illumination Devices	
4-fold system with Bioblock	76DG04PBBB
8-fold system with Bioblock	76DG08PBBB
16-fold system with Bioblock	76DG16PBBB
4-fold system, benchtop	76DG04PB
8-fold system, benchtop	76DG08PB
16-fold system, benchtop	76DG16PB

! DASGIP Parallel Bioreactor Systems are configured to meet individual customer requirements. The systems shown are example configurations. Please contact us for more information.

! For more information go to www.ependorf.com



Suitable vessels for the DASGIP Parallel Bioreactor Systems can be found on pages 60-69.

DASGIP® Parallel Bioreactor Systems

Technical specifications			
Model	DASGIP® System for Cell Culture	DASGIP® System for Microbiology	DASGIP® PhotoBioreactor System
Application	Cell culture	Microbiology	Phototrophic cultivation
Number of parallel units	Up to 16	Up to 16	Up to 16
Software	DASware control, other DASware optional	DASware control, other DASware optional	DASware control, other DASware optional
User Interface	Process computer with monitor	Process computer with monitor	Process computer with monitor
Typical power consumption (4-fold system without process computer)	480 W (at 230 V)/ 432 W (at 115 V) (595 W/552 W without DASGIP Bioblock)	541 W (at 230 V)/ 467 W (at 115 V) (639 W/584 W without DASGIP Bioblock)	490 W (at 230 V)/ 441 W (at 115 V) (605 W/561 W without DASGIP Bioblock)
Dimensions (W x D x H, 4-fold system without process computer)	140 x 70 x 53 cm (55 x 28 x 21 in)	140 x 70 x 53 cm (55 x 28 x 21 in)	140 x 70 x 53 cm (55 x 28 x 21 in)
Typical weight (4-fold system without accessories)	78 kg (60 kg without DASGIP Bioblock)	96 kg (78 kg without DASGIP Bioblock)	77 kg (59 kg without DASGIP Bioblock)
Bioreactors			
Vessels	Glass/single-use vessels	Glass/single-use vessels	Glass vessels
Sterilization	Autoclavable/ pre-sterilized	Autoclavable/ pre-sterilized	Autoclavable
Total volume	1.5 L to 4.3 L	1.3 L to 4.3 L	1.9 L / 3.0 L
Agitation			
Drive	Direct/magnetic overhead drive	Direct/magnetic overhead drive	Direct overhead drives
Speed ranges	30 – 1,250 rpm (standard)/ 100 – 1,600 rpm (optional)	100 – 1,600 rpm (standard)/ 30 – 1,250 rpm (optional)	30 – 1,250 rpm (standard)/ 100 – 1,600 rpm (optional)
Impellers	Pitched-blade	Rushton-type	Pitched-blade
Gassing			
Gas supply	TMFC; overlay and/or sparger	TMFC/Rotameter; sparger	TMFC; overlay and/or sparger
Standard gas flow rates	0.1 – 50 sL/h, 0.1 – 40 sL/h CO ₂ (DASGIP MX4/4, other modules available)	0.5 – 250 sL/h, 0.5 – 150 sL/h CO ₂ (DASGIP MX4/4H, other modules available)	0.5 – 250 sL/h, 0.5 – 150 sL/h CO ₂ (DASGIP MX4/4H, other modules available)
Standard gas mixing	Air, N ₂ , O ₂ and/or CO ₂	Air, N ₂ , O ₂ and/or CO ₂	Air, N ₂ , O ₂ and/or CO ₂
Feeding			
Feed lines per vessel	Up to 8	Up to 8	Up to 8
Standard feed rates (depending on tube diameter)	0.3 – 9.5 mL/h to 13 – 420 mL/h (DASGIP MP8) 10 – 70 mL/h to 0.4 – 5 L/h (DASGIP MP4)	0.3 – 9.5 mL/h to 13 – 420 mL/h (DASGIP MP8) 10 – 70 mL/h to 0.4 – 5 L/h (DASGIP MP4)	0.3 – 9.5 mL/h to 13 – 420 mL/h (DASGIP MP8) 10 – 70 mL/h to 0.4 – 5 L/h (DASGIP MP4)
Monitoring and Control			
Temperature control	Heat blankets (optional cooling fingers)/ heating and cooling integrated in DASGIP Bioblock	Heat blankets (optional cooling fingers)/ heating and cooling integrated in DASGIP Bioblock (additional cooling fingers optional)	Heat blankets (optional cooling fingers)/ heating and cooling integrated in DASGIP Bioblock (additional cooling fingers optional)
Standard temperature range (at 25° C room temp.)	5 K above cooling agent temperature – 60°C (heat blankets)/ 5 K above cooling agent temperature – 99°C ¹⁾ (DASGIP Bioblock)	5 K above cooling agent temperature – 60°C (heat blankets)/ 5 K above cooling agent temperature – 99°C ¹⁾ (DASGIP Bioblock)	5 K above cooling agent temperature – 60°C/ 5 K above cooling agent temperature – 99°C ¹⁾ (DASGIP Bioblock)
pH control		Acid and/or base, and other set-ups	CO ₂ /base, and other set-ups
DO control	Cascade (O ₂ concentration, gas flow rate), and other set-ups	Cascade (agitation speed, optional O ₂ concentration, optional gas flow rate), and other set-ups	Cascade (O ₂ concentration, gas flow rate), and other set-ups

ⁱ For more information go to www.eppendorf.com

Technical specifications subject to change.



The DASGIP modules enable customized solutions for all requirements. For more information see pages 118-119.

With a wide variety of autoclavable and single-use vessels, DASGIP Parallel Bioreactor Systems can be adapted to a huge range of applications.

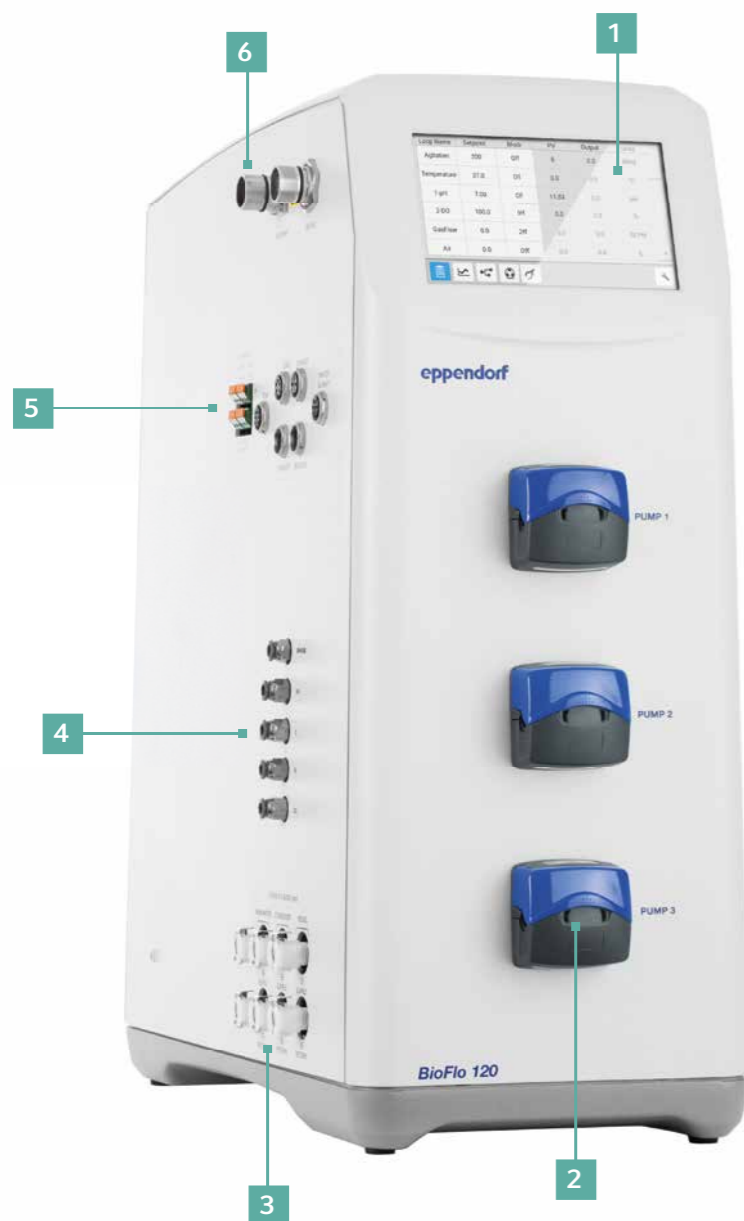
Technical specifications			
Model	DASGIP® System for Cell Culture	DASGIP® System for Microbiology	DASGIP® PhotoBioreactor System
ORP (redox) measurement	-	Optional	Optional
Level/foam	Optional	Optional	Optional
OD measurement	Optional (DASGIP OD4)	Optional (DASGIP OD4)	Optional (DASGIP OD4)
Exhaust condensation	Water-cooled or liquid-free (Peltier with DASGIP EGC4)	Water-cooled or liquid-free (Peltier with DASGIP EGC4)	Water-cooled
Exhaust analysis	Optional (DASGIP GA4)	Optional (DASGIP GA4)	Optional (DASGIP GA4)

¹⁾ Application-specific operating conditions apply.

Accessories		Order no.
Description		
Cable, for DASGIP® Overhead Drive RE30/RE40		
L 1.3 m		78525121
L 3 m		78525112
Heat Blanket, for DASGIP® vessel 0.5 – 3L with Pt100, 95x260 mm, 100 W		
115 V		78525163
230 V		78525162
Overhead Drive, RE30 (magnetic), 30 – 1,250 rpm, for BioBLU® 3c/5c/5p		78525263
Overhead Drive, RE30 (magnetic), 30 – 1,250 rpm, for BioBLU® 1		78525189
Overhead Drive, RE30, 30 – 1,250 rpm, for head plate port with Pg 13.5 thread		78525262
Overhead Drive, RE30, 30 – 1,250 rpm, for head plate port with M30 thread		78525187
Overhead Drive, RE40 (magnetic), 100 – 1,600 rpm		
for BioBLU® 1		78525198
for BioBLU® 5		78525199
Overhead Drive, RE40, 100 – 1,600 rpm, for head plate port with M30 thread		78525188

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BioFlo® 120



1. Easy-to-read 7 in integrated touchscreen monitor
2. Three front-mounted pumps with industry-standard easy load pump heads
3. Water recirculation module provides precise temperature control and exhaust condensing
4. High-precision thermal mass flow controller (TMFC) or rotameter for gas flow control with standard 4-gas mixing
5. Three user-defined analog input/output connections on the advanced model
6. Connection for direct-drive and bi-directional magnetic-drive motors



The BioFlo 120 Auto Culture modes allow 1-touch process control for microbial and cell culture applications.

Description

The BioFlo 120 is a bench-scale bioreactor/fermentor system perfectly suited for all levels of research and development. The system was designed to be flexible to meet the wide-ranging needs of scientists today. 24 interchangeable heat-blanketed and water-jacketed autoclavable vessels are available, along with BioBLU Single-Use Vessels ranging from 250 mL to 40 L working volume. Digital Mettler Toledo® ISM sensor technology is fully integrated allowing the user to choose between pH, redox, dissolved oxygen (polarographic and/or optical), and carbon dioxide measurements without the need for additional equipment. A high-precision expanded range thermal mass flow controller is available providing the capability for low flow mammalian cell culture through high-demand microbial processes on a single controller.

Applications

- > Cultivation of mammalian, stem, insect, and plant cells
- > Bacterial, yeast, and fungal fermentation
- > Batch, fed-batch, continuous or perfusion



Besides the BioBLU Single-Use Vessels for cell culture and microbial applications, water-jacketed or heat-blanketed autoclavable vessels are available in four sizes.

Product features

- > Scale-up from 250 mL to 40 L on a wide variety of autoclavable and Eppendorf BioBLU Single-Use Vessels.
- > New Auto culture modes offer process control for microbial and cell culture applications at the touch of a button.
- > Ready for process. Unbox and install in minutes.
- > Save critical lab space with a minimal footprint.
- > Flexible universal connections for analog sensors or digital Mettler Toledo® ISM sensors offer unsurpassed flexibility.
- > User-defined DO cascades offer process flexibility.
- > Automatic gas mixing algorithms for simplified control
- > View your entire process with expanded trend screen.
- > Access your data from anywhere with Eppendorf SCADA, IP network, and remote monitoring capabilities.

BioFlo® 120

BioFlo 120 Specifications		
Control Station		
Dimensions (W x D x H)	24.7 x 55.9 x 62.9 cm (9.7 x 22 x 24.8 in)	
Net weight	14.8 kg (32.7 lb)	
Touchscreen	7 in projected capacitive touchscreen	
Communication	2 x USB (software updates, serial communication)	
Utility	Connection	Requirement
Electrical	IEC-C14 (with regional plug types)	100 – 120/208 – 240 (± 10 %) V, 50/60 Hz, 10 A, Single Phase
Water	Quick-connect	10 psig (0.69 barg)
Gas supply (air, O ₂ , N ₂ , CO ₂)	Push-connect fittings accept 1/4 in tubing or hose barb fitting	Autoclavable 10 psig (0.69 barg) Single-use 6 psig (0.44 barg)
Exhaust	0.5 psig (0.035 barg)	
Operating conditions	10 – 30°C, up to 80 % RH, non-condensing	
Altitude limit	2000 m	
Agitation		
Direct drive	1 L: 25 – 1,500 rpm 3 L, 5 L, 10 L: 25 – 1,200 rpm	
Magnetic drive (autoclavable vessels)	1 L, 3 L, or 5 L: 5 – 500 rpm 10 L: 5 – 150 rpm	
Magnetic drive (single-use vessels)	BioBLU 1f & 3f: 5 – 1,200 rpm BioBLU 1c: 5 – 500 rpm BioBLU 3c, 5c, 5p, 10c & 14c: 5 – 200 rpm BioBLU 50c: 5 – 150 rpm	
Temperature		
Autoclavable	1, 2, 5 L: 8°C above coolant to 45°C above ambient (0°C – 70°C absolute) ¹⁾ 10 L: 8°C above coolant to 40°C above ambient (0°C – 65°C absolute) ¹⁾	
BioBLU Single-Use Vessels	BioBLU c vessels: 5°C above ambient to 40°C ¹⁾ BioBLU f vessels: 5°C above coolant to 45°C ¹⁾	
Sensor type	Pt100	
Gas supply		
Sparge	1 TMFC (0.04 – 20 SLPM) or 1 rotameter (multiple options available); ring or microsparger	
Sensors	Communication	Control range
pH	Analog or digital Mettler Toledo ISM	2 – 12
DO	Analog or digital Mettler Toledo ISM	0 – 200 % (air saturation)
Optical DO	Digital Mettler Toledo ISM	0 – 200 % (air saturation)
Redox	Analog or digital Mettler Toledo ISM	(-)2000 mV – (+)2000 mV
CO ₂	Digital Mettler Toledo ISM	0 – 100 %
Pumps	Pump head	Fixed speed
Pumps 1, 2, & 3	Watson-Marlow 114DV	30 rpm (0 – 100 % duty cycle)

¹⁾ Requires 115/230 V line voltage. Specifications cannot be guaranteed with operation at alternative line voltages

Specifications subject to change.

BioFlo 120 Advanced Control Station Bundles

Bundle includes Advanced Control Station with high precision TMFC, automatic four gas mix, 7 in (17.7 cm) integrated touchscreen, intuitive bioprocess control software for control of both microbial fermentation and cell culture processes, three front mounted addition pumps, three Analog input/output connections, and region specific power cord.

Ordering information	
Description	Order no.
BioFlo® 120, advanced, plug type B, TMFC, 20 SLPM	B120ACS000
BioFlo® 120, advanced, plug type CEE 7/7, TMFC, 20 SLPM	B120ACS001
BioFlo® 120, advanced, plug type I, TMFC, 20 SLPM	B120ACS002
BioFlo® 120, advanced, plug type J, TMFC, 20 SLPM	B120ACS003
BioFlo® 120, advanced, plug type G, TMFC, 20 SLPM	B120ACS004
BioFlo® 120, advanced, plug type N, TMFC, 20 SLPM	B120ACS005
BioFlo® 120, advanced, plug type D, TMFC, 20 SLPM	B120ACS006

Technical specifications subject to change.

BioFlo 120 Standard Control Station Bundles

Bundle includes Standard Control Station manual flow control, automatic four gas mix, 7 in (17.7 cm) integrated touchscreen, intuitive bioprocess control software for control of both microbial fermentation and cell culture processes, three front mounted addition pumps, and region specific power cord.

Ordering information	
Description	Order no.
BioFlo® 120, standard, plug type B	
Rotameter, 0.5 SLPM	B120SCS000
Rotameter, 1 SLPM	B120SCS010
Rotameter, 2.5 SLPM	B120SCS020
Rotameter, 5 SLPM	B120SCS030
Rotameter, 10 SLPM	B120SCS040
Rotameter, 25 SLPM	B120SCS050
BioFlo® 120, standard, plug type CEE 7/7	
Rotameter, 0.5 SLPM	B120SCS001
Rotameter, 1 SLPM	B120SCS011
Rotameter, 2.5 SLPM	B120SCS021
Rotameter, 5 SLPM	B120SCS031
Rotameter, 10 SLPM	B120SCS041
Rotameter, 25 SLPM	B120SCS051
BioFlo® 120, standard, plug type I	
Rotameter, 0.5 SLPM	B120SCS002
Rotameter, 1 SLPM	B120SCS012
Rotameter, 2.5 SLPM	B120SCS022
Rotameter, 5 SLPM	B120SCS032
Rotameter, 10 SLPM	B120SCS042
Rotameter, 25 SLPM	B120SCS052
BioFlo® 120, standard, plug type J	
Rotameter, 0.5 SLPM	B120SCS003
Rotameter, 1 SLPM	B120SCS013
Rotameter, 2.5 SLPM	B120SCS023
Rotameter, 5 SLPM	B120SCS033
Rotameter, 10 SLPM	B120SCS043
Rotameter, 25 SLPM	B120SCS053
BioFlo® 120, standard, plug type G	
Rotameter, 0.5 SLPM	B120SCS004
Rotameter, 1 SLPM	B120SCS014
Rotameter, 2.5 SLPM	B120SCS024
Rotameter, 5 SLPM	B120SCS034
Rotameter, 10 SLPM	B120SCS044
Rotameter, 25 SLPM	B120SCS054
BioFlo® 120, standard, plug type N	
Rotameter, 0.5 SLPM	B120SCS005
Rotameter, 1 SLPM	B120SCS015
Rotameter, 2.5 SLPM	B120SCS025
Rotameter, 5 SLPM	B120SCS035
Rotameter, 10 SLPM	B120SCS045
Rotameter, 25 SLPM	B120SCS055
BioFlo® 120, standard, plug type D	
Rotameter, 0.5 SLPM	B120SCS006
Rotameter, 1 SLPM	B120SCS016
Rotameter, 2.5 SLPM	B120SCS026
Rotameter, 5 SLPM	B120SCS036
Rotameter, 10 SLPM	B120SCS046
Rotameter, 25 SLPM	B120SCS056

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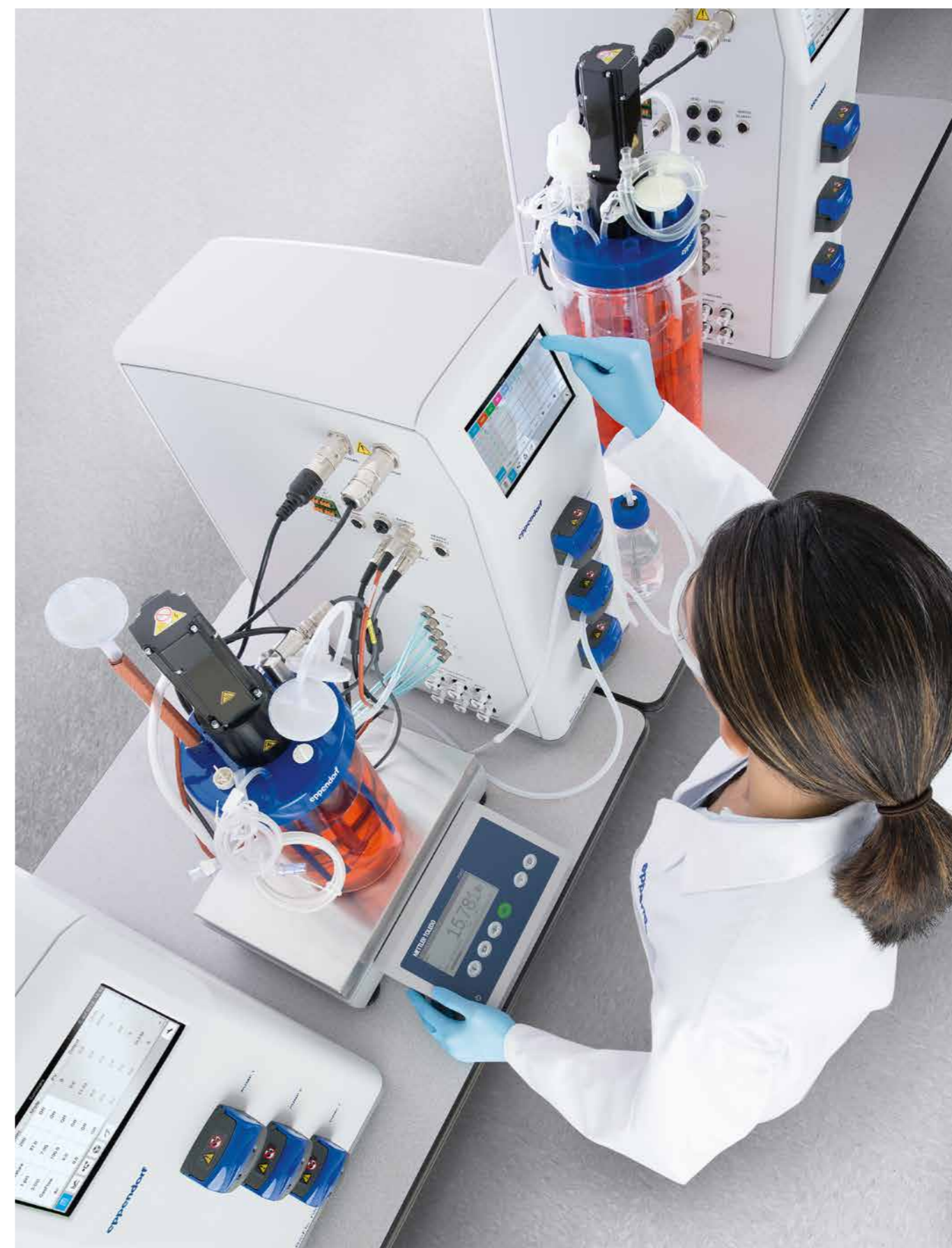
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BioFlo® 120

BioFlo/CelliGen 115 and BioFlo 120 replacement parts

Description	BioFlo/CelliGen 115	BioFlo 120
	Order no.	Order no.
Cables		
pH sensor, analog	P0720-2276	1390810400
DO sensor, analog	P0720-2336	1390810600
Redox sensor, analog	P0720-2763 ¹⁾	1390810400
Sensor cable, ISM	-	M1379-8108
Optical DO sensor, ISM	-	M1379-8107
Foam sensor cable	M1369-8035 (2 connections)	1390811000 (1 connection)/ 1390811100 (3 connections)
Temperature sensor (RTD)	M1369-8019	1390810000, BioBLU 1: M1379-8112
Agitation motors		
Autoclavable fermentation vessels (1 L/2 L)	M1369-3120	1390800000
Autoclavable fermentation vessels (5 L/10 L)	M1369-3125	1390800000
Autoclavable cell culture vessels, direct drive	M1369-3135	1390800000
Autoclavable cell culture vessels, magnetic drive	M1369-3130	M1379-9931
BioBLU 1c/1f	-	M1379-0850
BioBLU 3c/5c/5p/10c/14c/50c	M1369-3130	M1379-9931
BioBLU 3f	-	1386080000
Heat blankets		
Autoclavable vessel 1 L	M1369-8021	1390890000
Autoclavable vessel 2 L	M1369-8022	1390890100
Autoclavable vessel 5 L	M1369-8020	1390890200
Autoclavable vessel 10 L	M1369-8023	1390890300
BioBLU 1c/1f	-	M1379-8200
BioBLU 3c/5c/5p/3f	M1379-8116	M1379-8116
BioBLU 14c/10c	M1379-8114	M1379-8114
BioBLU 50c	M1379-8117	M1379-8117
BioBLU exhaust heater	M1379-8115	M1379-8115
Heat blanket adaptor for BioBLU	M1386-8125	1386811900
Base heaters for autoclavable vessels		
1 L/2 L	M1369-3107	1390310700
5 L/10 L	M1369-3108	1390310800

¹⁾ For BioFlo/CelliGen 115, a redox transmitter is required. See page 158 for details



BioFlo® 320



1. Control up to eight systems from a single user interface

2. Compact design with left- and right-handed orientation for industry-leading minimum footprint

3. Universal control for both microbial and cell culture applications

4. Interchangeable autoclavable and BioBLU® Single-Use Vessels

For more information go to www.eppendorf.com

Technical specifications subject to change.



A compact design, available in left- and right-handed orientation makes the BioFlo 320 the smarter solution for your laboratory.

Description

The BioFlo 320 seamlessly blends beauty and utility in one all-inclusive package. An industrial design, flexibility between interchangeable autoclavable and single-use vessels, intelligent sensors, Ethernet connectivity, and a software package are only a few of the features that set it apart from the competition. Extensive options give you the customizable solution your lab requires. Combined with the strict quality standards that all Eppendorf products are held to, the BioFlo 320 truly is the premium choice in benchtop bioprocess systems.

Applications

- > Research and development in cell culture and microbiology
- > Bench- and pilot-scale fermentation of aerobic and anaerobic bacteria, yeasts, and fungi
- > Cultivation of mammalian, insect, and human cell lines
- > Specialized applications such as stem cell culture or biofuel/biopolymer development
- > Specialized packed-bed impeller for vaccine production in anchorage and non-anchorage dependent cell lines
- > Suitable for batch, fed-batch, and continuous/perfusion processes
- > Validation packages available for GMP-regulated processes



Product features

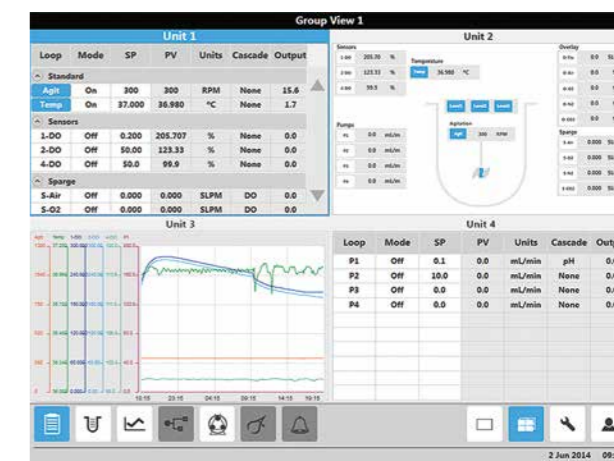
- > Interchangeable autoclavable and BioBLU® Single-Use Vessels
- > Integrated Mettler Toledo® Intelligent Sensor Management (ISM) platform
- > Control up to eight systems from a single user interface
- > Universal control for both microbial and cell culture applications
- > Field-upgradable TMFC drawers for sparge and overlay gas
- > Enhanced software package with new cascade and time profile features
- > Built-in optical pH sensing technology for use with the BioBLU Single-Use Vessels
- > Ethernet communication for multi-unit control, Eppendorf SCADA software, and IP addressing
- > Up to six integrated pumps capable of operating in variable-speed mode
- > Eight independently controlled process gas supplies

BioFlo® 320

Control station			
Dimensions (W x D x H)	40.6 x 40.6 x 66.0 cm (16 x 16 x 26 in)		
Net weight	32 kg (70 lb)		
Touchscreen	15 in Projected Capacitive Touchscreen		
Communication	2 x USB (software updates, serial communication)		
	Ethernet (SCADA, IP Network)		
	3 x analog input/output (4 - 20 mA/0 - 5 V/0 - 10 V)		
Agitation			
Direct drive	25 - 1,200 rpm		
Magnetic drive (autoclavable vessels)	25 - 500 rpm/25 - 150 rpm (10 L)		
Magnetic drive	BioBLU 1c: 25 - 500 rpm, BioBLU 1f: 25 - 1,200 rpm, BioBLU 3f: 25 - 1,200 rpm, BioBLU 3c/5c/5p and BioBLU 10c/14c: 25 - 200 rpm, BioBLU 50c: 25 - 150 rpm		
Temperature			
Water jacketed	5°C above coolant to 55°C above ambient (80°C max)		
Stainless-steel dish bottom	5°C above coolant to 65°C above ambient (90°C max; 85°C max for 10 L)		
Single-use	5°C above ambient to 40°C (cell culture)/45°C (microbiology)		
Sensor type	Pt100		
Gassing			
Sparge	1, 3, or 4 TMFC		
Overlay/headspace	1 TMFC		
Sensors	Communication	Control Range	
pH	Analog or Digital Mettler Toledo® ISM	2 - 12 pH	
Optical pH	Digital (Presens)	6 - 8 pH	
DO	Analog or Digital Mettler Toledo ISM	0 - 200 % (air saturation)	
Optical DO	Digital Mettler Toledo ISM	0 - 200 % (air saturation)	
Redox	Analog or Digital Mettler Toledo ISM	(-)2,000mV - (+)2,000mV	
CO₂	Digital Mettler Toledo ISM	0 - 100 %	
Pumps	Pump Head	Variable Speed	Fixed Speed
Pumps 1, 2, and 3	Watson Marlow® 114DV	5 - 25 rpm	25 rpm (0-100% duty cycle)
Pump 4 (optional)	Watson Marlow 314D	20 - 100 rpm	100 rpm (0-100% duty cycle)
External pumps 1 and 2	Watson Marlow 120U/DV	0.1-200 rpm	N/A
Utility	Connection	Requirement	
Electrical	IEC (with regional plug type)	100-120/208-240 VAC, 50/60Hz, 20 A, single phase	
Water	Stainless-steel quick-connect	10 psig (0.69 barg)	
Gas Supply (Air, O₂, N₂, CO₂)	Push-connect	Autoclavable	Single-use
		10 psig (0.69 barg)	6 psig (0.44 barg)
Exhaust	0.5 psig (0.035 barg)		
Operating conditions	10 - 30°C, up to 80 % RH, non-condensing		
Altitude limit	2,000 m		



The BioFlo 320 is compatible with 250 mL - 40 L BioBLU Single-Use Vessels.



Control up to eight units from a single user interface.

Description

Control Station Configurator: Choose from the options below to configure a BioFlo® 320 control station that meets your specific process needs. Contact your local Eppendorf sales representative for ordering information.

Ordering information	Order no.
Description	
Validation , for BioFlo® 320, control station validation	M1379-0102
BioFlo® 320 , base control station	1379963011
BioFlo® 320 , left-handed orientation/three front-mounted peristaltic pumps (3 @ 5-25 rpm)	1379963111
BioFlo® 320 , left-handed orientation/four front-mounted peristaltic pumps (3 @ 5-25 rpm/1 @ 20 -100 rpm)	1379963211
BioFlo® 320 , right-handed orientation/three front-mounted peristaltic pumps (3 @ 5-25 rpm)	1379963311
BioFlo® 320 , right-handed orientation/four front-mounted peristaltic pumps (3 @ 5-25 rpm/1 @ 20 -100 rpm)	1379963411
BioFlo® 320 , sparge gas option	
1 TMFC, 0.002 - 1.0 SLPM	1379501011
1 TMFC, 0.04 - 20 SLPM	1379501111
3 TMFC, 0.002 - 1.0 SLPM	1379501211
3 TMFC, 0.04 - 20 SLPM	1379501311
4 TMFC, 0.002 - 1.0 SLPM	1379501411
4 TMFC, 0.04 - 20 SLPM	1379501511
BioFlo® 320 , overlay gas option, 1 TMFC, 0.05 - 5 SLPM	1379502111
BioFlo® 320 , no overlay gas option module	1379963511
BioFlo® 320 , secondary sensor module	1379963611
BioFlo® 320 , no secondary sensor module	1379963711
BioFlo® 320 , optical pH module	1379963811
BioFlo® 320 , no optical pH module	1379963911
BioFlo® 320 , equipment connection module	1379964011
BioFlo® 320 , no equipment connection module	1379964111

BioFlo® 320



Accessories

Description	Order no.
Scale, vessel volume, 150 kg	M1379-8188
Tubing Kit, for BioFlo®/CelliGen® 310 and BioFlo® 320, all vessel sizes	M1287-9911
Pivot Arm Mount, for BioFlo® 320 touchscreen monitor	M1379-9905
Touchscreen Monitor Bundle, includes desk mount and 1 meter cable set, for BioFlo® 320	M1379-9906
Sparge Gas Drawer , field-installed	
1 TMFC, 0.002 – 1 SLPM	M1379-5010
1 TMFC, 0.04 – 20 SLPM	M1379-5011
3 TMFC, 0.002 – 1 SLPM	M1379-5012
3 TMFC, 0.04 – 20 SLPM	M1379-5013
4 TMFC, 0.002 – 1 SLPM	M1379-5014
4 TMFC, 0.04 – 20 SLPM	M1379-5015
Overlay Gas Option Drawer , field-installed	
1 TMFC, 0.05 – 5 SLPM	M1379-5021
Secondary Sensor Module , field-installed	M1379-9636
Optical pH Module , field-installed	M1379-9638
Equipment Connection Module , field-installed	M1379-9640

For more information go to www.eppendorf.com



Universal connections for four analog or digital Mettler Toledo ISM sensors reduce sensor complexity.



Variable/fixed speed front-mounted pumps are capable of clockwise and counterclockwise rotation.

BioFlo/CelliGen 310 and BioFlo 320 replacement parts

Description	BioFlo/CelliGen 310	BioFlo 320
	Order no.	Order no.
Cables		
pH sensor, analog	P0720-2273	M1379-8104
DO sensor, analog	P0720-2333	M1379-8106
Redox sensor, analog	P0720-2275 ¹⁾	M1379-8105
Sensor cable, ISM	-	M1379-8108
Optical DO sensor, ISM	-	M1379-8107
Foam sensor cable	M1297-8032	M1379-8109
Temperature sensor (RTD)	M1294-8013	M1379-8100 , BioBLU 1: M1379-8112
Agitation motors		
Autoclavable fermentation vessels, direct drive	M1287-0800	M1379-0800
Autoclavable cell culture vessels, magnetic drive	M1287-0750	M1379-0750
BioBLU® 1c/1f	-	M1379-0850
BioBLU® 3c/5c/5p/10c/14c/50c	-	M1379-9931
BioBLU® 3f	-	1386080000
Heat blankets		
BioBLU® 1c/1f	-	M1379-8200
BioBLU® 3c/5c/5p/3f	M1379-8116	M1379-8116
BioBLU® 14c/10f/10c	M1379-8114	M1379-8114
BioBLU® 50c	M1379-8117	M1379-8117
BioBLU® Exhaust Heat Blanket	M1379-8115	M1379-8115

¹⁾ For BioFlo/CelliGen 310, the secondary pH/redox/DO option is required. See page 158 for details



Suitable vessels for the BioFlo 320 can be found on pages 90 – 95.

New Brunswick™ BioFlo®/CelliGen® 510



Description

The New Brunswick BioFlo 510 Fermentors and CelliGen 510 Bioreactors are intermediate systems ideal for pilot through production applications. These compact systems fit on a benchtop or on an optional mobile table. A modular design and wide variety of standard and optional components provide the flexibility to customize these systems to meet a variety of process requirements.

Applications

- > Laboratory- and pilot-scale fermentation of aerobic and anaerobic bacteria, yeasts, and fungi
- > Laboratory- and pilot-scale cell culture of mammalian, insect, and human cell lines
- > Special applications such as stem cell culture, vaccine, monoclonal antibody or biofuel/biopolymer production
- > Suitable for batch, fed-batch, and continuous/perfusion processes

Working volume

- > 10.75 L to 32.0 L

Gas flow

- > Various combinations of one, two, three or four TMFCs:
 - 0.06 – 3 SLPM
 - 0.3 – 15 SLPM
 - 0.6 – 32 SLPM
 - 1 – 64 SLPM
- > Air Wash System with TMFC (0 – 15 or 0 – 32 SLPM)
- > Overlay with TMFC (0 – 15 or 0 – 32 SLPM)
- > Overlay (valve only)

Exhaust line

- > Exhaust condenser
- > Manual or automatic pressure control

Impellers

- > Rushton-type – Used commonly for robust cell lines such as bacteria, yeasts, and algae, where maximum OTR is desired. Provided as standard on BioFlo 510 fermentors
- > Pitched-blade – Commonly used with mammalian, insect or other shear sensitive cell lines for batch, fed-batch or continuous cultures. Produces axial and radial mixing. Provided as standard with the CelliGen 510 bioreactors.
- > Marine – Commonly used with mammalian, insect, or other shear sensitive cell lines for batch, fed-batch or continuous cultures. Produces axial mixing
- > Spinfilter – For suspension or microcarrier cultures where a dip tube inside the filter withdraws cell media as harvest or waste
- > Cell-Lift – Specially designed to provide uniform circulation for both suspension and microcarrier cultures. Can be used with optional decanting columns for perfusion cultures
- > Packed-bed – For secreted products from anchorage-dependent and suspension cells, this impeller immobilizes cells in a bed of Fibra-Cel® Disks to provide extremely high cell densities

Sensors

- > Single or redundant pH/DO
- > Redox
- > Foam/level

Addition and sampling

- > Resterilizable sampling valve
- > Resterilizable addition valves (4 max)
- > Resterilizable addition/harvest valve with dip tube (2 max)
- > 1.5 in sanitary fitting 7-port septum
- > Addition vessels (glass/stainless steel)
- > Decanters
- > Sterile sampling assembly



Numerous ports in the vessel head plate and sidewall provide flexibility to position sensors, spray balls, addition valves, pressure transducers, and more.

Validation

- > Basic Package
- > Basic Plus Package
- > Enhanced Package

Utility regulator & pre-filter kits

- > Process air pre-filter/regulator kit
- > Instrument air pre-filter/regulator kit
- > Water pre-filter/regulator kit
- > Process steam regulator kit
- > Utility steam pre-filter/regulator kit
- > Utility connection kit

Additional options

- > Allen Bradley® CompactLogix™ PLC Control System
- > Sprayballs for clean-in-place of vessel
- > External variable-speed pumps
- > External scales
- > Spare parts kits
- > Preventive maintenance kits
- > Mobile table
- > System passivation
- > Glycol/chiller heat exchanger

New Brunswick™ BioFlo® 610



Description

The New Brunswick BioFlo 610 is a compact, mobile, pilot-plant fermenter for process development and small-scale production. A modular design and wide variety of standard and optional components provide the flexibility to customize the system to meet your process requirements.

Applications

- > Pilot-scale fermentation of aerobic and anaerobic bacteria, yeasts, and fungi
- > Special applications such as vaccine or biofuel/biopolymer production
- > Suitable for batch, fed-batch, and continuous processes

Working volumes

- > 16.0 L to 50.0L
- > 32.0 L to 100.0 L

Gas flow control

- > Single gas
- > Two gas
- > Overlay (valve only)

Gas flow

- > 1 TMFC, 50 L vessels, 1.5 – 75 SLPM
- > 1 TMFC, 100 L vessels, 3.0 – 150 SLPM
- > 2 TMFC, 50 L vessels, 1.5 – 75/0.6-32 SLPM
- > 2 TMFC, 100 L vessels, 3.0 – 150/1.0-64 SLPM

Exhaust line

- > Exhaust condenser
- > Automatic pressure control

Impellers

- > Rushton-type, standard
- > Pitched-blade, optional
- > Marine, optional

Sensors

- > Single or redundant pH/DO
- > Redox
- > Foam/level

Addition and sampling

- > Resterilizable sampling valve
- > Resterilizable addition valves (4 max)
- > 1.5 in sanitary fitting 7-port septum
- > Addition vessels (glass/stainless steel)
- > Sterile sampling assembly

Validation

- > Basic Package
- > Basic Plus Package
- > Enhanced Package

Utility regulator and pre-filter kits

- > Process air pre-filter/regulator kit
- > Instrument air pre-filter/regulator kit
- > Water pre-filter/regulator kit
- > Process steam regulator kit
- > Utility steam pre-filter/regulator kit
- > Utility connection kit

Additional options

- > Sprayballs for clean-in-place of vessel
- > External variable-speed pumps
- > External scales
- > Spare parts kits
- > Preventive maintenance kits
- > System passivation
- > Low pressure seal alarm for double mechanical seal
- > Glycol/chiller heat exchanger

New Brunswick™ BioFlo® Pro



Description

BioFlo Pro fermentors are modular systems designed for quick delivery, dependable operation, and system flexibility, all at an affordable price. BioFlo Pro systems utilize industry-standard components for dependable operation, and an Allen Bradley® CompactLogix™ programmable-logic controller (PLC) for easy integration into any production facility. The modular design enables multiple options to be added, removed, or changed at any time to meet your various process requirements. Vessels available in 120, 240, 400 and 1,200 liter sizes.

Applications

- > Pilot- and large-scale fermentation of aerobic and anaerobic bacteria, yeasts, fungi, and insect cells
- > Special applications such as biofuel/biopolymer production
- > Suitable for batch, fed-batch, and continuous processes

Working volumes

- > 45 L to 120 L
- > 68 L to 240 L
- > 103 L to 400 L
- > 375 L to 1,200 L

Impellers

- > Rushton-type
- > Pitched-blade
- > Marine

Air inlet line

- > Thermal Mass Flow Controller
- > Dual inlet air filters (in series)
- > Dual-inlet air filters with test integrity ports
- > Gas overlay
- > 2-gas mix (O₂ supplementation)

Exhaust line

- > Exhaust condenser
- > Manual or automatic backpressure control
- > Dual exhaust filters (in parallel)
- > Single or dual exhaust filters with test integrity ports

Pumps

- > Four built-in fixed-speed addition pumps
- > External variable-speed pumps

Housings/sensors

- > pH/DO analog and digital ISM sensors and transmitters
- > Redox sensor and transmitter
- > Retractable sensor housings
- > Redundant sensor kits

Foam kits

- > Foam kit
- > High-foam kit
- > High-high foam kit

Utility regulator and pre-filter kits

- > Instrument air pre-filter/regulator kit
- > Water pre-filter/regulator kit
- > Process steam regulator kit
- > Utility steam pre-filter/regulator kit
- > Utility connection kit

Addition and sampling

- > Sampling valve (Resterilizable)
- > Sterile sampling assembly
- > Resterilizable addition valves

Vessel volume/weight

- > Vessel volume via differential pressure
- > Load cells
- > Level sensor



BioFlo Pro fermentors offer working volumes of up to 1,200 L.

Additional options

- > Clean-in-place option (transfer panel/spray balls)
- > Glycol/chiller heat exchanger
- > Low pressure seal alarm for double-mechanical seal
- > Vessel electropolish
- > System passivation
- > Transfer lines (resterilizable)
- > Addition vessel scales
- > DeltaV™ connectivity

Validation packages

- > Basic Package
- > Basic Plus Package
- > Enhanced Package

Parts kits

- > Spare parts kits
- > Preventive maintenance kits

Vessels



Dependability through proven design

With renowned polymer expertise, Eppendorf is proud to offer the largest portfolio of rigid-walled stirred-tank single-use vessels – in small, bench and pilot scale. A wide range of industry standard glass bioreactors for the cultivation of microbial, mammalian and human cells as well as phototrophic organisms completes our small and bench scale vessel offering.

- > BioBLU® c Single-Use Vessels 48 - 51
- > BioBLU® f Single-Use Vessels 52 - 55
- > BioBLU® Single-Use Vessel Adaptor Kits 56 - 57
- > DASbox® Mini Bioreactor 58 - 59
- > DASGIP® Bioblock Spinner Vessels 60 - 61
- > DASGIP Bioblock Stirrer Vessels 62 - 63
- > DASGIP Benchtop Bioreactors for Cell Culture 64 - 65
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- > DASGIP PhotoBioreactor 68 - 69
- > DASbox® and DASGIP® Vessel Accessories 70 - 81
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Model	BioBLU® Single-Use Vessels	DASbox® Mini Bioreactor
Page	48	58
Working volumes cell culture	100 - 250 mL, 320 mL - 1.25 L, 1.25 - 3.75 L, 3.5 - 10 L, 18.0 - 40.0 L	60 - 250 mL
Working volumes microbiology	65 - 250 mL, 250 mL - 1.25 L, 1.25 - 3.75 L	60 - 250 mL
Standard set-up	DASbox (BioBLU 0.3) DASGIP Bioblock (BioBLU 1) Benchtop (BioBLU 3, 5, 10, 14 and 50)	DASbox
Autoclavable		■
Single-use	■	
Packed-bed impeller	■	
Cell-lift impeller		
Bacteria/yeasts/fungi	■	■
Plant cells/algae		■
Mammalian/animal cells	■	■
Insect cells	■	■
Magnetic overhead drive	■	
Direct overhead drive		■
Exhaust treatment	Peltier-cooled/electric heat band/water-cooled	Peltier-cooled
LED illumination		

■ = standard, □ = optional



Model	DASGIP® Bioblock Vessels	DASGIP® Benchtop Bioreactors	BioFlo® 120 Vessels
Page	60	64	82
Working volumes	250 - 700 mL, 350 mL - 1.0 L, 350 mL - 1.5 L	700 mL - 2.7 L, 800 mL - 3.8 L	0.4 - 10.5 L
Working volumes	200 mL - 1.0 L, 400 mL - 1.5 L, 400 mL - 1.8 L	700 mL - 2.7 L, 800 mL - 3.8 L	0.4 - 10.5 L
Standard set-up	DASGIP Bioblock	Benchtop (DASGIP)	BioFlo 120
Autoclavable	■	■	■
Single-use			
Packed-bed impeller			
Cell-lift impeller			
Bacteria/yeasts/fungi	■	■	■
Plant cells/algae	■	■	■
Mammalian/animal cells	■	■	■
Insect cells	■	■	■
Magnetic overhead drive			■
Direct overhead drive	■	■	■
Exhaust treatment	Water-cooled o (1.0 L spinner vessel)	Water-cooled o (2.5 L vessel)	Water-cooled

For more information go to www.eppendorf.com



Model	BioFlo® 320 Vessels	BioFlo®/CelliGen® 510
Page	90	
Working volumes cell culture	0.6 - 10.5 L	10.75 - 32 L
Working volumes microbiology	0.6 - 10.5 L	10.75 - 32 L
Standard set-up	BioFlo 320	Benchtop/mobile table
Autoclavable	■	
Single-use		
Sterilize-in-place		■
Packed-bed impeller	o	o
Cell-lift impeller	o	o
Bacteria/yeasts/fungi	■	■
Plant cells/algae	■	■
Mammalian/animal cells	■	■
Insect cells	■	■
Magnetic overhead drive	■	■
Direct overhead drive	■	■
Exhaust treatment	Water-cooled	Water-cooled/ electric heat band
LED illumination		

■ = standard, o = optional



BioFlo® 610	BioFlo® Pro
-	-
16 - 100 L	45 - 1,200 L
Mobile skid	Skid-mounted
■	■
■	■
■	■
■	■
Bottom drive	Bottom drive
Water-cooled/ electric heat band	Water-cooled/ electric heat band

i For more information go to www.eppendorf.com

Technical specifications subject to change.

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BioBLU® c Single-Use Vessels



Description

Eppendorf BioBLU Single-Use Vessels combine all the advantages of single-use technology with the trusted performance and scalability of a stirred-tank design. Single-use vessels eliminate autoclaving, improve turn-around time, simplify validation, and reduce overall costs. The BioBLU portfolio has grown to accommodate users from early research and development through manufacturing. BioBLU c and p vessels cover a wide variety of processes, including shear-sensitive suspension cell cultures and adherent cell line development.

Applications

- > Insect, mammalian, and human suspension cell lines
- > Stem cells
- > Adherent cells

Product features

- > Single-use, stirred-tank, rigid-walled vessels available in sizes ranging from 100 mL to 40 L working volume
- > All BioBLU c vessel sizes available with pitched-blade impellers for cell culture applications
- > BioBLU 5p vessels with Eppendorf-exclusive packed-bed impeller, pre-loaded with Fibra-Cel® Disks
- > Unique non-invasive pH and DO sensor technology drastically reduces contamination risks (industry standard autoclavable pH sensors available for pH measurement)
- > Sealed magnetic drive with fully enclosed bearings maintain vessel sterility
- > Raw materials used to produce BioBLU vessels comply with USP Class VI standards and are BSE/TSE free
- > Vessels are assembled with sparger, overlay, gas filters for inlet and exhaust as well as penetrations for pH, DO, temperature, liquid additions, sampling, and harvest
- > For use with Eppendorf benchtop bioreactor systems
- > Adaptor kits for legacy bioreactor controllers available
- > Validation packages available upon request



BioBLU 5p Single-Use Vessels create optimum growth conditions for adherent cells and perfusion culture.

Ordering information

Description	Order no.						
Vessel	Working Volume	Sparger	Impeller	pH	Quantity	Sterilization	
BioBLU® 0.3c	100 mL - 250 mL	Open pipe	1x pitched-blade	Standard	4-pack	15 kGy β-irradiated	78903508
BioBLU® 0.3c	100 mL - 250 mL	Open pipe	1x pitched-blade	Optical	4-pack	15 kGy β-irradiated	78903507
BioBLU® 1c	320 mL - 1.25 L	Open pipe	1x pitched-blade	Standard	4-pack	15 kGy β-irradiated	1386110000
BioBLU® 1c	320 mL - 1.25 L	Open pipe	1x pitched-blade	Optical	4-pack	15 kGy β-irradiated	1386110400
BioBLU® 1c	320 mL - 1.25 L	Open pipe	2x pitched-blade	Standard	4-pack	15 kGy β-irradiated	1386110100
BioBLU® 1c	320 mL - 1.25 L	Open pipe	2x pitched-blade	Optical	4-pack	15 kGy β-irradiated	1386110500
BioBLU® 3c	1.25 L - 3.75 L	Microsparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	1386000100
BioBLU® 3c	1.25 L - 3.75 L	Macrosparger	1x pitched-blade	Optical	4-pack	15 kGy β-irradiated	1386000200
BioBLU® 3c	1.25 L - 3.75 L	Macrosparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	1386000300
BioBLU® 3c	1.25 L - 3.75 L	Macrosparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	1386000300
BioBLU® 5p	3.75 L	Microsparger	Packed bed	Optical	1-pack	15 kGy β-irradiated	M1363-0119
BioBLU® 5p	3.75 L	Microsparger	Packed bed	Optical	4-pack	15 kGy β-irradiated	M1363-0120
BioBLU® 5p	3.75 L	Macrosparger	Packed bed	Optical	1-pack	15 kGy β-irradiated	M1363-0133
BioBLU® 5p	3.75 L	Macrosparger	Packed bed	Optical	4-pack	15 kGy β-irradiated	M1363-0134
BioBLU® 10c	3.5 L - 10 L	Microsparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	1386140000
BioBLU® 10c	3.5 L - 10 L	Macrosparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	1386141000
BioBLU® 50c	18 L - 40 L	Microsparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	M1363-0131
BioBLU® 50c	18 L - 40 L	Microsparger	1x pitched-blade	Optical	4-pack	15 kGy β-irradiated	M1363-0132
BioBLU® 50c	18 L - 40 L	Macrosparger	1x pitched-blade	Optical	1-pack	15 kGy β-irradiated	M1363-0129
BioBLU® 50c	18 L - 40 L	Macrosparger	1x pitched-blade	Optical	4-pack	15 kGy β-irradiated	M1363-0130

For more information go to www.eppendorf.com

BioBLU® c Single-Use Vessels

Technical specifications		
Model	BioBLU® 0.3c	BioBLU® 1c
Bioreactors		
Sterilization	Pre-sterilized (15 kGy β-irradiated)	Pre-sterilized (15 kGy β-irradiated)
Working volume (total)	100 – 250 mL (380 mL)	320 mL – 1.25 L (1.8 L) ³⁾
Material vessel¹⁾	PS, PC (USP Class VI)	PS, PC (USP Class VI)
Material tubing	Silicone, C-Flex ²⁾	Silicone, C-Flex ²⁾
Head plate ports	2x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 1x liquid addition overlay, 1x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x gas overlay, 1x exhaust	3x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 2x liquid addition overlay, 2x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x gas overlay, 1x exhaust
Agitation		
Drive	Magnetic overhead drives	Magnetic overhead drives
Impellers	Pitched-blade	Pitched-blade
Recommended agitation speed	20 – 500 rpm	30 – 600 rpm
Gassing		
Gas supply	Sparger and/or overlay	Sparger and/or overlay
Monitoring and Control		
Sensor length	120 mm	220 mm
Temperature sensor	Pt100 RTD (not included)	Pt100 RTD (not included)
Max. operating temperature	40 °C	40 °C
pH sensor	Optical pH or standard glass sensor (120 mm)	Optical pH or standard glass sensor (220 mm)
DO Sensor	Polarographic DO - 4.7/118 mm	Polarographic DO - 4.7/229 mm
Exhaust condensation	Liquid-free cooling (Peltier)	Liquid-free cooling (Peltier)/water-cooled

¹⁾ PC = Polycarbonate, PS = Polystyrene
²⁾ C-Flex is for optical pH version only.
³⁾ 425 mL minimal working volume when used with vessel stand and heating blanket

For more information go to www.eppendorf.com

Technical specifications subject to change.

BioBLU® 3c	BioBLU® 5p	BioBLU® 10c	BioBLU® 50c
Pre-sterilized (15 kGy β-irradiated)	Pre-sterilized (15 kGy β-irradiated)	Pre-sterilized (15 kGy β-irradiated)	Pre-sterilized (15 kGy β-irradiated)
1.25 – 3.75 L (5 L)	3.75 L (5 L)	3.5 – 10 L (14 L)	18 – 40 L (50 L)
PC (USP Class VI)	PS, PC (USP Class VI)	PC (USP Class VI)	PS, PC (USP Class VI)
Silicone, C-Flex	Silicone, C-Flex	Silicone, C-Flex	Silicone, C-Flex
4x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 3x liquid addition overlay, 1x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x gas overlay, 1x exhaust	1x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 3x liquid addition overlay, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x gas overlay, 1x exhaust	4x Pg 13.5 (1x 19 mm to Pg 13.5), 1x harvest tube, 1x thermowell, 1x sample port, 3x liquid addition overlay, 1x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x gas overlay, 1x exhaust	1x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 3x liquid addition overlay, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x gas overlay, 1x exhaust
Magnetic overhead drives	Magnetic overhead drives	Magnetic overhead drive	Magnetic overhead drives
Pitched-blade	Packed-bed	Pitched-blade	Pitched-blade
25 – 200 rpm	25 – 200 rpm	25 – 200 rpm	25 – 150 rpm
Sparger and/or overlay	Sparger and/or overlay	Sparger and/or overlay	Sparger and/or overlay
225 mm			
Pt100 RTD (not included)	Pt100 RTD (not included)	Pt100 RTD (not included)	Pt100 RTD (not included)
40 °C	40 °C	40 °C	40 °C
Optical pH or standard glass sensor (220 mm)	Optical pH or standard glass sensor (120 mm)	Optical pH or standard glass sensor (325 mm)	Optical pH or standard glass sensor (625 mm)
Polarographic or optical DO - 12/225 mm	Polarographic DO - 12/120 mm	Polarographic or optical DO - 12/355 mm	Polarographic DO - 12/526 mm
Electric heater band or Peltier	Electric heater band or Peltier	Electric heater band	Electric heater band

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BioBLU® f Single-Use Vessels



Description

Eppendorf BioBLU Single-Use Vessels combine all the advantages of single-use technology with the trusted performance and scalability of a stirred-tank design. Single-use vessels eliminate labor-intensive cleaning, improve turn-around time, simplify validation, and reduce overall costs. BioBLU f vessels are specifically designed for robust microbial applications using bacteria, yeasts, and fungi.

Applications

- > Bacteria, yeasts, and fungi
- > Suitable for high-cell density fermentation

Product features

- > Single-use, stirred-tank, rigid-walled vessels available in sizes ranging from 65 mL to 3.75 L working volume
- > Designed for high-density fermentation processes
- > Multiple Rushton-type impellers for efficient mixing and mass transfer
- > Sealed magnetic drive with fully enclosed bearings maintain vessel sterility
- > Eppendorf exclusive interior cooling baffles for excellent mixing and mass transfer
- > Raw materials used to produce BioBLU vessels comply with USP Class VI standards and are BSE/TSE free
- > Vessels are assembled with sparger, gas filters for inlet and exhaust as well as penetrations for pH, DO, temperature, liquid additions, sampling, and harvest
- > For use with Eppendorf benchtop bioreactor systems



Microbiology on the fast track - with the BioBLU f vessels.

Ordering information

Description							Order no.
Vessel	Working Volume	Sparger	Impeller	pH	Quantity	Sterilization	
BioBLU® 0.3f	65 mL - 250 mL	Open pipe	2x Rushton-type	Standard	4-pack	15 kGy β-irradiated	78903509
BioBLU® 1f	250 mL - 1.25 L	Open pipe	2x Rushton-type	Standard	4-pack	15 kGy β-irradiated	1386110200
BioBLU® 1f	250 mL - 1.25 L	Open pipe	3x Rushton-type	Standard	4-pack	15 kGy β-irradiated	1386110300
BioBLU® 3f	1.25 L - 3.75 L	Macrosparger	3x Rushton-type	Standard	1-pack	Autoclavable	1386000900
BioBLU® 3f	1.25 L - 3.75 L	Macrosparger	3x Rushton-type	Standard	4-pack	Autoclavable	1386001000

For more information go to www.eppendorf.com

BioBLU® f Single-Use Vessels

Technical specifications	
Model	BioBLU® 0.3f
Application	Microbiology
Bioreactors	
Sterilization	Pre-sterilized (15 kGy β-irradiated)
Working volume (total)	65 – 250 mL (380 mL)
Material vessel¹⁾	PS, PC (USP Class VI)
Material tubing	Silicone
Head plate ports	2x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 2x liquid addition overlay, 1x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x exhaust
Agitation	
Drive	Magnetic overhead drives
Impellers	Rushton-type
Recommended agitation speed	20 – 2,000 rpm
Gassing	
Gas supply	Sparger
Monitoring and Control	
Temperature sensor	Pt100 RTD (not included)
Max. operating temperature	45 °C
pH sensor	Standard glass sensor (120 mm)
DO Sensor	Polarographic DO - 4.7/118 mm
Exhaust condensation	Liquid-free cooling (Peltier)

¹⁾ PC = Polycarbonate, PS = Polystyrene

BioBLU® 1f	BioBLU® 3f
Microbiology	Microbiology
Bioreactors	
Pre-sterilized (15 kGy β-irradiated)	Autoclavable
250 mL – 1.25 L (1.8 L)	1.25 L – 3.75 L (5 L)
PS, PC (USP Class VI)	PC (USP Class VI)
Silicone	Silicone
3x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 3x liquid addition overlay, 2x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x exhaust, 4x baffles (incl. cooling water connection)	4x Pg 13.5, 1x harvest tube, 1x thermowell, 1x sample port, 3x liquid addition overlay, 1x liquid addition submerged, 1x DO sensor port with permeable membrane, 1x gas sparge, 1x exhaust, 4x baffles (incl. cooling water connection)
Magnetic overhead drives	Magnetic overhead drives
Rushton-type	Rushton-type
100 – 1,500 rpm	25 – 1,200 rpm
Gassing	
Sparger	Sparger
Monitoring and Control	
Pt100 RTD (not included)	Pt100 RTD (not included)
45 °C	45 °C
Standard glass sensor (220 mm)	Standard glass sensor
Polarographic DO - 4.7/229 mm	Polarographic DO - 4.7/220 mm
Liquid-free cooling (Peltier)/water-cooled	Water-cooled

For more information go to www.eppendorf.com

Technical specifications subject to change.

Your local distributor: www.eppendorf.com/contact
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BioBLU® Single-Use Vessel Adaptor Kits

Description

Single-use vessel adaptor kits convert existing autoclavable bioreactor controllers for use with Eppendorf BioBLU Single-Use Vessels. Easy to install kits provide all the necessary equipment for conversion.

Product features

- > Adapt your existing Eppendorf DASbox, DASGIP, and BioFlo/CelliGen autoclavable systems for use with Eppendorf BioBLU Single-Use Vessels
- > Provides all the benefits of single-use technology with minimal upfront investment
- > Kits include all parts necessary for conversion of the respective system, such as motor adaptor, exhaust treatment, and more
- > BioBLU vessels sold separately



Ordering information

Description	Order no.
Adaptor Kit: BioBLU® Single-Use Vessels and DASbox®, Peltier condensers, for 4 BioBLU® 0.3	78532298
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® Bioblock, Peltier condensers, for 4 BioBLU® 1f	78532295
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® Bioblock, water-based condensers, for 4 BioBLU® 1f	78532330
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® Bioblock, Peltier condensers, for 4 BioBLU® 1c	78532299
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® Bioblock, water-based condensers, for 4 BioBLU® 1c	78532329
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® benchtop system, Peltier condensers, for 4 BioBLU® 1c	78532328
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® benchtop system, water-based condensers, for 4 BioBLU® 1c	78532334
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® benchtop system, 115 V, Peltier condensers, for 4 BioBLU® 3c/5c/5p	78532296
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® benchtop system, 230 V, Peltier condensers, for 4 BioBLU® 3c/5c/5p	78532297
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® benchtop system, water-based condensers, for 4 BioBLU® 3c/5c/5p	
115 V	78532331
230 V	78532333
Adaptor Kit: BioBLU® Single-Use Vessel, for BioFlo® 320	
100 – 240 V, BioBLU® 3c/5c/5p	M1386-9943
100 – 240 V, BioBLU® 3f	M1386-9923
100 – 240 V, BioBLU® 10c/14c	M1386-9963
100 – 240 V, BioBLU® 50c	M1386-9983

Ordering information

Description	Order no.
Adaptor Kit: BioBLU® Single-Use Vessel, for BioFlo®/CelliGen® 115	
100 – 240 V, BioBLU® 3c/5c/5p	M1386-9940
100 – 240 V, BioBLU® 3f, for direct-drive motor of 1 L or 2 L vessel	M1386-9920
100 – 240 V, BioBLU® 3f, for direct-drive motor of 5 L or 10 L vessel	M1386-9921
100 – 240 V, BioBLU® 10c/14c	M1386-9960
100 – 240 V, BioBLU® 50c	M1386-9980
Adaptor Kit: BioBLU® Single-Use Vessel, for CelliGen® 310	
100 – 120 V, BioBLU® 3c/5c/5p	M1386-9941
100 – 120 V, BioBLU® 10c/14c	M1386-9961
100 – 120 V, BioBLU® 50c	M1386-9981
200 – 240 V, BioBLU® 3c/5c/5p	M1386-9942
200 – 240 V, BioBLU® 10c/14c	M1386-9962
200 – 240 V, BioBLU® 50c	M1386-9982
Adaptor Kit: BioBLU® Single-Use Vessel, for BioFlo® 310, 100 – 240 V, BioBLU® 3f	M1386-9922

Adaptor kits are designed to adapt an existing unit in the field to single-use vessels. For information on single-use bundles in combination with a new controller, please refer to page 85 and 93.

Accessories

Description	Order no.
Multi-channel Fiber Optic pH Meter ph-4 mini, PreSens, with 4x optical pH, 1x Pt1000 input	78525222
Adaptor, single-use compression fitting, for Pg 13.5 port, pack of 10	1386010200
Adaptor, single-use blind plug, for Pg 13.5 port, pack of 10	1386010300
Adaptor, single-use septum kit, for Pg 13.5 port, pack of 10	1386010100
Adaptor, single-use tri-port, for Pg 13.5 port, pack of 10	1386010000
OP-76 Optical pH Module ¹⁾	M1376-1001
DASGIP® EGC4 Exhaust Condenser Controller, for 4 Peltier actuators, 110 – 240 V/50/60 Hz	76DGEGC4
Vessel Stand	
BioBLU® 1	M1379-4000
BioBLU® 3	M1386-0300
BioBLU® 10	M1386-0302
Exhaust Condenser, Peltier, for 1 BioBLU® 0.3c/f Single-Use Vessels	76DXCONDSU
Exhaust Condenser, Peltier	
for 1 BioBLU® 1c Single-Use Vessel	76DGCONDSU1C
for 1 BioBLU® 1f Single-Use Vessel	76DGCONDSU1F
for 1 BioBLU® 3c/5c/5p Single-Use Vessel	76DGCONDSU5C
Media/Supplement Addition Bag, with 1/4 in CPC connector	
500 mL	P0640-8860
1 L	P0640-8861
5 L	P0640-8862
10 L	P0640-8863
Y-Connector, with 1/4 in CPC connector	P0620-0947
BioBLU® Vessel Connection Kit	M1363-0112
Validation, for BioBLU® vessels	On request
Level/Foam Sensor, for 1 single-use vessel, incl. triple port, for 1 vessel, Pg 13.5 with two sensors (150 mm, 220 mm) and media addition	76DGLVLSU

¹⁾ M1376-1001: For sensor cables, see page 155

DASbox® Mini Bioreactor



Description

The DASbox Mini Bioreactor is an industry-standard autoclavable glass vessel featuring a multi port stainless steel head plate and a powerful direct overhead drive. With working volumes of 60 – 250 mL it is perfectly suited for process development in cell culture and microbial applications and ready for use with the Eppendorf DASbox.

Product features

- > Industry-standard design for excellent scalability and reproducibility in both cell culture and microbiology
- > Stainless steel head plate, fully instrumented with standard sensors for precise measurement and control of temperature, pH, DO, and level
- > Small working volumes of 60 – 250 mL saving valuable resources
- > Powerful direct overhead drive with marine impeller (cell culture) or two Rushton-type impellers (microbiology)
- > Liquid-free exhaust condenser with easy handling by automatic slide-in activation and slide-out deactivation mode

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications		
Model	Cell culture	Microbiology
Standard set-up	DASbox	DASbox
Dimensions (W × D × H)	90 × 90 × 360 mm	90 × 90 × 360 mm
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	60 – 250 mL (350 mL)	60 – 250 mL (350 mL)
Material vessel	Glass	Glass
Head plate	Stainless steel, GLS80 screw cap	Stainless steel, GLS80 screw cap
Head plate ports	6x Pg 13.5, 2x dip tube long, 2x dip tube short, 1x thermowell	6x Pg 13.5, 2x dip tube long, 2x dip tube short, 1x thermowell
Agitation		
Drive	Direct overhead drive	Direct overhead drive
Impellers	1x marine	2x Rushton-type
Recommended agitation speed	20 – 2,500 rpm	20 – 2,500 rpm
Gassing		
Gas supply	Overlay and/or sparger	Sparger
Monitoring and Control		
Sensor length	120 mm	120 mm
Temperature sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Liquid-free (Peltier)	Liquid-free (Peltier)

Contents of vessel kits		
	Cell culture	Microbiology
Flat-bottom vessel with stainless steel head plate, screw cap and o-ring	■	■
Overhead drive (20 - 2,500 rpm)	Sold separately	Sold separately
Sensors	Sold separately	Sold separately
Impeller	■	■
Sparger assembly (dip tube)	■	
Sparger assembly (L-sparger)		■
Peltier exhaust condenser with filter	Sold separately	Sold separately
Thermowell	■	■
Sampling assembly	■	■
Liquid addition tube (qty. 3)	■	■
Septum kit	■	■
Inlet filter	■	■
Silicone tubing	■	■
Tools (tubing clamp, hex wrench)	■	■

■ = standard

Ordering information

DASbox® Mini Bioreactor			
Vessel Volume	Working volume (total)	Impellers	Order no.
Cell culture	60 – 250 mL (350 mL)	1x marine	76DS0250DSS
Microbiology	60 – 250 mL (350 mL)	2x Rushton-type	76SR0250DLS

DASGIP® Bioblock Spinner Vessels



Description

Eppendorf offers a line of advanced autoclavable spinner vessels suitable for temperature control with the compact DASGIP Bioblock. These overhead driven spinner vessels feature a stainless steel head plate with standard ports, pitched-blade impellers, and two side arms. Covering a working volume range of 200 mL – 1.6 L they are perfectly suited for cell culture research and process development.

Product features

- > Working volumes ranging from 250 mL – 1.5 L
- > Direct overhead drives with 30 – 1,250 rpm (100 – 1,600 rpm optional), pitched-blade impellers
- > Industry-standard sensors available for accurate monitoring and control of temperature, pH, DO, level, and OD
- > Two GL45 side arms

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications			
Model	0.7 L	1 L	1.5 L
Application	Cell culture	Cell culture	Cell culture
Standard set-up	DASGIP Bioblock	DASGIP Bioblock	DASGIP Bioblock
Dimensions (W x D x H)	250 x 150 x 510 mm	250 x 150 x 560 mm	250 x 150 x 610 mm
Bioreactors			
Sterilization	Autoclavable	Autoclavable	Autoclavable
Working volume (total)	250 mL – 700 mL (1.5 L)	350 mL – 1.0 L (1.9 L)	350 mL – 1.5 L (2.3 L)
Material vessel	Glass	Glass	Glass
Head plate	Stainless steel, screw cap	Stainless steel, screw cap	Stainless steel, screw cap
Head plate ports	1x M30, 7x Pg 13.5, 1x thermowell	1x M30, 7x Pg 13.5, 1x thermowell	1x M30, 7x Pg 13.5, 1x thermowell
Agitation			
Drive	Direct overhead drive	Direct overhead drive	Direct overhead drive
Impellers	1x pitched blade	2x pitched-blade	2x pitched-blade
Recommended agitation speed	30 – 1,250 rpm	30 – 1,250 rpm	30 – 1,250 rpm
Gassing			
Gas supply	Overlay and/or sparger	Overlay and/or sparger	Overlay and/or sparger
Monitoring and Control			
Sensor length	220 mm	220 mm	320 mm
Temperature sensor	Pt100 RTD	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled	Water-cooled

Contents of Vessel Kits	
Contents	
Flat-bottom vessel with sidearms, stainless steel head plate and screw caps	■
Overhead drive (30 - 1,250 rpm)	Sold separately
Sensors	Sold separately
Impeller	■
Sparger assembly (dip tube)	■
Exhaust condenser with filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port with liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

Ordering information

DASGIP® Bioblock Spinner Vessels			
Vessel Volume	Working volume (total)	Impellers	Order no.
0.7 L	250 mL – 700 mL (1.5 L)	1x pitched blade	76DS0700DSS
1 L	350 mL – 1.0 L (1.9 L)	2x pitched-blade	76DS1000DSS
1.5 L	350 mL – 1.5 L (2.3 L)	2x pitched-blade	76DS1500DSS

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DASGIP® Bioblock Stirrer Vessels



Description

Eppendorf offers a line of advanced autoclavable stirrer vessels suitable for temperature control with the compact DASGIP Bioblock. These overhead-driven stirrer vessels feature a stainless steel head plate with standard ports and Rushton-type impellers. Covering a working volume range of 200 mL – 1.8 L they are perfectly suited for microbial research and process development.

Product features

- > Working volumes ranging from 200 mL – 1.8 L
- > Direct overhead drives with 100 – 1,600 rpm (30 – 1,250 rpm optional), Rushton-type impellers
- > Industry-standard sensors available for precise monitoring and control of temperature, pH, DO, redox potential, level, and OD

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications			
Model	1 L	1.5 L	1.8 L
Application	Microbiology	Microbiology	Microbiology
Standard set-up	DASGIP Bioblock	DASGIP Bioblock	DASGIP Bioblock
Dimensions (W x D x H)	110 x 150 x 500 mm	110 x 150 x 570 mm	110 x 150 x 610 mm
Bioreactors			
Sterilization	Autoclavable	Autoclavable	Autoclavable
Working volume (total)	200 mL – 1.0 L (1.3 L)	400 mL – 1.5 L (1.8 L)	400 mL – 1.8 L (2.1 L)
Material vessel	Glass	Glass	Glass
Head plate	Stainless steel, screw cap	Stainless steel, screw cap	Stainless steel, screw cap
Head plate ports	1x M30, 7x Pg 13.5, 1x thermowell	1x M30, 7x Pg 13.5, 1x thermowell	1x M30, 7x Pg 13.5, 1x thermowell
Agitation			
Drive	Direct overhead drive	Direct overhead drive	Direct overhead drive
Impellers	2x Rushton-type	2x Rushton-type	3x Rushton-type
Recommended agitation speed	100 – 1,600 rpm	100 – 1,600 rpm	100 – 1,600 rpm
Gassing			
Gas supply	Sparger	Sparger	Sparger
Monitoring and Control			
Sensor length	220 mm	220 mm	320 mm
Temperature sensor	Pt100 RTD	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled	Water-cooled

Contents of Vessel Kits

Contents	
Flat-bottom vessel with stainless steel head plate and screw caps	■
Overhead drive (100 - 1,600 rpm)	Sold separately
Baffle assembly	Sold separately (1 L and 1.5 L vessels only)
Sensors	Sold separately
Impellers	■
Sparger assembly (L-sparger)	■
Exhaust condenser with filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port with liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

Ordering information

DASGIP® Bioblock Stirrer Vessels			
Vessel Volume	Working volume (total)	Impellers	Order no.
1 L	200 mL – 1.0 L (1.3 L)	2x Rushton-type	76SR0700DLS
1.5 L	400 mL – 1.5 L (1.8 L)	2x Rushton-type	76SR1000DLS
1.8 L	400 mL – 1.8 L (2.1 L)	3x Rushton-type	76SR1500DLS

DASGIP® Benchtop Bioreactors for Cell Culture



Description

DASGIP Benchtop Bioreactors feature an autoclavable glass body and a stainless steel head plate. 16 industry-standard ports, direct overhead drives and pitched-blade impellers ensure optimal conditions for advanced cell culture research and process development. All parts are laser-labelled with part numbers and have certificates of origin available.

Product features

- > Working volumes of 750 mL – 2.7 L and 850 mL – 3.8 L
- > Direct overhead drives with 30 – 1,250 rpm (100 – 1,600 rpm optional), pitched-blade impellers
- > Industry-standard sensors available for precise monitoring and control of temperature, pH, DO, level, and OD

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications		
Model	2.5 L	3.5 L
Application	Cell culture	Cell culture
Standard set-up	Benchtop (DASGIP)	Benchtop (DASGIP)
Dimensions (W x D x H)	190 x 190 x 580 mm	190 x 190 x 660 mm
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	750 mL – 2.7 L (3.1 L)	850 mL – 3.8 L (4.3 L)
Material vessel	Glass	Glass
Head plate	Stainless steel	Stainless steel
Head plate ports	1x M30, 8x M18x1.5, 8x D6	1x M30, 8x M18x1.5, 8x D6
Agitation		
Drive	Direct overhead drive	Direct overhead drive
Impellers	2x pitched-blade	2x pitched-blade
Recommended agitation speed	30 – 1,250 rpm	30 – 1,250 rpm
Gassing		
Gas supply	Overlay and/or sparger	Overlay and/or sparger
Monitoring and Control		
Sensor length	220 mm	320 mm
Temperature sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled

Contents of Vessel Kits	
Contents	
Dished-bottom vessel with stainless steel head plate	■
Vessel stand	■
Overhead drive (30 - 1,250 rpm)	Sold separately
Sensors	Sold separately
Impeller	■
Sparger assembly L-sparger	■
Exhaust condenser with filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port with liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■
■ = standard	

Ordering information

DASGIP® Benchtop Bioreactors for Cell Culture			
Vessel Volume	Working volume (total)	Impellers	Order no.
2.5 L	750 mL – 2.7 L (3.1 L)	2x pitched-blade	76DR03C
3.5 L	850 mL – 3.8 L (4.3 L)	2x pitched-blade	76DR04C

DASGIP® Benchtop Bioreactors for Microbiology



Description

DASGIP Benchtop Bioreactors feature an autoclavable glass body and a stainless steel head plate. 16 industry-standard ports, direct overhead drives and Rushton-type impellers ensure optimal conditions for advanced microbial research and process development. All parts are laser-labelled with part numbers and have certificates of origin available.

Product features

- > Working volumes of 700 mL – 2.7 L and 800 mL – 3.8 L
- > Direct overhead drives with 100 – 1,600 rpm (30 – 1,250 rpm optional), Rushton-type impellers
- > Industry-standard sensors available for precise monitoring and control of temperature, pH, DO, redox potential, level, and OD

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications		
Model	2.5 L	3.5 L
Application	Microbiology	Microbiology
Standard set-up	Benchtop (DASGIP)	Benchtop (DASGIP)
Dimensions (W x D x H)	190 x 190 x 580 mm	190 x 190 x 660 mm
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	700 mL – 2.7 L (3.2 L)	800 mL – 3.8 L (4.3 L)
Material vessel	Glass	Glass
Head plate	Stainless steel	Stainless steel
Head plate ports	1x M30, 8x M18x1.5, 4x D6, 4x baffles	1x M30, 8x M18x1.5, 4x D6, 4x baffles
Agitation		
Drive	Direct overhead drive	Direct overhead drive
Impellers	2x Rushton-type	3x Rushton-type
Recommended agitation speed	100 – 1,600 rpm	100 – 1,600 rpm
Gassing		
Gas supply	Sparger	Sparger
Monitoring and Control		
Sensor length	220 mm	320 mm
Temperature sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled

Contents of Vessel Kits

Contents	
Dished-bottom vessel with stainless steel head plate	■
Vessel stand	■
Overhead drive (100 - 1,600 rpm)	Sold separately
Baffle assembly	■
Sensors	Sold separately
Impeller	■
Sparger (L-sparger)	■
Exhaust condenser with filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port with liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

Ordering information

DASGIP® Benchtop Bioreactors for Microbiology			
Vessel Volume	Working volume (total)	Impellers	Order no.
2.5 L	700 mL – 2.7 L (3.2 L)	2x Rushton-type	76DR03F
3.5 L	800 mL – 3.8 L (4.3 L)	3x Rushton-type	76DR04F

DASGIP® PhotoBioreactor



Description

DASGIP PhotoBioreactors are designed specifically to take advantage of DASGIP Parallel Bioreactor Systems in phototrophic cultivation applications.

Plant suspensions, algae and phototrophic bacteria can be grown under customized and variable lighting conditions. Making this possible are the integrated DASGIP LED Illumination Devices providing optimum light conditions for growth and photosynthesis. DASGIP PhotoBioreactors come in small and bench scale.

Product features

- > Industry-standard autoclavable bioreactors with working volumes of 350 mL – 1.0 L and 750 mL – 2.6 L
- > Direct overhead drives with 30 – 1,250 rpm (100 – 1,600 rpm optional), pitched-blade impellers
- > Industry-standard sensors available for precise monitoring and control of temperature, pH, DO, redox potential, level, and OD
- > Up to four DASGIP LED Illumination Devices integrated with emitted light spectra optimized to meet various photosynthesis requirements
- > DASGIP PBR4 Module allows for parallel illumination of up to four bioreactors with three individually controlled wavelength ranges

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications		
Model	1.0 L	2.5 L
Application	Phototrophic cultivation	Phototrophic cultivation
Standard set-up	Benchtop (DASGIP)	Benchtop (DASGIP)
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	350 mL – 1.0 L (1.9 L)	750 mL – 2.6 L (3.0 L)
Material vessel	Glass	Glass
Head plate	Stainless steel, screw cap	Stainless steel
Head plate ports	1x M30, 4x Pg 13.5, 1x thermowell	1x M30, 8x M18x1.5, 4x D6
Agitation		
Drive	Direct overhead drive	Direct overhead drive
Impellers	2x pitched-blade	2x pitched-blade
Recommended agitation speed	30 – 1,250 rpm	30 – 1,250 rpm
Gassing		
Gas supply	Overlay and/or sparger	Overlay and/or sparger
Monitoring and Control		
Sensor length	220 mm	220 mm
Temperature sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled
Illumination		
DASGIP LED Illumination Devices	3	4

Contents of Vessel Kits	
Contents	
Flat-bottom vessel (1.0 L)/ dished - bottom vessel (2.5 L) with stainless steel head plate	■
Vessel stand	■
	(2.5 L vessel only)
Overhead drive (30 - 1,250 rpm)	Sold separately
Sensors	Sold separately
Impellers	■
Sparger assembly (L-sparger)	■
LED illumination devices	Sold separately
Exhaust condenser with filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port with liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■
■ = standard	

Ordering information

DASGIP® PhotoBioreactor			
Vessel Volume	Working volume (total)	Impellers	Order no.
1 L	350 mL – 1.0 L (1.9 L)	2x pitched-blade	76DS1000ODSP
2.5 L	750 mL – 2.6 L (3.0 L)	2x pitched-blade	76DR03P

DASbox® and DASGIP® Vessel Accessories



Head Plates

- > Stainless steel, electropolished
- > All wetted parts laser-labeled with part numbers and material certificates

Model	Stainless-steel Head Plate			
	78107301	78107156	78107157	78107249
Order no.	78107301	78107156	78107157	78107249
Outer diameter (O.D.)	77 mm	100 mm	100 mm	190 mm
DASbox® MiniBioreactor	■			
DASGIP® Benchtop Spinner 0.5 L		■		
DASGIP® Benchtop Spinner 1.5 L		■		
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L			■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L			■	
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L			■	
DASGIP® Benchtop Bioreactors 2.5 L				■
DASGIP® Benchtop Bioreactors 3.5 L				■
DASGIP® PhotoBioreactors 1.0 L			■	
DASGIP® PhotoBioreactors 2.5 L				■
D4 ports	4	-	-	-
D6 ports	-	2	1	8
M30 ports	-	-	1	1
M18 ports	-	-	-	8
Pg 13.5 ports	6	8	7	-
Thermowell included	1	-	-	-

■ = standard



Compression Fittings and Triple Ports

- > Available with Pg 13.5 and M18 threads
- > Inner Diameter (I.D.) 4 mm, 6 mm or 12 mm

Ordering information

Description	Order no.
Compression Fitting , complete, with Pg 13.5 male thread	
I.D. 4 mm	78532282
I.D. 6 mm	78532283
I.D. 12 mm	78532284
Compression Fitting , complete, with M18x1.5 male thread	
I.D. 4 mm	78532279
I.D. 6 mm	78532280
I.D. 12 mm	78532281
DASGIP® Adaptor	
Pg 13.5 female thread to M18x1.5 male thread	77102016

Ordering information

Description	Order no.
Back Ferrule , for compression fitting, PFA	
O.D. 4 mm	78706352
O.D. 6 mm	78706354
O.D. 12 mm	78706356
Front Ferrule , for compression fitting, PFA	
O.D. 4 mm	78706351
O.D. 6 mm	78706353
O.D. 12 mm	78706355

Ordering information

Description	Order no.
Triple Port , Pg 13.5 thread, 3 tubes with O.D. 4 mm x L 85 mm, all parts included	78706414
Triple Port , M18x1.5 thread, 3 tubes with O.D. 4 mm x L 85 mm, all parts included	77102018
Triple Port , Pg 13.5 thread, welded, 3 tubes with O.D. 4 x Li 219 mm	78706587
Triple Port , Pg 13.5 thread, welded, 2 tubes with O.D. 4 x Li 219 mm, 1 tube with O.D. 4 x Li 21 mm	78706588
Triple Port , Pg 13.5 thread, welded, 3x O.D. 4 x Li 21 mm	78109071
Triple port , Pg 13.5 thread, welded, 2 tubes with O.D. 4 x Li 21 mm, 1 tube with O.D. 4 x Li 219 mm	78109075

For more information go to www.eppendorf.com

DASbox® and DASGIP® Vessel Accessories



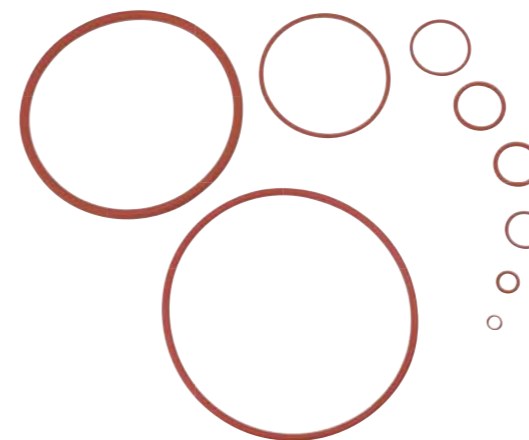
Blind Plugs and Septa

- > Stainless steel
- > Pg 13.5, M18 and M6 threads
- > Silicon septa available for addition, inoculation or sampling

Ordering information

Description	Order no.
Blind Plug , stainless steel, all parts included	
Pg 13.5 thread	78532300
M6 male thread	77102020
M18x1.5 thread	77102017
DASGIP® Septum Holder , stainless steel, with septum	
M18x1.5 male, I.D. 12 mm	77102019
Pg 13.5 male, I.D. 12 mm	77102006
Blind Plug , stainless steel, all parts included	
Pg 13.5 thread	77102041
Silicone Rubber Septum	
Pg 13.5, O.D. 18 mm/I.D. 12 mm	78106309
GL45	78106305
Silicone Rubber Septum , PTFE-coated, GL 45	78106306
DASGIP® Adaptor	
Pg 13.5 female thread to M18x1.5 male thread	77102016

For more information go to www.eppendorf.com



O-Rings

- > O-Rings are available in different materials (VMQ silicone, NBR rubber) and sizes.

Ordering information

Description	Order no.
O-Ring	
VMQ 70/Si 820, red, 4x1.5 (I.D. x d)	78706417
VMQ 70/Si 820, red, 5x1.5 (I.D. x d)	78706429
VMQ 70/Si 820, red, 6x1.5 (I.D. x d)	78706416
VMQ 70/Si 820, red, 6x2 (I.D. x d)	78706407
VMQ 70/Si 820, red, 12x1.5 (I.D. x d)	78706419
VMQ 70/Si 820, red, 14x2 (I.D. x d)	78706406
VMQ 70/Si 820, red, 20x2 (I.D. x d)	78706458
VMQ 70/Si 820, red, 24x2 (I.D. x d)	78706440
VMQ 70/Si 820, red, 31x2.5 (I.D. x d)	78706439
VMQ 70/Si 820, red, 68x3 (I.D. x d)	78201138
VMQ 70/Si 820, red, 75x4 (I.D. x d)	78201094
VMQ 70/Si 820, red, 88x3 (I.D. x d)	78706408
VMQ 70/Si 820, red, 135x4 (I.D. x d)	78706460
VMQ 70/Si 820, red, 4x1 (I.D. x d)	78706415
VMQ 50/Si 50, blue, 8x1.5 (I.D. x d)	78706465
VMQ 65/Si 840, blue, 18x2.5 (I.D. x d)	78706447
NBR 70/P583, black, 166.75x2 (I.D. x d)	78706478
NBR/P583, black, 178x2 (I.D. x d)	78706477

DASbox® and DASGIP® Vessel Accessories



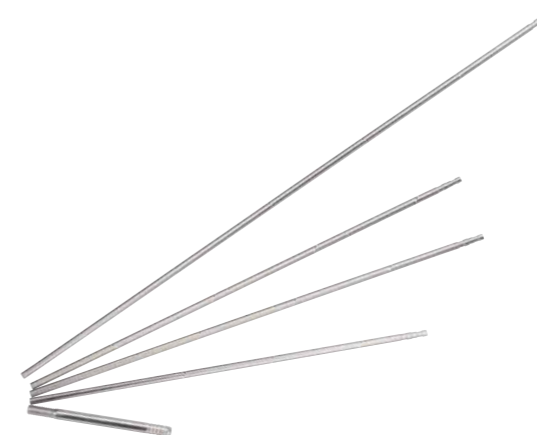
Valves

- > Easy and efficient sampling from any bioreactor
- > Self-sealing Luer lock connector

Ordering information

Description	Order no.
DASGIP® sampling accessory, with swabable valve	78510145
Sampling Valve, autoclavable, male Luer lock and swabable female Luer lock	78200077
Cap for Sampling Valve, autoclavable, male Luer lock	78200087
One Way Valve, with Luer lock female inlet and male outlet	78200078

For more information go to www.eppendorf.com



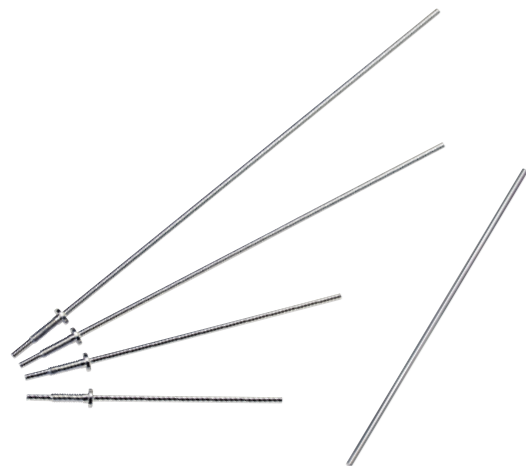
Stainless Steel Pipes

- > Stainless steel, electropolished
- > Various diameters and lengths available
- > For sampling, harvesting, submerged gassing and liquid addition

Model	Stainless Steel Pipes, with barb, OD 4mm/ID 2 mm					M6 Port Assembly, OD 6 mm/ID 2 mm	
	78107326	78107023	78107102	78107146	78107178	77102060	77102061
Order no.							
Length	180 mm	225 mm	270 mm	320 mm	370 mm	281 mm	356 mm
DASbox® MiniBioreactor	■						
DASGIP® Benchtop Spinner 0.5 L		■					
DASGIP® Benchtop Spinner 1.5 L			■				
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L		■					
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L			■				
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L					■		
DASGIP® Benchtop Bioreactors 2.5 L				■		o	
DASGIP® Benchtop Bioreactors 3.5 L					■		o
DASGIP® PhotoBioreactors 1.0 L			■				
DASGIP® PhotoBioreactors 2.5 L				■		o	

■ = standard, o = optional

DASbox® and DASGIP® Vessel Accessories



Thermowells

- > Easy and sterile insertion of temperature sensors
- > Various lengths available

Model	Thermowell, M6, stainless steel					
Order no.	77102027	77102003	77102028	77102029	77102030	77102031
Inner diameter (I.D.)	2 mm	2 mm	2 mm	2 mm	2 mm	2 mm
Inner length	163 mm	188 mm	213 mm	238 mm	263 mm	313 mm
Length	200 mm	225 mm	250 mm	275 mm	300 mm	350 mm
DASGIP® Benchtop Spinner 0.5 L	■	■				
DASGIP® Benchtop Spinner 1.5 L			■			
DASGIP® Bioblock Spinner 0.7 L		■				
DASGIP® Bioblock Stirrer 1 L	■					
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L				■		
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L					■	
DASGIP® Benchtop Bioreactors 2.5 L				■		
DASGIP® Benchtop Bioreactors 3.5 L						■
DASGIP® PhotoBioreactors 1.0 L				■		
DASGIP® PhotoBioreactors 2.5 L				■		

■ = standard



Impellers

- > Rushton-type, pitched-blade and marine impellers for microbiology and cell culture
- > Various sizes and shaft lengths available

Model	6-Blade Rushton-Type Impeller, stainless-steel		3-Blade Impeller, 30° pitch, stainless steel		
	78107304	78100557	78532236	78100576	78107325
Order no.	78107304	78100557	78532236	78100576	78107325
Inner diameter (I.D.)	5 mm	8 mm	8 mm	10 mm	5 mm
Outer diameter (O.D.)	30 mm	46 mm	50 mm	50 mm	30 mm
DASbox® MiniBioreactor	■				■
DASGIP® Benchtop Spinner 0.5 L				■	
DASGIP® Benchtop Spinner 1.5 L				■	
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L		■	■		
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L		■	■		
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L		■	■		
DASGIP® Benchtop Bioreactors 2.5 L		■	■		
DASGIP® Benchtop Bioreactors 3.5 L		■	■		
DASGIP® PhotoBioreactors 1.0 L			■		
DASGIP® PhotoBioreactors 2.5 L			■		

■ = standard

Accessories

Description	Order no.
Adaptor for Use of Impeller	
with I.D. 5 mm on shaft with O.D. 10 mm	77102047

Model	DASGIP® Lipseal Stirrer Assembly						
	78525116	78525130	78525119	78525118	78525123	78107334	78107335
Order no.	78525116	78525130	78525119	78525118	78525123	78107334	78107335
Seat	M30	M30	M30	M30	Pg 13.5	Pg 13.5	Pg 13.5
Stirrer shaft diameter	8 mm	8 mm	8 mm	8 mm	5 mm	5 mm	5 mm
Stirrer shaft inner length	186 mm	199 mm	245 mm	298 mm	112 mm	155 mm	215 mm
DASbox® MiniBioreactor					■		
DASGIP® Benchtop Spinner 0.5 L						■	
DASGIP® Benchtop Spinner 1.5 L					■		■
DASGIP® Bioblock Stirrer 1 L	■	■					
DASGIP® Bioblock Spinner 0.7 L		■					
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L			■				
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L				■			
DASGIP® Benchtop Bioreactors 2.5 L			■				
DASGIP® Benchtop Bioreactors 3.5 L				■			
DASGIP® PhotoBioreactors 1.0 L			■				
DASGIP® PhotoBioreactors 2.5 L				■			

■ = standard

DASbox® and DASGIP® Vessel Accessories



Caps for Vessels and Bottles

- > Various sizes available, closed or with ports

Ordering information

Description	Order no.
Screw Cap, for O.D. 100 mm Neck, PBT, with hole ID 90 mm without gasket	78903225
Screw Cap, for O.D. 80 mm neck, PBT, with hole ID 73 mm, without gasket	78903226
Screw Cap, GL 45, PBT, with port I.D. 34 mm	78903224
Screw Cap, GL 45, PBT, closed, incl. PTFE-coated silicone washer	78106122

Accessories

Description	Order no.
Silicone Washer	
PTFE-coated, for GL45, I.D. 32 mm, O.D. 42 mm, d 3 mm	78106307



Exhaust Condensers

- > Minimized evaporation during cultivation
- > DASGIP Cooling Water Distribution Unit allows for individual operation of each exhaust condenser

Model	Condenser	
Order no.	77102049	77102050
Outer diameter (O.D.)	12 mm	30 mm
DASGIP® Benchtop Spinner 0.5 L	■	
DASGIP® Benchtop Spinner 1.5 L	■	
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L		■
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L		■
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L		■
DASGIP® Benchtop Bioreactors 2.5 L		■
DASGIP® Benchtop Bioreactors 3.5 L		■
DASGIP® PhotoBioreactors 1.0 L		■
DASGIP® PhotoBioreactors 2.5 L		■

■ = standard

For more information go to www.eppendorf.com



Cooling Fingers

- > Highly efficient cooling even in high cell density applications
- > Various lengths available

Model	Cooling Finger	
Order no.	77102037	77102036
Inner length	240 mm	325 mm
Length	295 mm	380 mm
Outer diameter (O.D.)	12 mm	12 mm
DASGIP® Benchtop Spinner 0.5 L	■	
DASGIP® Benchtop Spinner 1.5 L	■	
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L	■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L	■	
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L		■
DASGIP® Benchtop Bioreactors 2.5 L	■	
DASGIP® Benchtop Bioreactors 3.5 L		■
DASGIP® PhotoBioreactors 1.0 L	■	
DASGIP® PhotoBioreactors 2.5 L		■

■ = standard



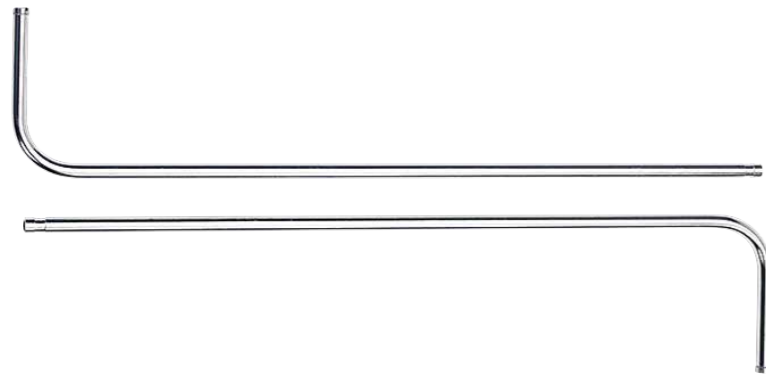
DASGIP® Heat Blankets

- > For individual temperature control of DASGIP vessels
- > Heating power 100 W
- > Power supply 115 or 230 V

Ordering information

Description	Order no.
230 V	78525162
115 V	78525163

DASbox® and DASGIP® Vessel Accessories



Spargers

- > For submerged gassing
- > Stainless steel
- > L-spargers have 7 holes of 0.5 mm

Model	L-Sparger for DASGIP® Culture Vessel, stainless steel			
Order no.	77102052	77102054	77102022	77102023
Length	180 mm	300 mm	300 mm	370 mm
Port	D4	D4	D6	D6
Width	40 mm	42 mm	63 mm	63 mm
DASbox® MiniBioreactor	■			
DASGIP® Benchtop Spinner 1.5 L				■
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L		o	■	
DASGIP® Bioblock Spinner 1.2 L/Stirrer 1.5 L		o	■	
DASGIP® Benchtop Bioreactors 2.5 L		o	■	
DASGIP® Benchtop Bioreactors 3.5 L				■
DASGIP® PhotoBioreactors 1.0 L		o	■	
DASGIP® PhotoBioreactors 2.5 L		o	■	

■ = standard, o = optional

Model	Stainless Steel Pipes, with barb, OD 4mm/ID 2 mm				
Order no.	78107326	78107023	78107102	78107146	78107178
Length	180 mm	225 mm	270 mm	320 mm	370 mm
DASbox® MiniBioreactor	■				
DASGIP® Benchtop Spinner 0.5 L		■			
DASGIP® Benchtop Spinner 1.5 L			■		
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L		■			
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L			■		
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L					■
DASGIP® Benchtop Bioreactors 2.5 L				■	
DASGIP® Benchtop Bioreactors 3.5 L					■
DASGIP® PhotoBioreactors 1.0 L			■		
DASGIP® PhotoBioreactors 2.5 L				■	

■ = standard

For more information go to www.eppendorf.com

Ordering information

Description	Order no.
Micro Sparger , stainless steel, pore size 10 µm, O.D. 6 mm, with O.D. 4 mm pipe	
L 284 mm, 90° tip	78530205
L 370 mm, 90° tip	78530206
L 245 mm	78530511
L 290 mm	78530512
L 340 mm	78530513



DASGIP® LED Illumination Devices

- > For illumination of DASGIP PhotoBioreactors, providing optimum light conditions for growth and photosynthesis
- > Diodes emitting light of specific wavelengths, aligned to the relevant chlorophyll absorption wavelengths
- > Individual control of up to four photobioreactors with the DASGIP PBR4
- > Other configurations available on request

Ordering information

Description	Order no.
LED Stick , L 235 mm, O.D. 12 mm, universal wavelength 453/572/625/640/660/780	78525301
DASGIP® Cable , 4pin M5, L 3 m	78702562

BioFlo® 120 Vessels



Description

The BioFlo 120 is a bench-scale bioreactor/fermentor system perfectly suited for all levels of research and development. The system was designed to be flexible to meet the wide-ranging needs of scientists today. 24 interchangeable heat-blanketed and water-jacketed autoclavable vessels are available, along with BioBLU Single-Use Vessels ranging from 250 mL to 40 L working volume.

Product features

- > Autoclavable glass vessels featuring working volume range between 0.4 – 10.5 L
- > Bundles for use with BioBLU Single-Use Vessels
- > Consistent vessel geometries for scale-up processes
- > Fermentation vessel assemblies capable of high oxygen transfer rates, designed for maximum density microbial applications
- > Pick from 24 autoclavable vessel options for cell culture and fermentation, including heat-blanketed and water-jacketed vessels with direct or magnetic drive
- > Conversion bundles to keep using your legacy vessels
- > Rushton-type, pitched-blade, and marine impellers as well as spinfilters available

For more information go to www.eppendorf.com

Vessel Specifications				
Autoclavable vessels				
Vessel	1 L	2 L	5 L	10 L
Total volume	1.3 L	3.0 L	7.5 L	14.0 L
Working volume	0.4 – 1.0 L	0.8 – 2.2 L	2.0 – 5.6 L	4.0 – 10.5 L
Vessel type	Water-jacketed or heat-blanketed			
Material	Borosilicate glass, 316L stainless steel			
Impellers				
Direct drive or magnetic drive	Rushton-type, pitched blade, marine or spin filter			
Autoclave dimensions				
Heat-blanketed				
Outer diameter (O.D.)	20.3 cm	20.3 cm	29.8 cm	29.8 cm
	8.0 in	8.0 in	11.7 in	11.7 in
Height (without exhaust filter)	54.0 cm	54.0 cm	61.0 cm	68.0 cm
	21.3 in	21.3 in	24.0 in	26.9 in
Water-jacketed				
Outer diameter (O.D.)	24.1 cm	24.1 cm	29.8 cm	29.8 cm
	9.5 in	9.5 in	11.7 in	11.7 in
Height (without exhaust filter)	48.9 cm	56.5 cm	64.8 cm	76.8 cm
	19.3 in	22.3 in	25.5 in	30.3 in
Number of head plate ports				
6 mm	1	6	7	7
12 mm	9	7	8	8
19 mm	0	0	1	1
Total	10	13	16	16
Recommended sensor lengths (mm)				
Sensor				
pH (analog)¹⁾	200	225	325	425
pH/redox (digital)¹⁾	225	225	325	425
DO (analog)¹⁾	160	220	320	420
DO (digital/optical)¹⁾	220	220	320	420
Redox (analog)¹⁾	200	225	325	425
CO₂ (digital)¹⁾	220	220	320	320

¹⁾ Installation may require compression fitting for optimal fit and depth (M1273-5040), 2 x included with Vessel Connection Kit

BioFlo® 120 Vessels

Autoclavable Vessel Bundles - Fermentation

Bundles include: Vessel assembly with Rushton-type impeller and baffle assembly, exhaust condenser, heat blanket or heater base (for water jacketed vessels), vessel connection kit (provides all the necessary accessories for start-up), motor assembly, pH/DO sensors and cables

Ordering information

Description	Order no.
Fermentation Vessel Bundle , for BioFlo® 120, heat blanket, direct drive	
1 L	B120AVB000
2 L	B120AVB001
5 L	B120AVB002
10 L	B120AVB003
Fermentation Vessel Bundle , for BioFlo® 120, water-jacketed vessel, direct drive	
1 L	B120AVB004
2 L	B120AVB005
5 L	B120AVB006
10 L	B120AVB007

Autoclavable Vessel Bundles - Cell Culture

Bundles include: Vessel assembly with pitched-blade impeller, exhaust condenser, heat blanket or heater base (for water-jacketed vessels), vessel connection kit (provides all the necessary accessories for start-up), motor assembly, pH/DO sensors and cables

Ordering information

Description	Order no.
Cell Culture Vessel Bundle , for BioFlo® 120, heat blanket, magnetic drive	
1 L	B120AVB008
2 L	B120AVB009
5 L	B120AVB010
10 L	B120AVB011
Cell Culture Vessel Bundle , for BioFlo® 120, water-jacketed vessel, magnetic drive	
1 L	B120AVB012
2 L	B120AVB013
5 L	B120AVB014
10 L	B120AVB015
Cell Culture Vessel Bundle , for BioFlo® 120, heat blanket, direct drive	
1 L	B120AVB016
2 L	B120AVB017
5 L	B120AVB018
10 L	B120AVB019
Cell Culture Vessel Bundle , for BioFlo® 120, water-jacketed vessel, direct drive	
1 L	B120AVB020
2 L	B120AVB021
5 L	B120AVB022
10 L	B120AVB023

For more information go to www.eppendorf.com

BioBLU Single-use Vessel Bundles - Fermentation¹⁾

Bundles include: Motor assembly, heat blanket, temperature sensor, pressure relief valve, electric-cooled (Peltier) exhaust condenser for BioBLU 1f or water-cooled exhaust condenser for BioBLU 3f, pH/DO sensors and cables, vessel stand, sampling syringes, and tubing.

¹⁾ BioBLU vessels sold separately

Ordering information

Description	Order no.
BioBLU® Vessel Bundle , for BioFlo® 120, heat blanket, magnetic drive	
BioBLU® 1f	B120SUV000
BioBLU® 3f	B120SUV001

BioBLU Single-use Vessel Bundles - Cell Culture¹⁾

Bundles include: Motor assembly, heat blanket, temperature sensor, pressure relief valves, Electric-cooled (Peltier) exhaust condenser (BioBLU 1c only) or electric heater band, pH/DO sensors and cables (Optical pH sensor and OP-76 included in BioBLU 3c vessels and up), vessel stand (BioBLU 1c), sampling syringes, and tubing.

¹⁾ BioBLU vessels sold separately

Ordering information

Description	Order no.
BioBLU® Vessel Bundle , for BioFlo® 120, heat blanket, magnetic drive	
BioBLU® 1c	B120SUV003
BioBLU® 3c/5c	B120SUV004
BioBLU® 5p	B120SUV005
BioBLU® 10c/14c	B120SUV006
BioBLU® 50c	B120SUV007

BioFlo 110/115 Conversion Bundles

Bundles include Vessel heat blanket or heater base (for water jacketed vessels), Vessel connection kit (provides all the necessary accessories for start-up), Motor assembly, pH/DO cables¹⁾

¹⁾pH/DO sensors are not included in conversion kits.

Ordering information

Description	Order no.
BioFlo® 120 to BioFlo® 110/115 Bundle , heat blanket, direct drive	
1 L vessel	B120110000
2 L vessel	B120110001
5 L vessel	B120110002
10 L vessel	B120110003
BioFlo® 120 to BioFlo® 110/115 Bundle , water jacket, direct drive	
1 L/2 L vessel	B120110004
5 L/10 L vessel	B120110005
BioFlo® 120 to BioFlo® 110/115 Bundle , heat blanket, magnetic drive	
1 L vessel	B120110006
2 L vessel	B120110007
5 L vessel	B120110008
10 L vessel	B120110009
BioFlo® 120 to BioFlo® 110/115 Bundle , water jacket, magnetic drive	
1 L/2 L vessel	B120110010
5 L/10 L vessel	B120110011

BioFlo® 120 Vessels

Contents of vessel assembly	Fermentation vessel, heat-blanketed	Fermentation vessel, water-jacketed	Cell culture vessel, heat-blanketed	Cell culture vessel, water-jacketed
Water-jacketed vessel with head plate ¹⁾	-	■	-	■
Heat-blanketed vessel with head plate (includes heat blanket) ¹⁾	■	-	■	-
Vessel stand	■	-	■	-
Direct drive assembly ²⁾	■	■	■	■
Magnetic drive assembly ²⁾	-	-	■	■
Immersion cooling coil	■	-	■	-
Thermowell	■	■	■	■
Baffle assembly	■	■	-	-
Two rushton-type impellers	■	■	-	-
One pitched-blade impeller	-	-	■	■
Ring sparger	■	■	■	■
Sample tube	■	■	■	■
Harvest tube	■	■	■	■
Single addition tube and adaptor	■	■	■	■

¹⁾ Heat-blanketed vessel assemblies include the heat blanket. Water-jacketed vessel assemblies do not include the base heater.
²⁾ Cell culture direct drive or magnetic drive assembly based on selected vessel bundle.
 ■ = standard

Autoclavable Vessel Assemblies - Fermentation

Ordering information

Description	Order no.
Fermentation Vessel, for BioFlo® 120, heat blanket, direct drive	
1 L	1390400000
2 L	1390400100
5 L	1390400200
10 L	1390400300
Fermentation Vessel, for BioFlo® 120, water jacket, direct drive	
1 L	1390402000
2 L	1390402100
5 L	1390402200
10 L	1390402300

For more information go to www.eppendorf.com

Autoclavable Vessel Assemblies - Cell Culture

Ordering information

Description	Order no.
Cell Culture Vessel, for BioFlo® 120, water jacket, direct drive	
1 L	1390402400
2 L	1390402500
5 L	1390402600
10 L	1390402700
Cell Culture Vessel, for BioFlo® 120, water jacket, magnetic drive	
1 L	1390402800
2 L	1390402900
5 L	1390403000
10 L	1390403100
Cell Culture Vessel, for BioFlo® 120, heat blanket, direct drive	
1 L	1390400400
2 L	1390400500
5 L	1390400600
10 L	1390400700
Cell Culture Vessel, for BioFlo® 120, heat blanket, magnetic drive	
1 L	1390400800
2 L	1390400900
5 L	1390401000
10 L	1390401100

BioFlo® 320 Vessels



Description

BioFlo 320 vessels feature an autoclavable borosilicate glass body and stainless steel head plate. Stainless-steel dished-bottom vessels are available for rapid heat transfer as well as traditional water-jacketed vessels for more gentle temperature control. Each vessel type is available in four sizes, with interchangeable overhead magnetic and direct drive options. A variety of impellers and multiple industry standard head plate ports are available for user flexibility.

Product features

- > Working volume range between 0.6 – 10.5 L
- > Stainless steel dish bottom and water jacketed vessels
- > Interchangeable magnetic and direct overhead drive options
- > Rushton, pitched-blade, marine, spinfilter, cell-lift and packed-bed impellers available

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications				
Vessel Volume	1 L	3 L	5 L	10 L
Volume	2.5 L	5 L	7.5 L	14 L
Working volume	0.6 - 1.9 L	1.3 - 3.8 L	1.9 - 5.6 L	3.5 - 10.5 L
Material	Borosilicate glass, 316 L stainless steel, EPDM o-rings			
Agitation				
Drive	Direct/magnetic overhead drive			
Speed ranges	25 - 1200 rpm (Direct Drive) 25 - 500 rpm (Magnetic Drive)			
Impellers	2 x Rushton, 1 x Pitched, 1x Marine, Spin Filter, Cell Lift, or Packed-bed			
Gassing				
Gas Supply	Overlay and/or Sparger			
Sparger Type	Ringsparger or microsparger			
Monitoring and Control				
Temperature control				
Temperature sensor	Pt100 RTD			
Exhaust condensation	Water-cooled			
Recommended sensor lengths				
pH ¹⁾	200 mm	225 mm	325 mm	425 mm
pH (packed-bed) ¹⁾	200 mm	200 mm	200 mm	225 mm
DO ¹⁾	220 mm	220 mm	320 mm	420 mm
DO (packed-bed) ¹⁾	120 mm	120 mm	220 mm	220 mm
Redox ¹⁾	200 mm	225 mm	325 mm	425 mm
CO ₂ ¹⁾	220 mm	220 mm	320 mm	420 mm
Head plate ports				
6 mm	1	3	3	3
Pg 13.5 ports	9	10	12	12
19 mm	0	1	1	1
Total	10	14	16	16
Autoclave Dimensions (with exhaust condensor)				
Stainless Steel Dished Bottom Vessels				
Outer diameter (O.D.)	19.9 cm (7.8 in)	22.9 cm (9.0 in)	25.6 cm (10.1 in)	29.3 cm (11.5 in)
Height	51.8 cm (20.4 in)	58 cm (22.8 in)	61.2 cm (24.1 in)	67.9 cm (26.7 in)
Water-Jacketed Vessels				
Outer diameter (O.D.)	21.6 cm (8.5 in)	23.1 cm (9.1 in)	27.7 cm (10.9 in)	32.3 cm (12.7 in)
Height	55.4 cm (21.8 in)	61.9 cm (24.4 in)	65.4 cm (25.7 in)	72.9 cm (28.7 in)

¹⁾ May require 12 mm compression fitting (M1287-5030)

BioFlo® 320 Vessels

Contents of vessel kits	Stainless-steel dished-bottom, direct drive	Stainless-steel dished-bottom, magnetic drive	Water-jacketed, direct drive	Water-jacketed, magnetic drive
Water-jacketed vessel with head plate	-	-	■	■
Dished-bottom vessel with head plate (incl. stainless-steel heat exchanger)	■	■	-	-
Direct drive	■	-	■	-
Magnetic drive	-	■	-	■
Baffles	■	Sold separately	■	Sold separately
Exhaust condenser	■	■	■	■
Agitation motor	Included with vessel bundles, separately offered with configured vessels			

■ = standard

Kit contents	Direct drive impeller kits	Magnetic drive impeller kits	Vessel connection kit
Impeller	Rushton (2) or Pitched-blade(1) or marine (1)	Pitched-blade (1) or marine (1) or spinfilter with marine (1) or cell-lift (1) or basket (1)	-
Drive shaft	Included in vessel kit	■	-
Sparger with head plate adaptor	■	■	-
Thermowell	■	■	-
Sample tube with head plate adaptor	■	■	-
Harvest tube with head plate adaptor	■	■	-
Inlet & exhaust line with absolute filter	■	■	■
Compression fitting adaptors for sensors	-	-	■ (2x)
Foam/level sensor with adaptor and cable	-	-	■
Temperature sensor	-	-	■
Tri-port/Single addition tube and adaptor	-	-	■
Sampling kit	-	-	■

■ = standard

Stainless steel dished-bottom vessel bundles include vessel kit with direct-drive bearing housing (baffles included), direct-drive motor, vessel connection kit, and Rushton impeller kit.

Water-jacketed vessel bundles include vessel kit with magnetic drive bearing housing, magnetic-drive motor for autoclavable vessels, and vessel connection kit.

NOTE: Impeller kit is **not** included in water-jacketed vessel bundles.

Single-use vessel bundles include magnetic drive motor for single-use vessels, heat blanket, and connection tubing.

Sensors and sensor cables must be purchased individually.

Ordering information

Description	Order no.
Vessel Bundle , for BioFlo® 320, stainless-steel dished bottom, direct drive	
1 L	M1379-0300
3 L	M1379-0301
5 L	M1379-0302
10 L	M1379-0303
Vessel Bundle , for BioFlo® 320, water jacket, magnetic drive	
1 L	M1379-0310
3 L	M1379-0311
5 L	M1379-0312
10 L	M1379-0313
Single-Use Vessel Bundle , for BioFlo® 320	
for BioBLU® 1c	M1379-0320
for BioBLU® 1f	M1379-0321
for BioBLU® 3c/5c	M1379-0322
for BioBLU® 5p	M1379-0323
for BioBLU® 3f	M1379-0326
for BioBLU® 10c/14c	M1379-0324
for BioBLU® 50c	M1379-0325

For more information go to www.eppendorf.com

BioFlo® 320 Vessels



Validated Vessel Configurations

- > Choose from the options below to configure a validated autoclavable vessel bundle that meets your process needs
- > All items are available for individual ordering
- > Eight independently controlled process gas supplies
- > Sensors and cables not included, sold separately
- > Addition motor not included, sold separately

Ordering information

Description	Order no.
Validation , for BioFlo® 320, autoclavable vessel validation	M1379-0103
Vessel , for BioFlo® 320, stainless-steel dished bottom, direct drive	
1 L	M1379-1001
3 L	M1379-1002
5 L	M1379-1003
10 L	M1379-1004
Vessel , for BioFlo® 320, water jacket, direct drive	
1 L	M1379-1005
3 L	M1379-1006
5 L	M1379-1007
10 L	M1379-1008
Vessel , for BioFlo® 320, stainless-steel dished bottom, magnetic drive	
1 L	M1379-1101
3 L	M1379-1102
5 L	M1379-1103
10 L	M1379-1104
Vessel , for BioFlo® 320, water jacket, magnetic drive	
1 L	M1379-1105
3 L	M1379-1106
5 L	M1379-1107
10 L	M1379-1108
Vessel Connection Kit , fermentation and cell culture, autoclavable vessels, all vessel sizes	M1379-0115
Rushton-Type Impeller Kit , direct drive	
1 L	M1379-1011
3 L	M1379-1012
5 L	M1379-1013
10 L	M1379-1014
Pitched-Blade Impeller Kit , direct drive	
1 L	M1379-1015
3 L	M1379-1016
5 L	M1379-1017
10 L	M1379-1018

For more information go to www.eppendorf.com

Ordering information

Description	Order no.
Marine Impeller Kit , direct drive	
1 L	M1379-1019
3 L	M1379-1020
5 L	M1379-1021
10 L	M1379-1022
Pitched-Blade Impeller Kit , magnetic drive	
1 L	M1379-5068
3 L	M1379-5069
5 L	M1379-5070
10 L	M1379-5071
Marine Impeller Kit , magnetic drive	
1 L	M1379-5072
3 L	M1379-5073
5 L	M1379-5074
10 L	M1379-5075
Spinfilter Impeller Kit , for suspension cells (10 µm)	
1 L	M1379-1125
3 L	M1379-1126
5 L	M1379-1127
10 L	M1379-1128
Spinfilter Impeller Kit , for microcarriers (75 µm)	
1 L	M1379-1135
3 L	M1379-1136
5 L	M1379-1137
10 L	M1379-1138
Cell-Lift Impeller Kit , for microcarriers (80 µm), for BioFlo® 320	
1 L	M1379-1110
3 L	M1379-1111
5 L	M1379-1112
10 L	M1379-1113
Packed-bed Impeller Kit , for BioFlo® 320	
1 L	M1379-1140
3 L	M1379-1141
5 L	M1379-1142
10 L	M1379-1143
Air Wash Kit , required with cell-lift impeller kits, for BioFlo® 320 and CelliGen® 310, all vessel sizes	M1287-1150
Baffles	
for 1 L vessel	M1287-9217
for 3 L vessel	M1287-9218
for 5 L vessel	M1287-9219
for 10 L vessel	M1287-9220
Decanter Column	
1 L	M1287-1190
3 L	M1287-1191
5 L	M1287-1192
10 L	M1287-1193
Perfusion Kit , for BioFlo® 320, all vessel sizes	M1379-1185

BioFlo 320 Vessel Accessories

Order no.	Rushton impeller				Pitched-blade impeller, 45° pitch				Marine Impeller				
	M1379-9295	M1379-9296	M1379-9297	M1379-9298	M1287-9227	M1287-9228	M1287-9229	M1379-9230	M1287-9230	M1287-9950	M1287-9952	M1379-9954	M1287-9954
1 L vessel	■				■					■			
3 L vessel		■				■				■			
5 L vessel			■				■				■		
10 L vessel				■				■ ¹⁾	■ ²⁾			■ ¹⁾	■ ²⁾

¹⁾ direct drive only, ²⁾ magnetic drive only, ■ = standard

Ordering information

Description	Order no.
Septum Kit , Pg 13.5 port, 10 septa included	M1287-5031
Adaptor , compression fitting, Pg 13.5 port to 12 mm sensor	M1287-5030
Addition/Gas Overlay Kit , for Pg 13.5 port	M1287-5043
Adaptor , Pg 13.5 port to tri-port (3 x 3.2 mm)	M1287-5035
Adaptor , compression fitting, for foam/level sensor, Pg 13.5 port to foam/level	M1287-5032
Adaptor , compression fitting, Pg 13.5 port to 1/4 in tube	M1287-5033
Adaptor , Pg 13.5 port to 1 1/2 in tri-clamp	M1287-9544
Adaptor , compression fitting, 6.35 mm port to 1/4 in tube	M1287-5034
Adaptor , compression fitting, for foam/level sensor, 6.35 mm port to foam/level	M1294-5022
Adaptor , 19 mm port to 1.5 in tri-clamp	M1287-9545
Adaptor , compression fitting, 19 mm port to 12 mm sensor	M1287-5037
Adaptor , for 19 mm port, for 19 mm sensor	M1294-9542
Adaptor , for 19 mm port, for Pg 13.5 sensor	M1294-9544
Blind Plug	
6.35 mm port	M1294-9534
Pg 13.5 port	M1294-9540
19 mm port	M1294-9536
Foam/Level Sensor	
372 mm	M1273-5036
206.4 mm	F5-137C
User's Kit , fermentation and cell culture, autoclavable vessels, all vessel sizes	M1379-0110
Head plate O-Ring Kit , for BioFlo® 310/CelliGen® 310 and BioFlo® 320	M1379-0121
Tubing Connection Kit , kynar	M1379-0122
Teflon Ferrule Kit	M1379-0116
Quick Connect Kit , polysulfone	M1379-0135
Cable Tie Kit	P0700-8125
Tubing Clamp , plastic, pack of 20	M1379-0155
Needle-Free Sampling Valve , set of 10	M1379-0131
Luer Connector , barbed tube to female Luer, set of 10	M1379-0130
Hosebarb , for sparge gas option/overlay gas option, pack of 4	M1379-0145

For more information go to www.eppendorf.com

Ordering information

Description	Order no.
Spare Parts Kit , stainless-steel dished-bottom vessel	
1 L	M1287-6020
3 L	M1287-6021
5 L	M1287-6022
10 L	M1287-6023
Spare Parts Kit , water jacket	
1 L	M1287-6030
3 L	M1287-6031
5 L	M1287-6032
10 L	M1287-6033
Needle-Free Syringe , pack of 10	M1363-9910
Bearing Housing Cap , pack of 10	M1273-9936
Autoclave Rack , angled, for BioFlo® 320, all vessel sizes	XMF-8624
Autoclave Rack , BioFlo® 320, low-profile, 10 L only	M1227-9231
Replacement Screen and O-Ring Kit , for cell-lift impeller	
1 L	M1287-9985
3 L	M1287-9986
5 L	M1287-9987
10 L	M1287-9988

Vessel	1 L	3 L	5 L	10 L
Baffles	M1287-9217	M1287-9218	M1287-9219	M1287-9220
Sampling assembly (glass bottle)	M1287-5042 (all vessel sizes)			
Sampling adaptor to 15/50 mL tube	M1287-9964 (for sampling assembly M1287-5042 only)			
Sampling tube	M1287-9486	M1287-9487	M1287-9487	M1287-9489
Harvest tube	M1287-9482	M1287-9483	M1287-9484	M1287-9485
Macrosparge	M1287-9475	M1287-9476	M1287-9477	M1287-9478
Microsparge	M1287-5010	M1287-5011	M1287-5012	M1287-5013
Thermowell	M1287-9213	M1287-9214	M1287-9215	M1287-9216
Glass vessel (dished-bottom)	M1287-9930	M1287-9931	M1287-9932	M1287-9933
Glass vessel (water-jacketed)	M1287-9920	M1287-9921	M1287-9922	M1287-9923
Head plate	M1287-6950	M1287-6951	M1287-6952	M1287-6953
Exhaust condenser	M1287-5039	M1287-5041	M1287-5041	M1287-5045
Bearing assembly (direct drive)	M1379-4031	M1379-4032	M1379-4033	M1379-4034
Direct-drive shaft	M1287-9470	M1287-9471	M1287-9472	M1287-9473
Bearing assembly (magnetic drive)	M1379-4035 (all vessel sizes)			
Magnetic-drive shaft	M1287-5050	M1287-5051	M1287-5052	M1287-5053

BioFlo/CelliGen Vessel Replacement Parts

Replacement Rings and Compression Fitting Ferrules

- > Rings are available in 6 mm, 12 mm, and 19 mm size
- > Ferrules are available in 3/16 inch, 1/4 inch, and 12 mm size
- > Material: Teflon

Minimum order quantities may apply.

	BioFlo/CelliGen 115, BioFlo 120	BioFlo/CelliGen 310, BioFlo 320	BioFlo 415	BioFlo/CelliGen 510, BioFlo 610, BioFlo/ CelliGen Pro
1/4 inch back ferrule	-	H-1351	-	-
1/4 inch front ferrule	-	H-1350	-	-
12 mm back ferrule	P0240-3201	P0240-3201	-	-
12 mm front ferrule	P0240-3200	P0240-3200	-	-
3/16 inch back ferrule	H-1260	H-1260	H-1260	H-1260
3/16 inch front ferrule	H-1259	H-1259	H-1259	H-1259
6 mm ring	P0100-9860	-	-	-
12 mm ring	P0100-9870	-	-	-
19 mm ring	P0100-9920	-	-	-

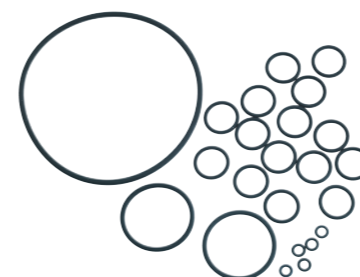


Replacement Septa

- > Red rubber septum
- > Validatable QMI 7-port and QMI 12-port septum

Minimum order quantities may apply.

	BioFlo/CelliGen 115, BioFlo 120	BioFlo/CelliGen 310, BioFlo 320	BioFlo 415	BioFlo/CelliGen 510, BioFlo 610, BioFlo/ CelliGen Pro
Septum	P0280-2690	P0280-2690	P0280-2690	P0280-2690
QMI 7-port	-	-	P0280-0640	P0280-0640
QMI 12-Port	-	-	-	P0280-0642
Harvest/Sample tube septum	-	-	P0280-0643	-



O-Rings

- > Replacement o-rings are available for current and legacy Eppendorf bench-scale vessels
- > Material of o-rings: EPDM

Minimum order quantities may apply.

	BioFlo/CelliGen 115, BioFlo 120 (heat-blanketed vessels)	BioFlo/CelliGen 115, BioFlo 120 (water-jacketed vessels)	BioFlo 310/320 (stainless-steel dished-bottom vessels)
6 /6.35 mm	P0280-5882	P0280-5882	P0280-5882
6 mm sample/foam port	P0280-6662	P0280-6662	-
12 mm	P0280-5352	P0280-5352	-
Pg 13.5	-	-	P0280-5912
19 mm	P0280-5962	P0280-5962	P0280-5952
Head plate	P0280-7922 (1L) P0280-8002 (2L) P0280-8122 (5L) P0280-8122 (10L)	P0280-7922 (1L) P0280-8002 (2L) P0280-8122 (5L) P0280-8122 (10L)	P0280-8002 (1L) P0280-8082 (3L) P0280-8122 (5L) P0280-8182 (10L)
Base (plate)	-	P0280-8622 (1L) P0280-8622 (2L) P0280-8682 (5L) P0280-8682 (10 L)	P0280-8002 (1L) P0280-8082 (3L) P0280-8122 (5L) P0280-8182 (10L)

	CelliGen 310, BioFlo 320 (water-jacketed vessels)	BioFlo 415	BioFlo/CelliGen 510, BioFlo 610, BioFlo/CelliGen Pro
6 /6.35 mm	P0280-5882	P0280-6662	-
6 mm sample/foam port	-	-	-
12 mm	-	P0280-5952	-
Pg 13.5	P0280-5912	P0280-5912	P0280-5912 (BioFlo/CelliGen 510/BioFlo 610)
19 mm	P0280-5952	P0280-5952	-
Head plate	P0280-8002 (1L) P0280-8082 (3L) P0280-8122 (5L) P0280-8182 (10L)	P0280-8512 (5L) P0280-8612 (10L) P0280-8612 (15L)	P0280-8222 (BioFlo/CelliGen 510-16L) P0280-8742 (BioFlo/CelliGen 510-32L) P0280-8742 (BioFlo 610-50L) P0280-8792 (BioFlo 610-100L) P0280-9385 (BioFlo Pro-60L) P0280-9365 (BioFlo Pro-120L/CelliGen Pro-60L) P0280-9375 (BioFlo Pro-240L/BioFlo Pro-2400L/ CelliGen Pro-120L) P0280-9315 (BioFlo Pro-400L) P0280-9415 (CelliGen Pro-240L) P0280-9395 (BioFlo Pro-800L/CelliGen Pro-500L) P0280-9405 (BioFlo Pro-1200L)
Base (plate)	P0280-8082 (1L) P0280-8122 (3L) P0280-8182 (5L) P0280-8242 (10L)	-	-

For more information go to www.eppendorf.com

Software



- > New Brunswick™ BioCommand® SCADA Software 104 - 105
- > DASware® control 106 - 107
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Much more than just bioprocess control

Eppendorf offers several BioCommand Supervisory Control and Data Acquisition (SCADA) software packages to meet individual requirements in bioprocess control. The comprehensive DASware software suite stands for next generation bioprocess management with DASware control 5 as the key to parallel processing.

New Brunswick™ BioCommand® SCADA Software



Description

Eppendorf offers three next-generation New Brunswick BioCommand software packages to enhance your ability to monitor, control and log data from your fermentation and cell culture processes through your personal computer (PC). These Supervisory Control and Data Acquisition (SCADA) packages provide the tools needed for research, optimization, and if needed, the security and audit trails to support your regulatory requirements. All are OPC compatible to enable your fermentor or bioreactor to „talk“ to any other OPC-compatible device in your lab or production facility.



Watch our video clip about the BioCommand!

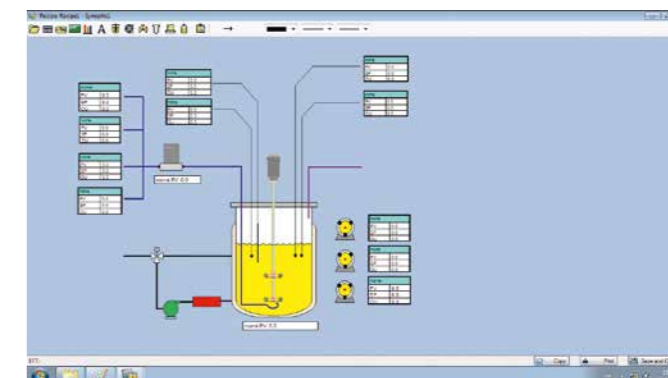
www.eppendorf.com/biocommand-video

Product features

- > New Brunswick BioCommand Track & Trend: this entry-level package has been designed specifically for researchers and scientists requiring basic data management and monitoring capabilities. It provides the ability to trend and control parameter setpoints, establish alarm settings, and produce batch records; and is ideal for basic process management.
- > New Brunswick BioCommand Batch Control: this intermediate package includes all the capabilities of Track and Trend, plus additional enhanced control features including a sophisticated programming module, custom synoptic display window, and equipment lock feature. The added control features of this software package make it ideal for optimizing your process.
- > New Brunswick BioCommand Batch Control Plus: our premium package includes all of the features of the previous two packages, adding three levels of security, event logs, and audit-trail capabilities to be compatible with the FDA 21 CFR Part 11 requirements. The Batch Control Plus package allows the power of the New Brunswick BioCommand software to be utilized in validated processes.
- > New Brunswick OPC Server: used to interface and connect OPC-compliant third-party equipment to BioFlo/CelliGen bioreactors and fermentors. Included with all BioCommand software packages listed above. Additionally, can be used without BioCommand packages to provide connectivity to third-party SCADA such as MATLAB®, LabVIEW™ and other OPC-compatible packages.



Batch summary screen displays setpoints, current values, and more; custom trend screens allow you to compare and track all of your process data.



Synoptic screen provides graphical representation of process information.

Ordering information

Description	Order no.
BioCommand®, Track and Trend	M1326-0000
BioCommand®, Batch Control	M1326-0010
BioCommand®, Batch Control Plus	M1326-0020

Accessories

Description	Order no.
RS-232 Interface Box, RS-232 to USB, 8 ports	M1287-0020
Cable, for BioCommand®, RS232-RS422	M1286-8010
Converter, RS-232 serial pin-out to RS-422 cable connection	P0460-7550
Interconnecting Cable, for BioCommand® to controller connection, 50 ft/15.2 m	M1171-8010
Connection Kit, for BioCommand®	M1286-0100
OPC Server ¹⁾	M1291-0011
Ethernet Switch, 18 ports	P0460-2591

¹⁾ Not applicable to BioFlo 120 and 320

DASware® control



Description

DASware control is the bioprocess control software at the core of all DASGIP Parallel Bioreactor Systems and the DASbox Mini Bioreactor System and offers a parallel process design right from the scratch. Combined with extensive embedded process automation features, intelligent recipe management and integrated report generating capabilities it delivers an unprecedented level of integral process documentation. Additionally, the advanced software package DASware control professional transfers process data to the central database in real-time. Current process runs can be accessed online and compared to historical runs, including online charting. The seamless integration of industry-leading OPC communication enables implementation of a host of solutions associated with QbD, DoE, PAT and the like. These are offered in the powerful DASware solution suite that integrates with DASware control.

Product features

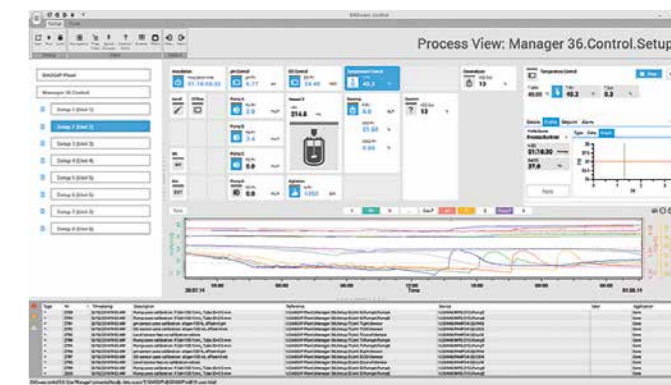
- > Parallel process control with individual control of each vessel:
 - DASbox: up to 24 vessels, DASGIP systems: up to 16
- > Seamless integration with BioFlo 120 and BioFlo 320
- > Integrated batch functionality for process and recipe management
- > Ideally suited for Design of Experiments (DoE)
- > Parallel calibration and cleaning procedures
- > Customized views and user-defined functions
- > Automated data export, reporting and chart creation for Microsoft® Excel®
- > Professional database with managed access (Microsoft SQL Server®)
- > OPC communication for easy integration with third party-equipment using DASware connect and DASware analyze
- > DASware control professional: Online batch-to-batch comparison, integrated analysis of offline values, online calculated values, and alarm notification
- > IQ/OQ package available

For more information go to www.eppendorf.com

Technical specifications subject to change.



The parallel design of DASware control allows for the operation of a DASGIP Parallel Bioreactor System with up to 16 vessels.



In the Process View of DASware control, the user finds all relevant information at a glance and can access and edit individual parameter settings.

Description	Order no.
DASware® control , incl. PC, OS, and licenses	
for 4-fold DASGIP® system	76DGCS4
for 8-fold DASGIP® system	76DGCS8
for 4-fold DASbox® system	76DXCS4
for 8-fold DASbox® system	76DXCS8
for 12-fold DASbox® system	76DXCS12
DASware® control Upgrade , incl. database update and licenses	
for 4-fold DASGIP® system	76DGCS+4
for 4-fold DASbox® system	76DXCS+4
DASware® control professional , incl. PC, OS, and licenses	
for 4-fold DASGIP® system	76DGCS4P
for 8-fold DASGIP® system	76DGCS8P
for 4-fold DASbox® system	76DXCS4P
for 8-fold DASbox® system	76DXCS8P
for 12-fold DASbox® system	76DXCS12P
DASware® control professional Upgrade , incl. database update and licenses	
for 4-fold DASGIP® system	76DGCS4P+
DASware® control professional Upgrade , incl. database update and licenses	
for 4-fold DASbox® system	76DXCS4P+
Software Update from DASGIP® Control 4.X to DASware® control 5	
for 4 Vessels, (with Win 7)	76DWUPD4
for 8 Vessels, (with Win 7)	76DWUPD8
Software Update from DASGIP® Control 4.X to DASware® control 5 professional	
for 4 Vessels, (with Win 7)	76DWUPD4P
for 8 Vessels, (with Win 7)	76DWUPD8P
Software Update from DASware® control 5 to DASware® control 5 professional , for 4 Vessels, (with Win 7)	76DWUPDP
DASware® control (professional) , incl. PC, OS without licenses, for Eppendorf bench-scale controller (BioFlo 120 and 320, BioFlo®/CelliGen® 115 and 310)	76DGCSX
Software License , DASware® control 5, for one culture vessel	78600166
Software License , DASware® control professional, for one culture vessel	78600167

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DASware® access



Description

DASware access provides an unprecedented level of freedom and flexibility in the management of bioprocesses. Each DASware control system on-site is accessible remotely by one or more remote clients simultaneously. Depending on the user-defined configuration and associated authentication either monitor or monitor and control access can be enabled for any network or mobile client.

Wi-Fi, Intranet, VPN and 4G connections can be used to provide web-based access with almost every browser to one or more bioreactor systems via PC, Notebook or Netbook. The unique DASGIP iApp supports access from iPhone, iPod touch and iPad, optionally with webcam support.

Product features

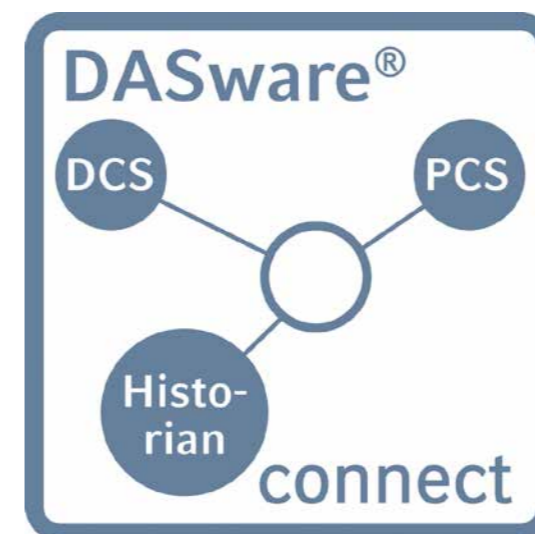
- > Remote monitoring and control of bioprocesses with multiple clients at the same time
- > Remote access to online charts/trending
- > Used via Wi-Fi, Intranet, VPN and 3G/4G with PC and Notebook or with the DASGIP iApp for iPhone, iPod touch and iPad (available in the App Store)
- > Supports existing IT infrastructure, network security and access control
- > Optional webcam support

Ordering information

Description	Order no.
DASware® access, remote access support (web and iApp) for 1 vessel	76DWACC

For more information go to www.eppendorf.com

DASware® connect



Description

DASware connect was designed to integrate DASbox and DASGIP systems and BioFlo/CelliGen bioprocess control stations into process control systems and legacy corporate historians. This includes but is not limited to Emerson® DeltaV™, Siemens® SIMATIC PCS 7®, ABB® 800 xA, OSIsoft® PI System and MatrikonOPC® Historian. DASware connect facilitates company-wide access to all relevant bioprocess data like set-points, process values, feed profiles, calibration and controller parameters as well as events and alarms.

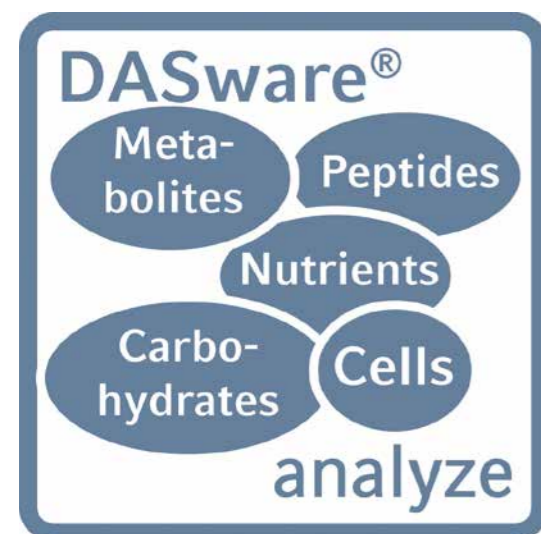
Product features

- > Integration of bioreactor systems into legacy control systems and corporate historians using OPC technology
- > Interfacing with scientific software packages like LabVIEW® and MATLAB®
- > Enables, among others, the integration into: Emerson DeltaV, Siemens SIMATIC PCS 7, ABB 800xA, OSIsoft PI System, Matrikon OPC Historian

Ordering information

Description	Order no.
DASware® connect, OPC server (OPC DA for ext. PCS), for 1 vessel	76DWCON

DASware® analyze



Description

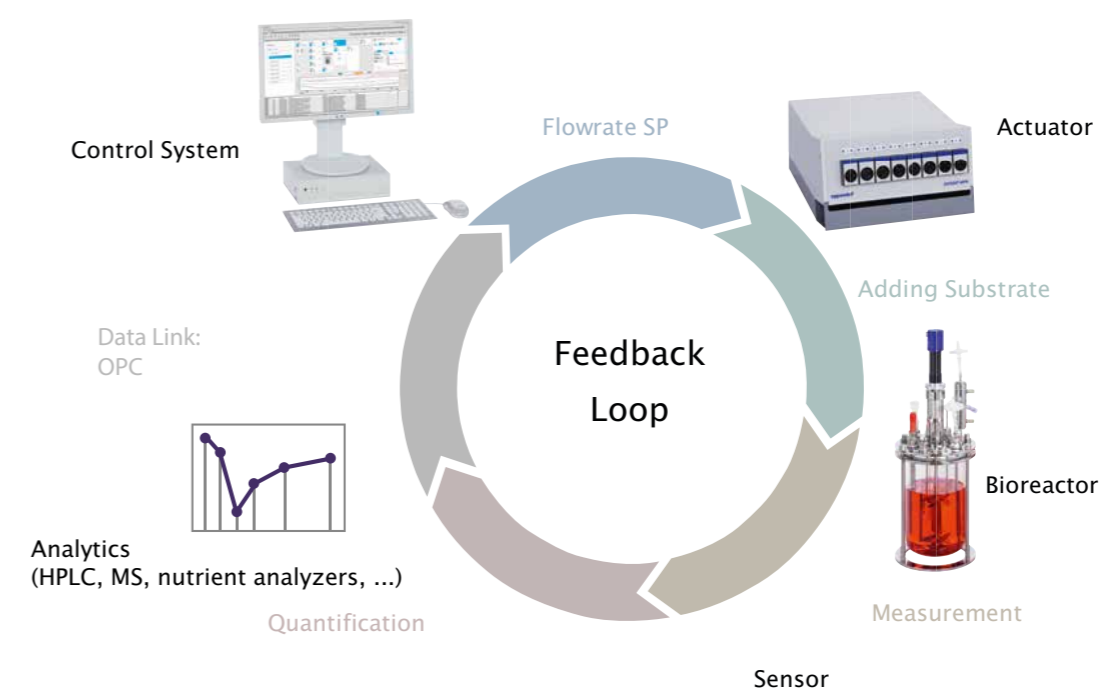
DASware analyze enables seamless integration of sampling and analytical laboratory devices to the bioreactor system. A broad and growing range of analyzers can be integrated, among them nutrient analyzers, cell counters, biomass monitors, HPLC and mass spectrometers. The OPC network protocol as well as the Modbus® protocol allows for interconnectivity between the bioreactor system and the analyzer, including the possibility of direct feedback from the bioreactor system according to online measured analytical data. This facilitates feedback control loops for nutrients, biomass or product concentrations. Online calculations as well as event- and data-driven decisions are supported. The bidirectional OPC communication, available for supporting devices enables sampling on demand and process-dependent analyzer panel selection.

Product features

- > Integration of third-party lab devices into bioreactor control units
- > Enables bidirectional OPC interconnectivity, process-triggered feedback control loop and sampling on demand
- > Allows for online calculations and event- or data-driven decisions
- > Users benefit from integration of existing benchtop equipment, better process understanding and optimal process control
- > Integration includes nutrient analyzers and cell counters, biomass monitors, mass spectrometers, automation platforms and autosamplers, HPLC, and Raman spectroscopy

For more information go to www.eppendorf.com

Technical specifications subject to change.

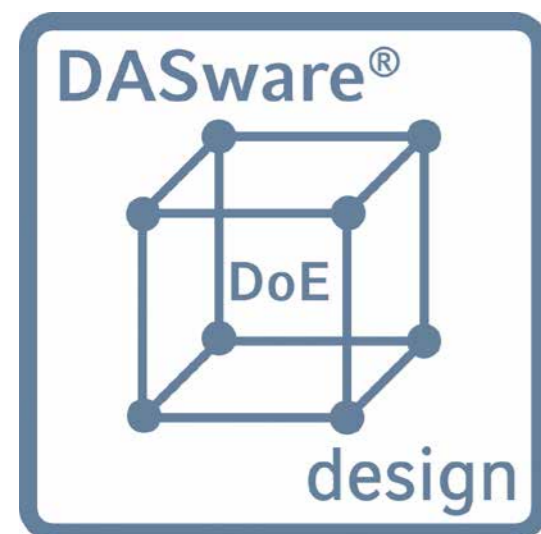


DASware® analyze seamlessly integrates third-party analyzers - allowing real-time measurement and feedback loops.

Ordering information

Description	Order no.
DASware® analyze, OPC client standard (OPC DA e.g. for external analyzer), for 1 vessel	76DWANA
DASware® analyze, serial/Modbus integration (e.g. for external biomass sensors), license for 1 vessel	76DWANAM
DASware® analyze, OPC client professional incl. 1x tunneller license (OPC DA e.g. for external analyzer with autosampler)	
for 4 vessels	76DWANA4P
for 8 vessels	76DWANA8P
for 12 vessels	76DWANA12P
DASware® analyze, cable and license	
for 4 Aber® Futura® sensors	76DWANA4AF
for 4 Hamilton® Fogale sensors	76DWANA4HF

DASware® design



Description

The DASbox Mini Bioreactor System and the DASGIP Parallel Bioreactor Systems serve as ideal platforms to carry out Design of Experiments (DoE) on bioreactors in parallel. DASware design automatically compiles DoE information from DoE software tools into recipes and feedback response information into DoE and multivariate analysis and reporting tools.

The software comes with a full factorial DoE builder. Alternatively, a large variety of DoE designs for screening, process development and optimization can be automatically imported from third-party DoE tools. Parallel recipes incorporating the DoE factor variations (i.e. pH, DO, temperature set-points or feed rates) are automatically populated. Following our Point-Click-Grow concept they can be carried out on a set of bioreactors with a single mouse-click.

Product features

- > Built-in full factorial DoE: easy definition of experimental factors and responses; center points and randomized positioning of runs
- > Integration of 3rd party DoE tools like JMP and others
- > Recipe generator supporting multiple system layouts

Ordering information

Description	Order no.
DASware® design, DoE and local information management, license for 1 vessel	76DWD0E

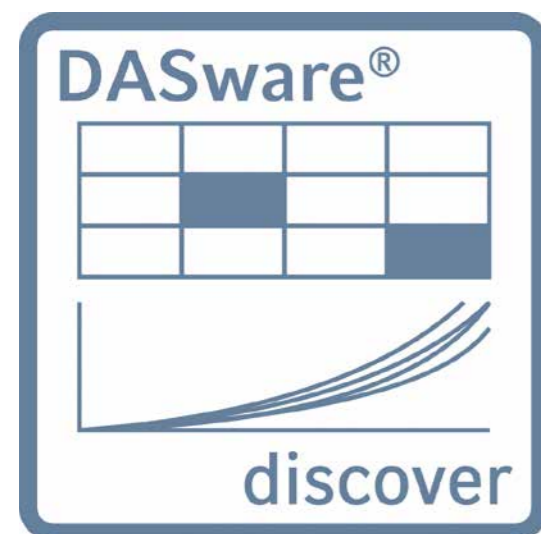
For more information go to www.eppendorf.com



Are you also interested in learning more about the benefits of Multivariate Data Analysis? Watch our on-demand webinar.

www.eppendorf.com/webinar-bioprocess

DASware® discover



Description

With DASware discover user-defined process parameters can be added to process runs either online or retrospectively. DASware discover enables near real-time retrieval of runtime information from an SQL Server database by intuitive Microsoft Excel style queries. An embedded report generator provides recipe information, process information as well as event reporting. Utilizing the integral Chart Creator tool users can easily compare bioprocess information from current and historical runs.

Applications

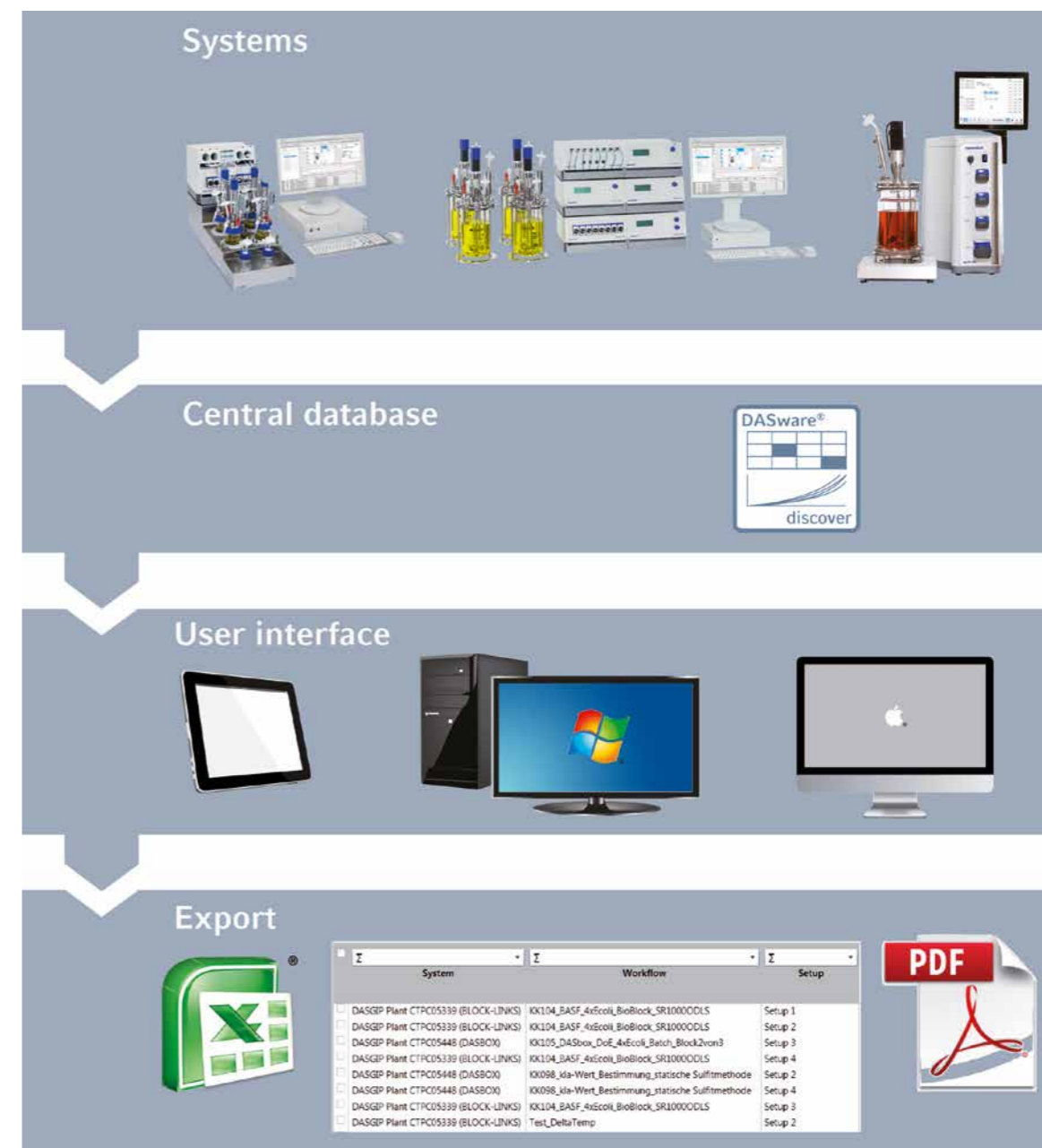
- > Comprehensive management of bioprocess information derived from multiple systems and plants
- > Long-term storage of online and offline data
- > Bioprocess development in accordance with Quality by Design (QbD) standards

Product features

- > Easy analysis of bioprocess information using an intuitive web-based database query tool
- > Real-time retrieval of key process information
- > Batch-to-batch comparison of process information and trends
- > Tabulated and configurable views of all critical process information
- > Easy chart generation using the integral Chart Creator tool
- > Automatic Microsoft Excel® and Adobe PDF® process workbook generation
- > Supports cross platform comparison of runtime data between Eppendorf and third-party systems

For more information go to www.eppendorf.com

Technical specifications subject to change.



Advanced query templates allow for comparison of current and historical runs of multiple systems - stored and shared in a central database.

Ordering information

Description	Order no.
DASware® discover, client-license, for 1 vessel (SQL Server®-based information management)	76DWDIS
DASware® discover, information management server, PC hardware, OS software and server licence	76DWDISPC
DASware® discover, Server-License, SQL Server®-based information management	76DWDISS

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Monitoring & Control



Flexible solutions for monitoring & control

Eppendorf DASGIP® bioprocess analyzer modules deliver accurate measurement of critical process parameters allowing real-time monitoring (and control) of pH, dissolved Oxygen, temperature, ORP/ redox, level/anti foam, cell density and exhaust. In addition, the DASGIP line includes variable speed pumps, TMFC gassing stations, and solutions for photobioreactor illumination. The DASGIP EasyAccess software package allows the modules to be operated as stand-alone solutions.

- > DASGIP® PHPO for Monitoring of pH, DO, Redox and/or Level **120 - 121**
- > DASGIP OD4 for Optical Density Monitoring **122**
- > DASGIP GA for Exhaust Analysis **123**
- > DASGIP TC4SC4 for Temperature and Agitation Control **124 - 125**
- > DASGIP Bioblock **126**
- > DASGIP MP8 and MP4 Multi Pump Modules **127**
- > DASGIP MX Modules for TMFC Gas Mixing **128 - 129**
- > DASGIP Rotameters and Gassing Modules **130**
- > DASGIP PBR4 for PhotoBioreactor Illumination **131**



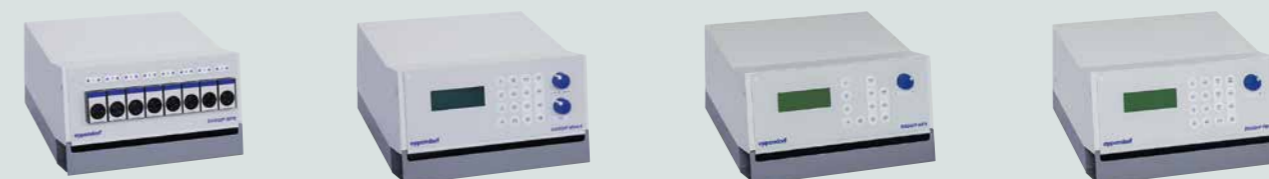
Model	DASGIP® PHPO	DASGIP® OD4	DASGIP® GA	DASGIP® TC4SC4
Page	120	122	123	124
Number of parallel bioreactors per module	4/8	4	4/2/1	4
Operable as stand-alone		■	■	■
pH monitoring and control	■			
DO monitoring and control	o			
Level/foam monitoring and control	o			
ORP (redox) monitoring and control	o			
Optical density measurement		■		
Exhaust analysis			O ₂ , CO ₂ , OTR, CTR, RQ	
PhotoBioreactor illumination				
Feeding				
Gas flow control				
Gas mixing				
Temperature control				■
Agitation control				■

■ = standard, o = optional

OTR = Oxygen transfer rate, CTR = Carbon Dioxide transfer rate, RQ = Respiratory Quotient

For more information go to www.eppendorf.com

Technical specifications subject to change.



Model	DASGIP® MP	DASGIP® MX	DASGIP® MF4	DASGIP® PBR4
Page	127	128	130	131
Number of parallel bioreactors per module	4	4 / 1	4	4
Operable as stand-alone	■	■	■	■
pH monitoring and control				
DO monitoring and control				
Level/foam monitoring and control				
ORP (redox) monitoring and control				
Optical density measurement				
Exhaust analysis				
PhotoBioreactor illumination				■
Feeding	■			
Gas flow control		TMFC	TMFC	
Gas mixing		1/2/4 gas (air, N ₂ , O ₂ , CO ₂)	1 gas (e.g. air, N ₂ , O ₂ , CO ₂)	
Temperature control				
Agitation control				

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DASGIP® PHPO for Monitoring of pH, DO, Redox and/or Level



Description

Eppendorf provides a range of DASGIP bioprocess monitoring modules delivering precise measurement and real-time control of pH, dissolved oxygen (DO), redox potential (ORP) and/or level/foam. Industry standard sensors can be connected. The monitoring systems enable parallel monitoring of four or eight pH sensors with temperature compensation. Additionally, up to two Pt100 temperature sensors can be connected and two 0/4-20mA/0-10V analog inputs provide external signal integration. An easy-to-use one- or two-point calibration procedure for pH, DO and temperature is integrated for use with DASware® control.

The four-channel modules PHPO (configured for pH and DO control) and PHPORD (pH, DO and ORP) each feature four optional conductivity-based level inputs. These inputs can be used for level control during continuous operation or automated antifoam addition.

Applications

- > Parallel monitoring and control of crucial process parameters in cell culture and microbiology
- > Seamless integration with DASGIP Parallel Bioreactor System

Product features

- > Parallel monitoring of four or eight pH sensors with temperature compensation and precise control
- > PHPO modules feature additional DO control and optional level/foam control
- > PHPORD module for four vessels features additional ORP control and optional level/foam control
- > Easy-to-use one- or two-point calibration procedure for pH, DO and temperature

i For more information go to www.eppendorf.com

Technical specifications					
Model	PH4PO4	PH4PO4L	PH8PO8	PH4RD4	PH4PO4RD4L
Dimensions (W x D x H)	300 x 320 x	300 x 320 x	300 x 320 x	300 x 320 x	300 x 320 x
	190 mm / 11.8 x	190 mm / 11.8 x	190 mm / 11.8 x	190 mm / 11.8 x	190 mm / 11.8 x
	15.6 x 7.5 in	15.6 x 7.5 in	15.6 x 7.5 in	15.6 x 7.5 in	15.6 x 7.5 in
Weight	8 kg	8 kg	8.2 kg	8 kg	9.4 kg
Typical power consumption	31 W (230 V) /	31 W (230 V) /	31 W (230 V) /	31 W (230 V) /	31 W (230 V) /
	20 W (115 V)	20 W (115 V)	20 W (115 V)	20 W (115 V)	20 W (115 V)
pH measurement					
Channels	4	4	8	4	4
Measurement range (depending on sensor)	0 – 14	0 – 14	0 – 14	0 – 14	0 – 14
DO measurement					
Channels	4	4	8	–	4
Measurement range (depending on sensor)	0 – 500 % DO	0 – 500 % DO	0 – 500 % DO	–	0 – 500 % DO
Temperature compensation/measurement					
Pt100 inputs	2	2	2	2	2
NTC inputs ¹⁾	4	4	8	–	4
Redox/ORP measurement					
Channels	–	–	–	4	4
Measurement range (depending on sensor)	–	–	–	-2000 – 2000 mV	-2000 – 2000 mV
Level measurement					
Channels	–	4	–	–	4

¹⁾ NTC = Negative Temperature Coefficient

Ordering information

Description	Order no.
DASGIP® PH4PO4 Monitoring Module, for 4 vessels, without sensors, pH and DO	76DGP4PO4
DASGIP® PH4PO4L Monitoring Module, for 4 vessels, without sensors, pH and DO with level/anti foam option	76DGP4PO4L
DASGIP® PH8PO8 Monitoring Module, for 8 vessels without sensors, pH and DO	76DGP8PO8
DASGIP® PH4PO4RD4L Monitoring Module, for 4 vessels, without sensors, pH, DO and redox with level/anti foam option	76DGP4PO4RDL

Accessories

Description	Order no.
Cable, for DO Sensor, for 1 vessel, T82 connector	76DGPOT82
Cable, for connecting a level sensor to a DASGIP® module, for 1 vessel	76DGLVLC
Cable, for DO Sensor (optical), for 1 vessel, VP8 connector	76DGPVP8
Cable, for pH/Redox Sensor, for 1 vessel, AK9 connector	76DGPHRDAK9
Platinum RTD Temperature Sensor, 100 Ohm class A, O.D. 1.6 mm, L 300 mm, cable L 3 m	78103304

i For sensors, see page 148- 158.

DASGIP® OD4 for Optical Density Monitoring



Description

The DASGIP OD4 monitoring module is suitable for applications in cell culture and microbiology enabling parallel optical absorbance measurement in 4 bioreactors. Integrated correlations to offline parameters such as OD₆₀₀ or cell dry weight (CDW) provide online cell growth information. The DASGIP OD4 module can be operated as a stand-alone module or be integrated into legacy control systems and historians.

Product features

- > Optical absorbance measurement in 4 bioreactors
- > Runs with industry standard sensors, various sensor sizes available
- > Integrated correlation to user-defined offline values
- > Can be operated as a stand-alone solution with EasyAccess Software

Technical specifications	
Model	DASGIP® OD4
Dimensions (W x D x H)	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in
Weight	7.6 kg
Typical power consumption	21 W (230 V)/11 W (115 V)
OD measurement	
Channels	4
Measurement range (depending on sensor)	0 – 5 AU

Ordering information

Description	Order no.
DASGIP® OD4 Monitoring Module for Optical Density Measurement, for 4 vessels, incl. transmitter and cables, without sensors	76DGOD4
DASGIP® OD4 Stand-Alone Monitoring Module for Optical Density Measurement, for 4 vessels, incl. transmitter and cables, without sensors, incl. EasyAccess Software	76DMOD4

i For OD sensors, see page 160.

i For more information go to www.eppendorf.com

Technical specifications subject to change.

DASGIP® GA for Exhaust Analysis



Description

The DASGIP GA4 exhaust analyzer supports precise online measurement of exhaust oxygen and carbon dioxide in four discrete analyzer channels. An integrated mass flow sensor allows online calculation and monitoring of oxygen transfer rate (OTR), carbon dioxide transfer rate (CTR) and respiratory quotient (RQ), permitting direct conclusions on the metabolic state of the culture and online feedback loops. Optionally the DASGIP GA4 can be equipped with an analog input/output interface for easy integration into third party systems.

Product features

- > Online calculation of OTR, CTR and RQ allowing for direct feedback
- > Available with two alternative electrochemical O₂ sensors to best serve individual customer's needs (1 – 50 % O₂ or 0 – 100 % O₂)
- > Can be operated as a stand-alone solution with EasyAccess Software
- > Humidity and temperature compensation (rHT option)

Technical specifications		
	DASGIP® GA	DASGIP® GA4E
Model	DASGIP® GA	DASGIP® GA4E
Dimensions (W x D x H)	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in
Weight	12.1 kg	12.1 kg
Typical power consumption	47 W (230 V)/36 W (115 V)	47 W (230 V)/36 W (115 V)
Exhaust oxygen measurement		
Channels (O ₂ , CO ₂ , mass flow each)	4	4
Measuring principle	Zirconium Dioxide (ZrO ₂)	Galvanic Cell
Measurement range	1 – 50 %	0 – 100 %
Pressure range	0,8 – 1,2 bar	0,8 – 1,2 bar
Channels	4	4
Exhaust carbon dioxide measurement		
Measurement range	0 – 25 %	0 – 25 %
Pressure range	0,8 – 1,2 bar	0,8 – 1,2 bar
Mass flow measurement		
Measurement range	0 – 300 sL/h	0 – 300 sL/h

Ordering information

Description	Order no.
DASGIP® GA4 Exhaust Analyzing Module, incl. accessories for 4 vessels	
O ₂ 1 – 50 %, CO ₂ 0 – 25 %	76DGGA4
O ₂ 0 – 100 %, CO ₂ 0 – 25 % (GA4E)	76DGGA4E
DASGIP® GA4 Stand-Alone Exhaust Analyzing Module, for 1 vessel, including relative humidity measurement and accessories, O ₂	76DMGA1
1 – 50 %, CO ₂ 0 – 25 %	
DASGIP® GA4 Stand-Alone Exhaust Analyzing Module, for 2 vessels, including relative humidity measurement and accessories, O ₂	76DMGA2
1 – 50 %, CO ₂ 0 – 25 %	
DASGIP® GA4 Stand-Alone Exhaust Analyzing Module, for 4 vessels, including relative humidity measurement and accessories	
O ₂ 1 – 50 %, CO ₂ 0 – 25 %	76DMGA4
O ₂ 0 – 100 %, CO ₂ 0 – 25 % (GA4E)	76DMGA4E

Accessories

Description	Order no.
Kit to compensate relative humidity and temperature, for DASGIP® GA4, incl. accessories, for 4 vessels	76DGGA4RHT

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DASGIP® TC4SC4 for Temperature and Agitation Control



Description

DASGIP TC4SC4 Modules for Temperature and Agitation Control provide individual stirring speed and temperature control for four bioreactors. Depending on the overhead drive stirring speeds ranging from 30 to 1,600 rpm can be achieved. For temperature control the TC4SC4 supplies four electrical outlets for heat blankets as well as four electrical outlets to switch cooling valves. The TC4SC4B module allows a seamless integration with the compact temperature control system DASGIP Bioblock.

Product features

- > Individual temperature and agitation control for 4 vessels
- > Powerful stirring up to 1,600 rpm supports high oxygen transfer rates in microbial applications
- > Gentle cultivation of animal and human cells is achieved with continuously adjustable agitation speeds down to 30 rpm
- > Use of the TC4SC4B module in combination with the DASGIP Bioblock enables advanced temperature control up to 99 °C
- > Supports freely programmable scripts, trigger automation, user-defined profiles and DO cascades (integrated in DASGIP Parallel Bioreactor System)
- > Can be operated as a stand-alone solution with EasyAccess Software

Technical specifications			
Model	TC4SC4D	TC4SC4B	SC4D
Dimensions (W x D x H)	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in
Weight	9.5 kg	9 kg	8.5 kg
Temperature control			
Set-up	Heat blankets/cooling fingers	DASGIP Bioblock	–
Typical control range (depending on set-up)	5 K above cooling agent temperature – 99 °C	5 K above cooling agent temperature – 99 °C	–
Agitation control			
Set-up	Overhead drives	Overhead drives	Overhead drives
Typical speed range (depending on drive)	30 – 1,250 rpm/ 100 – 1,600 rpm	30 – 1,250 rpm/ 100 – 1,600 rpm	30 – 1,250 rpm/ 100 – 1,600 rpm

Ordering information

Description	Order no.
DASGIP® TC4SC4 Temperature and Agitation Control Module, without sensors, for Bioblock and overhead drives (TC4SC4B), for 4 vessels	76DGT4SC4B
DASGIP® TC4SC4 Temperature and Agitation Control Module, without sensors, for heat blankets and overhead drives (TC4SC4D), for 4 vessels	76DGT4SC4D
DASGIP® SC4D Agitation Control Module, for 4 vessels, for overhead drives	76DGSC4D
DASGIP® TC4SC4 Stand-Alone Temperature and Agitation Control Module, without sensors, for overhead drives (TC4SC4D), for 4 vessels, incl. EasyAccess Software	76DMTC4SC4D

Accessories

Description	Order no.
Overhead Drive RE30, 30 – 1,250 rpm, digitally encoded for 1 BioBLU® 1 Single-Use Vessel	76DGRE30SU01
Overhead Drive RE30, 30 – 1,250 rpm, digitally encoded, for 1 vessel	76DGRE30
Overhead Drive RE40, 100 – 1,600 rpm, digitally encoded for 1 BioBLU® 5 Single-Use Vessel	76DGRE30SU05
Overhead Drive RE40, 100 – 1,600 rpm, digitally encoded, for 1 vessel	76DGRE40
Overhead Drive RE40, 100 – 1,600 rpm, digitally encoded, for 1 vessel	76DGRE40SU01

DASGIP® Bioblock



Description

The compact DASGIP Bioblock combined with the DASGIP TC4SC4B Module for Temperature and Agitation Control provides an integrated solution for accurate and independent temperature control for 4 bioreactors with overhead-driven agitation.

Each well is equipped with an individual electrical heating element featuring an integrated safety temperature sensor as well as separate cooling coils, activated by solenoid valves. A wide choice of DASGIP vessels suitable for the Bioblock is available (working volumes ranging from 200 mL – 2 L), including single-use vessels BioBLU 1c and 1f.

Product features

- > Compact solution for 4 vessels with a footprint of 425 x 520 mm (17 x 20 in)
- > Accurate temperature control up to 99 °C, individually in each well
- > Wide range of Bioblock-suitable glass and single-use vessels for cell culture and microbiology
- > Vessels can be directly inserted into the Bioblock without any additional connections

Technical specifications

Model	DASGIP® Bioblock
Dimensions (W x D x H)	425 x 520 x 130 mm / 16.7 x 20.4 x 5.1 in
Weight	18 kg
Typical power consumption (incl. DASGIP TC4SC4)	309 W/298 W (230 V)/ 323 W/297 W (115 V)
Suitable working volumes	200 mL – 1.6 L (cell culture)/ 200 mL – 1.8 L (microbiology)
Adjustable temperature range	5 K above cooling agent temperature – 99 °C

Ordering information

Description	Order no.
DASGIP® Bioblock, 4-position heating/cooling block, max. temp. 99 °C, for 4 Vessels	76DGTBLOCK

Accessories

Description	Order no.
DASGIP® CWD4 Cooling Water Distribution Unit, incl. connection cable for 4 condenser-/ and 4 cooling finger ports (CWD4+4)	76DGCWD44
for 4 condenser ports (CWD4)	76DGCWD4
Accessories for DASGIP® CWD4+4, for 4-fold system	76DGCWD44UM
Accessories for DASGIP® CWD4, for 4-fold system	76DGCWD4UM
Inline Water Filter, for parallel Bioblock or benchtop systems, incl. accessories for 4-fold or 8-fold systems	76DGIWF

i For more information go to www.eppendorf.com

DASGIP® MP8 and MP4 Multi Pump Modules



Description

DASGIP variable speed pump modules MP8 and MP4 provide eight and four high precision speed controlled miniature peristaltic pumps, respectively. Pump head tubings with different inner diameters allow continuous flow rates from 0.3 – 420 mL/h (MP8) and 0.01 – 5 L/h (MP4). With set points below the minimum continuous flow rate duty cycling mode is activated automatically. Both modules can be operated as stand-alone solutions or be integrated into legacy control systems.

Product features

- > Bidirectional peristaltic pump heads with digitally controlled variable speed motors
- > Continuous feed rates (depending on tube diameter) of 0.3 – 420 mL/h (MP8) and 0.01 – 5 L/h (MP4)
- > Embedded parallel calibration procedures
- > Can be operated as stand-alone solutions with EasyAccess Software

Technical specifications

Model	MP8	MP4
Dimensions (W x D x H)	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in
Weight	8.1 kg	10.3 kg
Typical power consumption	8 W (230 V)/5 W (115 V)	11 W (230 V)/8 W (115 V)
Pumps		
Quantity	8	4
Variant	Pump head with 4 rollers	Spring mounted 2-roller rotor
Drive	Speed-controlled planetary drive	Speed-controlled planetary drive
Operational modes	Continuous and dispensing	Continuous and dispensing
Tubes		
Standard material	PTFE	PTFE/C-Flex
Inner diameter (flow rates)	0.25 mm (0.3 – 9.5 mL/h) 0.5 mm (1.3 – 42 mL/h) 1.0 mm (4.0 – 122 mL/h) 2.0 mm (13 – 420 mL/h)	0.5 mm (0.01 – 0.07 L/h) 0.8 mm (0.02 – 0.22 L/h) 1.6 mm (0.06 – 0.74 L/h) 2.4 mm (0.13 – 1.57 L/h) 3.2 mm (0.23 – 2.72 L/h) 4.8 mm (0.43 – 5.04 L/h)

Ordering information

Description	Order no.
DASGIP® MP4 Multi Peristaltic Pump Module, for 4 feeds, without feed lines and addition bottles	76DGMP4
DASGIP® MP8 Multi Peristaltic Pump Module, for 8 feeds, without feed lines and addition bottles	76DGMP8
DASGIP® MP4 Stand-Alone Multi Peristaltic Pump Module, for 4 feeds, without feed lines and addition bottles, including EasyAccess Software	76DMMP4
DASGIP® MP8 Stand-Alone Multi Peristaltic Pump Module, for 8 feeds, without feed lines and addition bottles, including EasyAccess Software	76DMMP8
DASGIP® MP8 Multi Peristaltic Pump Module, for 8 feeds, without feed lines and addition bottles, including analog IO option	76DGMP8X

Accessories

Description	Order no.
Package to Support Calibration of DASGIP® MP4/MP8, including balance for 4 vessels	76DGMPC4
for 8 vessels	76DGMPC8

i For balances, see page 143.

DASGIP® MX Modules for TMFC Gas Mixing



Description

The DASGIP MX4/4 gas mixing system supplies four separate culture vessels with independent mixtures of air, nitrogen, oxygen and carbon dioxide. Each gas outlet has separate setpoints for flow rate, and concentrations of O₂ and CO₂. The standard MX4/4 module with a maximum gas flow rate of 50 sL/h per outlet covers a wide range of microbial and cell culture applications. For applications with a higher gas flow rate demand, the MX4/4H provides up to 250 sL/h per gas outlet.

The DASGIP MX4/1 model suits pilot scale by providing one vessel with flow rates up to 1200 sL/h. Optional pressure sensors allow safe operation of glass bioreactors, BioBLU® Single-Use Vessels, and disposable bags.

Product features

- > Thermal mass flow-controlled (TMFC) gassing of one (MX4/1) or up to 4 (MX4/4) bioreactors
- > Individual gas mixing from air, N₂, O₂ and CO₂
- > Gas flow rates ranging from 0.1 – 50 sL/h (MX4/4) to 40 – 1200 sL/h (MX4/1)
- > Can be operated as a stand-alone solution with EasyAccess Software

For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications			
Model	MX4/4	MX4/4H	MX4/1
Dimensions (W x D x H)	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in
Weight	16 kg	16 kg	10.2 kg
Typical power consumption	100 W (230 V)/ 90 W (115 V)	100 W (230 V)/ 90 W (115 V)	100 W (230 V)/ 90 W (115 V)
Gas inlet			
Quantity	4	4	4
Gas types	Air, O ₂ , CO ₂ , N ₂	Air, O ₂ , CO ₂ , N ₂	Air, O ₂ , CO ₂ , N ₂
Gas outlet			
Quantity	4	4	1
Flow rates (CO₂)	0.1 – 50 sL/h (CO ₂ :0.1 – 40 sL/h)	0.5 - 250 sL/h (CO ₂ :0.5 – 150 sL/h)	1 – 30 sL/h (CO ₂ :1 - 18 sL/h) 4 – 120 sL/h (CO ₂ :4 - 72 sL/h) 10 – 300 sL/h (CO ₂ :10 - 180 sL/h) 20 – 600 sL/h (CO ₂ :20 - 360 sL/h) 40 – 1200 sL/h (CO ₂ :40 - 720 sL/h)

Ordering information

Description	Order no.
DASGIP® MX4/4 Gas Mixing Module , Mass Flow Controller, 0.1 – 50 sL/h, 0.1 – 40 sL/h CO ₂ , for 4 vessels	76DGMX44
DASGIP® MX4/4 Gas Mixing Module , Mass Flow Controller, 0.5 – 250 sL/h, 0.5 – 150 sL/h CO ₂ , for 4 vessels	76DGMX44H
DASGIP® MX4/1 Gas Mixing Module , for 4 vessels (4x MX4/1), mass flow controller	
20 – 600 sL/h	76DGMX41F600
10 – 300 sL/h	76DGMX41F300
4 – 120 sL/h	76DGMX41F120
1 – 30 sL/h	76DGMX41F030
40 – 1200 sL/h	76DGMX41F1200
DASGIP® MX4/4 Stand-Alone Gas Mixing Module , for 4 vessels, mass flow controller	
0.1 – 50 sL/h, 0.1 – 40 sL/h CO ₂ , incl. 2x 30 m gas tube and EasyAccess Software	76DMMX44
0.5 – 250 sL/h, 0.5 – 150 sL/h CO ₂ (MX4/4H), incl. 2x 30 m gas tube and EasyAccess Software	76DMMX44H
DASGIP® MX4/1 Stand-Alone Gas Mixing Module , for 1 vessel, mass flow controller	
20 – 600 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F600
10 – 300 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F300
4 – 120 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F120
1 – 30 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F030
40 – 1200 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F1200

Your local distributor: www.eppendorf.com/contact

Eppendorf AG · Barkhausenweg 1 · 22339 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

DASGIP® Rotameters and Gassing Modules



DASGIP® WRM Rotameter Gassing Station

- > Designed to be mounted to the DASGIP Bioblock
- > Supplying four-channel rotameter gassing
- > Up to 75 sL/h or up to 260 sL/h gas flow rates

Ordering information

Description	Order no.
DASGIP® WRM Rotameter Gassing Station , for 4 vessels, rotameter and manual valves	
1 – 75 sL/h	76DGWRM
1 – 260 sL/h	76DGWRMH

Accessories

Description	Order no.
DASGIP® Stand for Rotameter Gassing Station , for 1 DASGIP® WRM	76DGWRMRX4
DASGIP® Stand for Rotameter Gassing Station , for 2 DASGIP® WRM	76DGWRMRX8



DASGIP® MF4 for TMFC Gas Supply

- > Gassing of one bioreactor with four separate thermal mass flow-controlled (TMFC) channels
- > Selectable gas types, including air, N₂, O₂, CO₂
- > Individual set-points for each inlet gas
- > Constant flow rates up to 1200 sL/h

Ordering information

Description	Order no.
DASGIP® MF4 Gassing Module , for 4 vessels, mass flow controller	
1 – 30 sL/h, 1 – 18 sL/h CO ₂	76DGMF4F030
4 – 120 sL/h, 4 – 72 sL/h CO ₂	76DGMF4F120
10 – 300 sL/h, 10 – 180 sL/h CO ₂	76DGMF4F300
20 – 600 sL/h, 20 – 360 sL/h CO ₂	76DGMF4F600
40 – 1200 sL/h, 40 – 720 sL/h CO ₂	76DGMF4F1200

For more information go to www.eppendorf.com

DASGIP® PBR4 for PhotoBioreactor Illumination



Description

The DASGIP PBR4 module provides parallel illumination of up to 4 bioreactors under individual conditions. By selectively varying the light intensities of different wavelength channels A, B and C, both the spectral composition and the overall intensity of the resulting light can be adjusted according to individual requirements. In addition to a continuous illumination mode the DASGIP PBR4 module supports the configuration of variable day/night cycles and the programming of different flash modes.

Product features

- > Parallel illumination of up to 4 vessels (DASGIP PhotoBioreactors)
- > Three individually controlled channels A (660 nm, 780 nm), B (572 nm, 625 nm, 640 nm) and C (453 nm) reflecting the relevant chlorophyll absorption wavelengths
- > Continuous mode or flash mode with adjustable period and pulse width
- > Day/night simulation
- > Illumination carried out with DASGIP LED Illumination Devices
- > Can be operated as stand-alone solution with EasyAccess Software

Technical specifications

Model	PBR4
Dimensions (W x D x H)	300 x 320 x 190 mm / 11.8 x 15.6 x 7.5 in
Weight	7.8 kg
Typical power consumption	31 W (230 V) / 20 W (115 V)
Illumination	
Bioreactors	Up to 4
LED illumination devices per bioreactor	Up to 4
Individual wavelength channels	A (660 nm, 780 nm) B (572 nm, 625 nm, 640 nm) C (453 nm)

Ordering information

Description	Order no.
DASGIP® PBR4 PhotoBioreactor Illumination Module , for 4 vessels, without LED Illumination Devices	76DGPBR4
DASGIP® PBR4 Stand-Alone PhotoBioreactor Illumination Module , for 4 vessels, without LED Illumination Devices, incl. EasyAccess Software	76DMPBR4

Accessories

Description	Order no.
LED Illumination Device¹⁾ , L 235 mm, O.D. 12 mm, type S (4 sticks with 453/572/625/640/660/780 nm)	76DGLD220S

¹⁾ Other configurations available on request.

Accessories



Sensors, chillers, scales, and more

- > Fibra-Cel® Disks **134 - 135**
- > System Accessories **136 - 143**
- > DASGIP® EGC for Exhaust Condensation **144**
- > DASGIP® Peltier Exhaust Condensers **145**
- > DASGIP® Feeding Accessories **146**
- > DO Sensors **148 - 151**
- > pH Sensors **152 - 155**
- > Redox Sensors **156 - 158**
- > Turbidity Sensors **159**
- > CO₂ Sensors **159**
- > Optical Density Sensors **160**
- > Level Sensors **161**
- > Temperature Sensors **161**

Fibra-Cel® Disks



Description

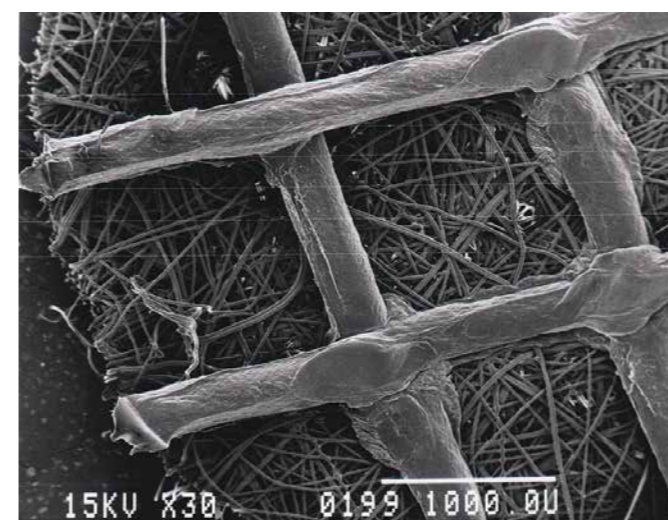
Fibra-Cel is a solid support growth matrix for mammalian, animal, and insect cells, used predominantly for production of secreted products such as recombinant proteins and viruses. Fibra-Cel enables sustained long-term periods of high-density growth in perfusion, without danger of clogging; and eliminates the need for cell filtration to separate cells from the end product.

Applications

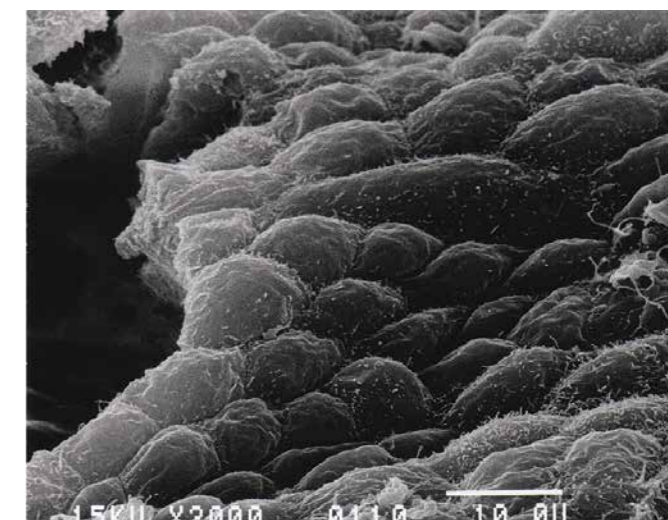
- > **Hybridoma:** DA4-4, 123A, 127A, GAMMA, 67-9-B
- > **Anchorage-Dependent:** 3T3, COS, Human Osteosarcoma, MRC-5, BHK, VERO, CHO, rCHO-tPA, rCHO - Hep B Surface Antigen, HEK 293, rHEK 293, rC127 - Hep B Surface Antigen, Normal Human Fibroblasts, Stroma, Hepatocytes
- > **Insect:** Tn-368, SF9, rSF9, Hi-5

Product features

- > Low pressure drop across the bed of Fibra-Cel minimizes the variability and maintains a global viability of cells over the entire bed
- > High surface-to-volume ratios increases the total biomass that can be maintained in the bioreactor greatly enhancing production of cellular products
- > Entrapped cells are shielded from the turbulence and are less susceptible to shear forces from impeller blades and sparger gas bubbles
- > Higher mass transfer of nutrients and oxygen versus standard microcarrier systems
- > Fibra-Cel is manufactured and tested according to strict quality guidelines
- > Composed of USP Class VI polypropylene and polyester non-woven fiber



High-resolution micrograph of a Fibra-Cel disk indicating the polyester mesh with polypropylene support



HEK-293 cells grown on Fibra-Cel disk at day 7 of the growth cycle

Ordering information

Description	Order no.
Fibra-Cel® Disks	
50 g	M1292-9984
250 g	M1292-9988

Custom package sizes available on request.

System Accessories



Interface Kit for RS-232 Device

- > The RS-232 Device Interface Kit provides the ability to integrate up to eight simple RS-232 devices into your fermentation process to obtain weight measurements, flow rates or other data. This information can be integrated directly into OPC-compatible BioCommand® packages for the development of powerful feed strategies based on weights or pump flow rates.
- > The kit includes one USB cable to connect to your PC and an eight-port RS-232 serial box (OPC server software designed specifically to communicate with BioCommand included with M1295-0002 only).
- > This kit is designed to communicate with Mettler Toledo® scales which use SICS level 0 communication protocol.

Ordering information

Description	Order no.
RS-232 Interface Box, RS-232 to USB, 8 ports, including OPC Server	M1295-0002
RS-232 Interface Box, RS-232 to USB, 8 ports	M1287-0020

¹⁾ Kit M1287-0020 is designed for direct connection to reactor process control (RPC) and BioFlo® control software (BCS) controllers, no OPC server required.

²⁾ Kit M1295-0002 is designed for integration to BioCommand and is primarily intended for the BioFlo/CelliGen® 115, BioFlo/CelliGen 510 - Allen Bradley and BioFlo/CelliGen Pro.



Analog Input/Output Module

- > OPC server interface
- > Communicates with OPC-compatible BioCommand® packages for total process control (requires a computer with USB connection)
- > User-definable 0 – 5 V or 4 – 20 mA: 3 inputs, 3 outputs
- > 0-5 V: 4 inputs, 4 outputs
- > Connection of external pumps, transmitters for sensors, exhaust analyzers

Ordering information

Description	Order no.
Analog Input/Output Module	M1372-1001

100 – 240 V/50/60 Hz



Recirculating Chillers

- > For use with Eppendorf small and bench-scale systems
- > Powerful heat removal
- > Models from different vendors available

Ordering information

Description	Order no.
Recirculating Chiller, ThermoFlex® 1400 PD2, 230 V/50 Hz	P0620-2798
Recirculating Chiller, ThermoFlex® 1400 PD2, 120 V/60 Hz	P0620-2796
Plumbing Package, for ThermoFlex® recirculating chiller	P0620-0959
Pressure Regulator, for ThermoFlex® recirculating chiller, 0 – 20 psig (0 – 1.4 bar)	P0620-2799
Pressure Gauge, for ThermoFlex® recirculating chiller, 0 – 30 psig (0 – 2.1 bar)	M1287-9918
Chiller, Julabo® SC5000a	
208 – 230 V/60 Hz	P0620-3380
400 V/50 Hz	P0620-3381
Connection Kit, for Julabo® SC5000a chiller, for BioFlo®/CelliGen® 510 and BioFlo® 610	M1361-0391
Recirculating Chiller, with 600 W, incl. accessories	
115 V	76DGCHILL06U1
230 V	76DGCHILL06U2
Recirculating Chiller, with 1200 W, incl. accessories	
115 V	76DGCHILL12U1
230 V	76DGCHILL12U2



Benchtop Scale

- > Bench-top scales combine a robust design for long life, integrated display, and the precision needed to meet a variety of needs.
- > Seamless integration with Eppendorf bench-scale controllers (requires RS-232 device interface kit)
- > Offered in 6, 15, and 30 kg capacities
- > Benchtop Scale Kits include a connection cable to RS-232.

Ordering information

Description	Order no.
Benchtop Scale Kit, Mettler Toledo® ICS425	
6 kg, North American plug	M1425-1001
15 kg, North American plug	M1425-1002
35 kg, North American plug	M1425-1003
6 kg, Schuko plug	M1425-1004
15 kg, Schuko plug	M1425-1005
35 kg, Schuko plug	M1425-1006

For more information go to www.eppendorf.com

System Accessories

Variable Speed Pumps

- > Watson-Marlow® variable speed pumps

Ordering information

Description	Order no.
Variable-Speed Pump , Watson-Marlow® 120U with 114DV pump head, 0 – 200 rpm, including connection cable with free leads	M1287-9959
Variable-Speed Pump , Watson-Marlow® 120U, with 114DV pump head, 0 – 200 rpm, including connection cable with Lumberg® connector, for BioFlo® 320	M1379-9959
Variable-Speed Pump , Watson-Marlow® 120U, with 114DV pump head, 0 – 200 rpm, including connection cable with Lumberg® connector, for BioFlo®/CelliGen® 510 - Allen Bradley®	M1287-9978

Regulator/pre-filter kits

- > Regulator/pre-filter kits for water, gas, and steam
- > Utility connection kit for metric conversions and sterilize-in-place systems

System	DASbox®	DASGIP®	BioFlo/CelliGen			
			115, BioFlo 120	310	320	415
Single Gas (up to 4 systems)			M1273-5002	M1273-5002	M1273-5002	M1273-5002
4-Gas			M1363-5002	M1363-5002	M1363-5002	
1/4 inch to 6 mm converter kit ¹⁾			77105038	77105038	77105038	
Single Water	76DGIWF	76DGIWF				
Water (up to 4)			M1273-5001	M1273-5001	M1273-5001	M1273-5001
Water (up to 4) - metric			77105037	77105037	77105037	

¹⁾ Requires M1363-5002

System	BioFlo/CelliGen		BioFlo/CelliGen Pro (60 - 120L)	BioFlo/CelliGen Pro (240 - 500 L)	BioFlo Pro (800 - 1200 L)	BioFlo Pro (2400 L)
	510	BioFlo 610				
Water	M1361-1100	M1361-1100	M1290-0650	M1290-0654	M1290-0656	M1290-0657
Main Steam	M1361-1101	M1361-1101	M1290-0660	M1290-0664	M1290-0666	M1290-0667
Process Steam	M1361-1102	M1361-1102	M1290-0670	M1290-0674	M1290-0676	M1290-0677
Process Air	M1361-1103	M1361-1103	-	-	-	-
Instrument Air	M1361-1104	M1361-1104	M1290-0760	M1290-0760	M1290-0760	M1290-0760
Process Steam to Utility Steam ²⁾	M1361-1105	M1361-1105	-	-	-	-
Utility Connection Kit	M1361-9992	M1362-9992	M1298-9992	M1298-9992	M1290-9992	

²⁾ Requires M1361-1101

Tubing

- > Silicone tubing for liquid addition and gassing
- > Polyurethane tubing for gas connections to control station

Ordering information

Description	Order no.
Tubing , silicone	
I.D. 1/16 in/1.6 mm, O.D. 3/16 in/4.7 mm, length 50 ft/15.2 m	M0740-2396
I.D. 3/32 in/2.4 mm, O.D. 1/4 in/6.4 mm, length 50 ft/15.2 m	M0740-2430
I.D. 1/8 in/3.2 mm, O.D. 1/4 in/6.4 mm, length 25 ft/7.6 m	M0740-2445
I.D. 3/16 in/4.7 mm, O.D. 5/16 in/7.9 mm, length 25 ft/7.6 m	M0740-2505
I.D. 1/4 in/6.4 mm, O.D. 3/8 in/9.5 mm, length 25 ft/7.6 m	M0740-2542
I.D. 5/16 in/7.9 mm, O.D. 7/16 in/11.1 mm, length 50 ft/15.2 m	M0740-2590
Tubing , polyurethane, blue,	
I.D. 5/64 in/2.0 mm, O.D. 3/16 in/4.7 mm, length 50 ft/15.2 m	M0740-3110
I.D. 1/8 in/3.2 mm, O.D. 1/4 in/6.4 mm, length 50 ft/15.2 m	M0740-3111C3
I.D. 5/32 in/4.0 mm, O.D. 1/4 in/6.4 mm, length 25 ft/7.6 m	M0740-3113C3
I.D. 3/8 in/9.5 mm, O.D. 0.655 in/16.3 mm, length 25 ft/7.6 m	M0740-2721C3

Replacement filters

- > Round and Cartridge Filters
- > Available in 0.2 µm and 1.2 µm

			BioFlo/ CelliGen 115	BioFlo 120	BioFlo/ CelliGen 310	BioFlo 320	BioFlo 415	BioFlo/ CelliGen 510	BioFlo 610	BioFlo/ CelliGen Pro
Inlet	0.2 µm	Round	P0200-0491 (Small) P0200-0495 (Large)	P0200-0495	P0200-0491 (Small) P0200-0495 (Large)	P0200-0495	-	-	-	-
Inlet	0.2 µm	Cartridge	-	-	-	-	P0200-0129	P0200-4148	P0200-4148	P0200-4061 (BioFlo Pro 60-120L/CelliGen Pro) P0200-4060 (BioFlo Pro 240-400L) P0200-4064 (BioFlo Pro 800-2400L)
Exhaust	0.2 µm	Round	P0200-0495	P0200-0495	P0200-0495	-	-	-	-	-
Exhaust	0.2 µm	Cartridge	-	-	-	P0200-4130	P0200-0129	P0200-4147	-	P0200-4061 (BioFlo Pro 60-120L/ CelliGen Pro) P0200-4060 (BioFlo Pro 240-400L) P0200-4063 (BioFlo Pro 800-1200L) P0200-4064 (BioFlo Pro 2400L)
Exhaust	1.2 µm	Cartridge	-	-	-	-	P0200-4150	P0200-4146	P0200-4190	-
Sample	0.2 µm	Round	P0200-0970	-	P0200-0970	-	P0200-0970	-	-	-

System Accessories



Addition/Harvest Bottles

- > Autoclavable addition/harvest bottles in various sizes
- > Ranging from 250 mL – 10 L

Ordering information

Description	Order no.
Foam Trap Kit, 250 mL	M1273-9942
Addition/Harvest Bottle Kit, for aerobic processes	
250 mL	M1362-9905
500 mL	M1362-9906
1 L	M1362-9901
2 L	M1362-9902
5 L	M1362-9903
10 L	M1362-9904
Addition/Harvest Bottle Kit, for anaerobic processes	
250 mL	M1362-9913
500 mL	M1362-9914
1 L	M1362-9915
2 L	M1362-9916
5 L	M1362-9917
10 L	M1362-9918
Addition/Harvest Bottle Kit, for aerobic processes, including bottle holder	
250 mL	M1273-9989
500 mL	M1273-9990
Bottle Holder Kit	
for 250/500 mL bottle	M1273-9940

Other Accessories

Ordering information

Description	Order no.
Hypodermic Needle, 107.95 mm long, 3.26 mm diameter, 12 needles	P0440-0061A
Hypodermic Needle, 18 Gauge (3.8 cm Length) - Pack of 100	P0440-0064
Sample Vials, autoclavable, case of 72	
25 mL, with caps	M1227-9935
40 mL, with caps	P0640-0500
Bearing Housing Cap, pack of 10	M1273-9936
Addition Vessel Kit, includes stainless-steel vessel with dip tube, stainless-steel process valve, silicone tubing and 0.2 µm vent filter	
4 L	M1290-0550
7.5 L	M1290-0551
11 L	M1290-0552
19 L	M1290-0553
38 L	M1290-0554



Bioprocess Accessories

- > Tubing connectors
- > Tri-clamp to barbed tube connectors
- > Luer connectors

Straight connectors

1/4 in to 1/8 in	P0242-0460
1/4 in to 1/4 in	P0242-0510
1/4 in to 3/16 in	P0242-0200
5/16 in to 1/4 in	P0242-0201
3/8 in to 1/4 in	P0242-0202

T-connector

1/4 x 1/4 x 1/4 in	P0242-0210
--------------------	------------

Quick Connects

Female	P0240-2680
Male	P0240-2670

Tri-clamp to barbed tube

0.75 inch to 1/8 in barbed tube	P0240-0774C3
0.75 inch to 1/4 in barbed tube	P0240-0773C3
0.75 inch to 1/2 in barbed tube	P0240-0775C3

Tubing Clamps

Clamp, plastic	P0160-4460
Clamp, steel	P0160-4830

Luer

Barbed tube to male luer, 1/8 in tube, stainless steel	P0240-5000
Barbed tube to female luer, 1/4 in tube, set of 10	M1379-0130

For more information go to www.eppendorf.com

System Accessories



DASGIP® Process Computer

- > Intel Core® i5
- > SSD ≥ 128 GB
- > 22 in LCD monitor
- > Microsoft® Windows® 7

Ordering information

Description	Order no.
Process Computer for Small Scale Systems, including OS software, DASware® control without licenses, and PC hardware, english language, with accessories	76DGPCS



Uninterruptible Power Supply for DASGIP® Products

- > Uninterruptible power supplies and replacement batteries

Ordering information

Description	Order no.
Uninterruptible Power Supply for DASGIP® System, 230 V/50 Hz, Eaton® 5P 1550i, 1550 VA	78535272
Uninterruptible Power Supply, APC BackUPS BR1500G, 115 V, 60 Hz, 1500 W	78535267
Replacement Battery RBC33, for UPS BR1500(I/LCD)	78110007



DASGIP® CWD Cooling Water Distribution Unit

- > Exhaust cooling and/or temperature control in up to four vessels
- > Available with four or eight ports for condensers and/or cooling fingers

Ordering information

Description	Order no.
DASGIP® CWD4 Cooling Water Distribution Unit, incl. connection cable for 4 condenser ports (CWD4)	76DGCWD4
for 4 condenser-/ and 4 cooling finger ports (CWD4+4)	76DGCWD44
Accessories for DASGIP® CWD4+4, for 4-fold system	76DGCWD44UM
Accessories for DASGIP® CWD4, for 4-fold system	76DGCWD4UM
Inline Water Filter, for parallel Bioblock or benchtop systems, incl. accessories for 4-fold or 8-fold systems	76DGIWF



Balance

- > Precision balances e.g. for integration with DASGIP MP8 and MP4 multi pumps
- > Mettler Toledo® MS
- > Available with max. capacities of 3.2 – 12.2 kg

Ordering information

Description	Order no.
Precision Balance, including license and cable	
3.2 kg	76DGBAL32
4.2 kg	76DGBAL42
6.2 kg	76DGBAL62
8.2 kg	76DGBAL82
12.2 kg	76DGBAL122



Serial Device Servers for DASGIP® Products

- > Connects up to eight serial devices to the Ethernet

Ordering information

Description	Order no.
Serial Device Server, with 2 ports	
115 V	76DGRSPORT2U1
230 V	76DGRSPORT2U2
Serial Device Server, with 8 ports	76DGRSPORT8

DASGIP® EGC for Exhaust Condensation



Description

The Eppendorf DASGIP EGC4 Module in combination with our Peltier Exhaust Condensers provides liquid-free exhaust condensation for up to four vessels. Proven effective for the DASbox Mini Bioreactor and for the mini scale BioBLU 0.3 Single-use Vessels, this innovative technology can also be utilized with the larger vessels of the Eppendorf BioBLU family, BioBLU 1c, 3c, 5c, and 5p. Optimum recovery of condensate prevents volume loss due to evaporation and associated changes in osmolarity as well as blocking of exhaust filters. No cooling agent or chiller is needed so users benefit from easy handling.

Product features

- > Effective liquid-free exhaust condensation via Peltier technology
- > Up to four exhaust condensers can be connected
- > Suitable for single-use vessels BioBLU 1c, 3c, 5c, and 5p

Ordering information

Description	Order no.
DASGIP® EGC4 Exhaust Condenser Controller, for 4 Peltier actuators, 110 – 240 V/50/60 Hz	76DGE4

For more information go to www.eppendorf.com

Technical specifications subject to change.

DASGIP® Peltier Exhaust Condensers



Description

Our innovative Peltier Exhaust Condenser offers highly effective condensation - without the need for a cooling agent or chiller. Volume loss due to evaporation is thereby minimized and blocking of exhaust filter prevented. The condenser's automatic slide in activation and slide out deactivation mode satisfies users with its easy handling.

The Peltier-based exhaust condenser was designed for use with the Eppendorf DASbox Mini Bioreactor System and is ready-to-use with both autoclavable (DASbox Mini Bioreactor) and single-use vessels (BioBLU 0.3). The DASGIP EGC4 module makes this technology available as well for use with our larger BioBLU Single-Use Vessels.

Product features

- > Liquid-free exhaust condensation through Peltier-based cooling
- > Highly effective condensation minimizes volume loss caused by evaporation
- > Prevents blocking of exhaust filter
- > Automatic activation/deactivation with proximity sensor
- > Automatic and manual de-icing functionality
- > Suitable for single-use vessels BioBLU 1c, 3c, 5c, and 5p

Applications

- > Cell culture and fermentation in mini scale using the Eppendorf DASbox
- > Small and bench scale applications with BioBLU Single-Use Vessels

Ordering information

Description	Order no.
Actuator Unit for Peltier Exhaust Condenser	
incl. cable L 1.6 m	78201321
incl. cable L 4 m	78201330
Exhaust Condenser Adaptor, incl. insulation	
for DASbox® Mini Bioreactor	78201323
for BioBLU® 0.3/1c Single-Use Vessels	78201322
for BioBLU® 1f Single-Use Vessels	78109131
for BioBLU® 3c/5c/5p Single-Use Vessels	78201326

Your local distributor: www.eppendorf.com/contact

Eppendorf AG · Barkhausenweg 1 · 22339 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

DASGIP® Feeding Accessories

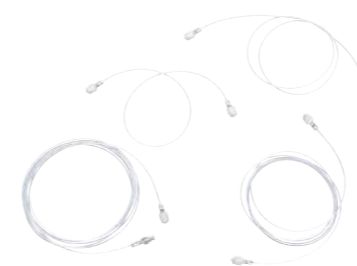


DASGIP® Pump Head Tubings

- > Available with different inner diameter (ID) and wall thickness (W)
- > Material: Bioprene®/Marprene®
- > Connectors: male/female, female/female
- > Suitable for DASGIP MP4 and MP8, respectively

Ordering information

Description	Order no.
Pump Head Tubing, for DASGIP® MP8 pump, PharMed®	
I.D. 0.25/W 0.85 mm, male/female	78510198
I.D. 0.25/W 0.85 mm, female/female	78510119
Pump Head Tubing, for DASGIP® MP8 pump, Bioprene®	
I.D. 0.5/W 1.05 mm, male/female	78510117
I.D. 0.5/W 1.05 mm, female/female	78510118
I.D. 1.0/W 1.05 mm, male/female	78510109
I.D. 1.0/W 1.05 mm, female/female	78510236
Pump Head Tubing, for DASGIP® MP8 pump, Peripren	
I.D. 2.0/W 0.8 mm, male/female	78510197
I.D. 2.0/W 0.8 mm, female/female	78510237
Pump Head Tubing, for DASGIP® MP4 pump, Marprene®	
I.D. 0.5/W 1.6 mm, female/female	78510292
I.D. 0.8/W 1.6 mm, female/female	78510293
I.D. 1.6/W 1.6 mm, female/female	78510295
I.D. 2.4/W 1.6 mm, female/female	78510296
I.D. 3.2/W 1.6 mm, female/female	78510297
I.D. 4.8/W 1.6 mm, female/female	78510298



DASGIP® Feed Lines

- > Available with different inner diameter (ID) and length (L)
- > Material: C-Flex® or PTFE
- > Connectors: male/male

Ordering information

Description	Order no.
Feed Line PTFE, uncolored with 2x Luer lock fittings, I.D. 0.8 mm	
L 1 m, male/male	78510241
L 3 m, male/male	78510243
Feed Line C-Flex®, with 2x Luer lock fittings, male/male	
I.D. 0.8 mm, L 1 m	78510309
I.D. 0.8 mm, L 2 m	78510310
I.D. 3.2 mm, L 1 m	78510320
I.D. 3.2 mm, L 2 m	78510321



DASGIP® Head Gears

- > Allows easy transfer of liquids from addition bottles to the bioreactor
- > For GL45 neck

Ordering information

Description	Order no.
DASGIP® Head Gear, for addition bottles with GL45 neck, C-Flex	
female Luer lock	78510311

DO Sensors



DO Sensors

- > Accurate monitoring of dissolved oxygen
- > Standard Clark electrodes as well as optical sensors
- > Various sensor lengths available

Model	Spinner		Bioreactor		PhotoBioreactor		
Vessel Size	DASbox® 0.25 L	0.5 L	1.5 L	2.5 L	3.5 L	1.0 L	2.5 L
DASbox® MiniBioreactor	1 or 4 or 7	–	–	–	–	–	–
DASGIP® Benchtop	–	2 or 5 or 8	3 or 6 or 9	2 or 5 or 8	3 or 6 or 9	–	–
DASGIP® PhotoBioreactors	–	–	–	–	–	2 or 5 or 8	2 or 5 or 8

Model	Spinner 0.7 L	Spinner 1 L	Spinner 1.5 L	Stirrer 1 L	Stirrer 1.5 L	Stirrer 1.8 L
DASGIP® Bioblock	2 or 5 or 8	2 or 5 or 8	3 or 6 or 9	2 or 5 or 8	2 or 5 or 8	3 or 6 or 9

Model	0.3c/f	1c/f	3c/5c/3f	5p	10c/14c	50c
BioBLU® Vessel	10	11	2 or 5 or 8 or 16 or 23 or 27	1 or 4 or 7 or 12 or 22 or 26	18 or 25 or 29	20

Model	1 L	2 L	3 L	5 L	10 L	15 L	All Vessels
BioFlo®/CelliGen® 115	14	15	–	17	19	–	–
BioFlo® 120	14 or 23 or 27	15 or 23 or 27	–	17 or 24 or 28	19 or 25 or 29	–	–
BioFlo®/CelliGen® 310	15	–	15	17	19	–	–
BioFlo® 320	15 or 23 or 27	–	15 or 23 or 27	17 or 24 or 28	19 or 25 or 29	–	–
CelliGen® 310 (packed-bed)	12	–	12	15	15	–	–
BioFlo® 320 (packed-bed)	12 or 22 or 26	–	12 or 22 or 26	15 or 23 or 27	15 or 23 or 27	–	–
BioFlo® 415	–	–	–	17	19	21	–
BioFlo®/CelliGen® 510	–	–	–	–	–	–	12
BioFlo® 610	–	–	–	–	–	–	12
BioFlo®/CelliGen® Pro	–	–	–	–	–	–	Standard Housing - 12 Retractable Housing - 17

Ordering information

Description	Ref.	Order no.
DO Sensor , Mettler Toledo®, autoclavable, O.D. 12 mm		
L 120 mm	1	78108018
L 220 mm	2	78108026
L 320 mm	3	78108022
DO Sensor (Optical) , Hamilton® VisiFerm™, autoclavable, O.D. 12 mm, H0 cap		
L 120 mm	4	78108058
L 225 mm	5	78108059
L 325 mm	6	78108060
DO Sensor , Hamilton®, autoclavable, O.D. 12 mm		
L 120 mm	7	78108023
L 225 mm	8	78108039
L 325 mm	9	78108040
DASGIP® DO Sensor O.D. 4.7 mm , including cable L 3 m and storage chamber for BioBLU® 0.3, L 162 mm	10	78108046
DASGIP® DO Sensor O.D. 4.7 mm , including cable L 3 m and storage chamber for BioBLU® 1, L 278 mm	11	78108051
DO Sensor , Mettler Toledo® InPro 6830, 120 mm, angled T-82 connector	12	P0720-6280
DO Sensor , Mettler Toledo® InPro 6810, 160 mm, angled VP connector	13	P0720-6281
DO Sensor , Mettler Toledo® InPro 6830, 160 mm, angled T-82 connector	14	P0720-6580
DO Sensor , Mettler Toledo® InPro 6830, 220 mm, angled T-82 connector	15	P0720-6282
DO Sensor , Mettler Toledo® InPro 6820, 225 mm, straight T-82 connector	16	P0720-6526
DO Sensor , Mettler Toledo® InPro 6830, 320 mm, angled T-82 connector	17	P0720-6283
DO Sensor , Mettler Toledo® InPro 6820, 355 mm, straight T-82 connector	18	P0720-6525
DO Sensor , Mettler Toledo® InPro 6830, 420 mm, angled T-82 connector	19	P0720-6284
DO Sensor , Mettler Toledo® InPro 6820, 526 mm, straight T-82 connector	20	P0720-6529
DO Sensor , Hamilton® OxyFerm FDA, 625 mm, straight T-82 connector	21	P0720-6520
DO Sensor , Mettler Toledo® InPro 6850i, ISM®		
120 mm	22	P0720-6652
220 mm	23	P0720-6653
320 mm	24	P0720-6654
420 mm	25	P0720-6655
Optical DO Sensor , Mettler Toledo® InPro 6860i, ISM®		
120 mm	26	P0720-6651
220 mm	27	P0720-6660
320 mm	28	P0720-6661
420 mm	29	P0720-6662

For more information go to www.eppendorf.com

DO Sensors

Accessories	
Description	Order no.
DO Electrolyte , Mettler Toledo®, pack of 3 x 25 mL	0045840006
DO Electrolyte , Mettler Toledo®, pack of 3 x 25 mL	78108053
Membrane Kit for 12 mm DO Sensors , Hamilton®, incl. spare o-rings, 3 membrane bodies	78108042
Membrane Kit for 12 mm DO Sensors , Mettler Toledo®, incl. spare o-rings, 4 membrane bodies	78108003
Membrane Kit for 12 mm DO Sensors , incl. spare o-rings, Mettler Toledo®	
4 membrane bodies	P0720-6268
1 membrane body	P0720-6339
Membrane Kit for 12 mm DO Sensors , incl. spare o-rings, Hamilton®, 3 membrane bodies	P0720-6570
Sensor Cap , Optocap BT O2T, for Mettler Toledo® InPro 6860i	P0720-6621
Cap , for DO sensor, with 4-pin connector (T82)	P0720-5567
pH & DO Simulator/Calibrator , for checking integrity of pH and DO electronics and cables	P0720-5631

Model	Cable				Adaptor/ sensor housing		
	Analog	Analog	Digital	Digital			
	T-82	VP8	ISM	ISM-Optical DO	Head plate adaptor	Side-Wall Adaptor	Sensor Housing
DASbox® MiniBioreactor	78522040	78522042	–	–	–	–	–
DASGIP® Parallel Bioreactor System	78522040	78522042	–	–	77102016 ¹⁾	–	–
BioFlo®/CelliGen® 115	P0720-2336	–	–	–	M1273-5040	–	–
BioFlo® 120	1390810600	–	M1379-8108	M1379-8107	M1273-5040	–	–
BioFlo®/CelliGen® 310	P0720-2333	–	–	–	M1287-5030	–	–
BioFlo® 320	M1379-8106	–	M1379-8108	M1379-8107	M1287-5030	–	–
BioFlo® 415	P0720-2333	–	–	–	–	–	–
CelliGen® BLU - 1st Generation	P0720-2336	–	–	–	–	–	–
CelliGen® BLU - 2nd Generation	P0720-2336	–	–	–	–	–	–
BioFlo®/CelliGen® 510	P0720-2336	–	–	–	–	M1361-9208	P0720-6240C3
BioFlo® 610	P0720-2336	–	–	–	–	M1361-9208	P0720-6240C3
BioFlo®/CelliGen® Pro - Standard Housing	P0720-2342	–	–	–	–	–	P0720-6450C1
BioFlo®/CelliGen® Pro - Retractable Housing	P0720-2342	–	–	–	–	–	P0720-5570C

¹⁾ For DASGIP Benchtop Bioreactors

Ordering information	
Description	Order no.
Cable , for connecting DO sensors to DASGIP® modules, grey, with plug type T82, L 3 m	78522040
Cable , for connecting DO sensors to DASGIP® modules, grey, with plug type VP8 for VisiFerm™, L 3 m	78522042
Cable , ISM® sensor, 1 m	M1379-8108
DO Cable , with T-82 connector, for BioFlo® 120, 1 m	1390810600
DO Cable , with T-82 connector, for BioFlo® 320, 1 m	M1379-8106
Optical DO Cable , ISM® sensor, 1 m	M1379-8107
DO Cable , with T-82 connector, for BioFlo®/CelliGen® 310, BioFlo® 410, BioFlo® 415, 1.1 m (45 in)	P0720-2333
DO Cable , with T-82 connector, for BioFlo®/CelliGen® 115, BioFlo®/CelliGen® 510, BioFlo® 610, CelliGen® BLU (2nd generation), 1.4 m (55 in)	P0720-2336
DO Cable , with T-82 connector, for BioFlo®/CelliGen® Pro, 1.8 m (6 ft)	P0720-2342
Sensor Housing , stainless steel	
for 25 mm Ingold® port, for 120 mm sensor length, with material certificate	P0720-6450C1
InFit® 761, for 25 mm Ingold® port, for 120 mm sensor length, with material certificate	P0720-6240C3
retractable, InTrac® 797, for 25 mm Ingold® port, 325 mm sensor length, with material certificate	P0720-5570C
Ingold® Port Weldment , converts 1 1/2 in sanitary to 25 mm Ingold® port	M1361-9208
Adaptor	
VP connector to T-82 connector, for analog sensors	P0720-6470
Power Adaptor , VP to T-82 connector	P0720-9771

pH Sensors



pH Sensors

- > Electrodes for accurate monitoring of pH
- > Various sensor lengths available

Model	DASbox	Spinner	Spinner	Bioreactor	Bioreactor	PhotoBioreactor	PhotoBioreactor
Vessel Size	0.25 L	0.5 L	1.5 L	2.5 L	3.5 L	1.0 L	2.5 L
DASbox MiniBioreactor	1 or 4	–	–	–	–	–	–
DASGIP Benchtop	–	2 or 5	2 or 5	2 or 5	3 or 6	–	–
DASGIP PhotoBioreactors	–	–	–	–	–	2 or 5	2 or 5

Model	Spinner 0.7 L	Spinner 1 L	Spinner 1.5 L	Stirrer 1 L	Stirrer 1.5 L	Stirrer 1.8 L
DASGIP Bioblock	2 or 5	2 or 5	3 or 6	2 or 5	2 or 5	3 or 6

Model	0.3c/f	1c/f	3c/5c/3f	5p	10c/14c	50c
BioBLU Vessel	1 or 4	2 or 5 or 9 or 14	2 or 5 or 9 or 14	1 or 4 or 7 or 13	11 or 16	12

Model	1 L	2 L	3 L	5 L	10 L	15 L	All Vessels
BioFlo 110 and BioFlo/CelliGen 115	8	9	–	10	11	–	–
BioFlo 120	8 or 14	9 or 14	–	10 or 15	11 or 16	–	–
BioFlo/CelliGen 310	8	–	9	10	11	–	–
BioFlo 320	8 or 14	–	9 or 14	10 or 15	11 or 16	–	–
CelliGen 310 (packed-bed)	8	–	8	8	9	–	–
BioFlo 320 (packed-bed)	8 or 14	–	8 or 14	8 or 14	9 or 14	–	–
BioFlo 415	–	–	–	10	11	12	–
BioFlo/CelliGen 510	–	–	–	–	–	–	7
BioFlo 610	–	–	–	–	–	–	7
BioFlo/CelliGen Pro	–	–	–	–	–	–	Standard Housing - 7 Retractable Housing - 10

Ordering information

Description	Ref.	Order no.
pH Sensor, Mettler Toledo® , autoclavable, O.D. 12 mm		
L 120 mm	1	78103207
L 225 mm	2	78103220
L 325 mm	3	78103209
pH Sensor, Hamilton® EasyFerm Plus , autoclavable, O.D. 12 mm		
L 120 mm	4	78103205
L 225 mm	5	78103230
L 325 mm	6	78103231
pH Sensor, Mettler Toledo® 405-DPAS-SC-K8S , gel-filled		
120 mm	7	P0720-5581
200 mm	8	P0720-5582
225 mm	9	P0720-5584
325 mm	10	P0720-5580
425 mm	11	P0720-5583
pH Sensor, Hamilton®, EasyFerm , gel-filled		
625 mm	12	P0720-6540
pH/Redox Sensor, Mettler Toledo® InPro 3253i, ISM®		
120 mm	13	P0720-6656
225 mm	14	P0720-6657
325 mm	15	P0720-6658
425 mm	16	P0720-6659

Accessories

Description	Order no.
pH & DO Simulator/Calibrator , for checking integrity of pH and DO electronics and cables	P0720-5631
Cap , for sensor, K9 connector	P0720-5317

pH Sensors

Model	Cable		Adaptor/Sensor Housing		
	Analog	Digital			
	AK9	ISM	Headplate Adaptor	Side-Wall Adaptor	Sensor Housing
DASbox® MiniBioreactor	78522020	-	-	-	-
DASGIP® Parallel Bioreactor System	78522020	-	77102016	-	-
BioFlo®/CelliGen® 115	P0720-2276	-	M1273-5040	-	-
BioFlo® 120	1390810400	M1379-8108	M1273-5040	-	-
BioFlo®/CelliGen® 310	P0720-2273	-	M1287-5030	-	-
BioFlo® 320	M1379-8104	M1379-8108	M1287-5030	-	-
BioFlo® 415	P0720-2273	-	-	-	-
CelliGen® BLU - 1st Generation	N/A	-	-	-	-
CelliGen® BLU - 2nd Generation	P0720-2276	-	-	-	-
BioFlo®/CelliGen® 510	P0720-2276	-	-	M1361-9208	P0720-6240C3
BioFlo® 610	P0720-2276	-	-	M1361-9208	P0720-6240C3
BioFlo®/CelliGen® Pro - Standard Housing	M1290-0610	-	-	-	P0720-6450C1
BioFlo®/CelliGen® Pro - Retractable Housing	M1290-0610 and M1290-8012	-	-	-	P0720-5570C

Ordering information

Description	Order no.
DASGIP® pH/Redox Cable , grey, with AK9 plug, L 3 m	78522020
pH/Redox Cable , with AK9 connector, for BioFlo® 120, 1 m	1390810400
Cable , ISM® sensor, 1 m	M1379-8108
pH/Redox Cable , for BioFlo® and CelliGen® Pro, 1.8 m	M1290-0610
Cable , pH/redox ground wire extension, for retractable sensor housings, 0.6 m	M1290-8012
pH Cable , with AK9 connector, for BioFlo® 320, 1 m	M1379-8104
pH Cable , with AK9 connector, for BioFlo®/CelliGen® 310, BioFlo® 410, BioFlo® 415, 1 m (40 in)	P0720-2273
pH Cable , with AK9 connector, for BioFlo®/CelliGen® 115, BioFlo®/CelliGen® 510 and BioFlo® 610, 1.4 m (55 in)	P0720-2276
Optical pH Sensor Cable	
for BioBLU® 1c/3c/5c	P0300-2371
for BioBLU® 10c/14c	P0300-2370
for BioBLU® 50c	P0300-2374
for BioBLU® 5p	P0300-2372
Sensor Housing , stainless steel	
for 25 mm Ingold® port, for 120 mm sensor length, with material certificate	P0720-6450C1
InFit® 761, for 25 mm Ingold® port, for 120 mm sensor length, with material certificate	P0720-6240C3
retractable, InTrac® 797, for 25 mm Ingold® port, 325 mm sensor length, with material certificate	P0720-5570C
Ingold® Port Weldment , converts 1 1/2 in sanitary to 25 mm Ingold® port	M1361-9208

For more information go to www.eppendorf.com

Technical specifications subject to change.

Your local distributor: www.eppendorf.com/contact
Eppendorf AG · Barkhausenweg 1 · 22339 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

Redox Sensors



Redox Sensors

- > Accurate monitoring of ORP (redox potential)
- > Used with DASGIP/DASbox PHPO monitoring module series and Eppendorf control units, respectively
- > Various sensor lengths available

Model	DASbox	Spinner	Spinner	Bioreactor	Bioreactor	PhotoBioreactor	PhotoBioreactor
Vessel Size	0.25 L	0.5 L	1.5 L	2.5 L	3.5 L	1.0 L	2.5 L
DASbox MiniBioreactor	1	–	–	–	–	–	–
DASGIP Benchtop	–	2	2	2	3	–	–
DASGIP PhotoBioreactors	–	–	–	–	–	2	2

Model	Spinner 0.7 L	Spinner 1 L	Spinner 1.5 L	Stirrer 1 L	Stirrer 1.5 L	Stirrer 1.8 L
DASGIP Bioblock	2	2	3	2	2	3

Model	0.3c/f	1c/f	3c/5c/3f	5p	10c/14c	50c
BioBLU Vessel	1	2 or 6 or 13	2 or 6 or 13	2 or 4 or 12	7 or 9 or 14	11

Model	1 L	2 L	3 L	5 L	10 L	15 L	All Vessels
BioFlo 110 and BioFlo/CelliGen 115	5	6	–	7 or 9	8 or 10	–	–
BioFlo 120	5 or 13	6 or 13	–	7 or 9 or 14	8 or 10 or 15	–	–
BioFlo/CelliGen 310	5	–	6	7 or 9	8 or 10	–	–
BioFlo 320	5 or 13	–	6 or 13	7 or 9 or 14	8 or 10 or 15	–	–
CelliGen 310 (packed-bed)	5	–	5	5	6	–	–
BioFlo 320 (packed-bed)	5 or 13	–	5 or 13	5 or 13	6 or 13	–	–
BioFlo 415	–	–	–	7 or 9	8 or 10	11	–
BioFlo/CelliGen 510	–	–	–	–	–	–	4
BioFlo 610	–	–	–	–	–	–	4
BioFlo/CelliGen Pro	–	–	–	–	–	–	Standard Housing - 4 Retractable Housing - 7 or 9

Ordering information

Description	Ref.	Order no.
Redox Sensor, Mettler Toledo® , autoclavable, O.D. 12 mm		
L 120 mm	1	78103224
L 225 mm	2	78103225
L 325 mm	3	78103226
Redox Sensor, Mettler Toledo® , Pt4805-DPAS-SC-K8S, gel-filled		
120 mm	4	P0720-5780
200 mm	5	P0720-5781
225 mm	6	P0720-5783
325 mm	7	P0720-5782
425 mm	8	P0720-5784
Redox Sensor, Hamilton® , EasyFerm RX, gel-filled		
325 mm	9	P0720-6532
425 mm	10	P0720-6531
625 mm	11	P0720-6530
pH/Redox Sensor, Mettler Toledo® InPro 3253i, ISM®		
120 mm	12	P0720-6656
225 mm	13	P0720-6657
325 mm	14	P0720-6658
425 mm	15	P0720-6659

Redox Sensors

Model	Cable		Adaptor/Sensor		
	Analog	Digital	Headplate Adaptor	Side-Wall Adaptor	Sensor Housing
	AK9	ISM			
DASbox® MiniBioreactor	78522020	–	–	–	–
DASGIP® Parallel Bioreactor System	78522020	–	–	–	–
BioFlo®/CelliGen® 115	P0720-2763	–	M1273-5040	–	–
BioFlo® 120	1390810400	M1379-8108	M1273-5040	–	–
BioFlo®/CelliGen® 310	P0720-2275	–	M1287-5030	–	–
BioFlo® 320	M1379-8105	M1379-8108	M1287-5030	–	–
BioFlo® 415	P0720-2275	–	–	–	–
BioFlo®/CelliGen® 510	P0720-2277	–	–	M1361-9208	P0720-6240C3
BioFlo® 610	P0720-2277	–	–	M1361-9208	P0720-6240C3
BioFlo®/CelliGen® Pro - Standard housing	M1290-0610	–	–	–	P0720-6450C1
BioFlo®/CelliGen® Pro - Retractable housing	M1290-0610 & M1290-8012	–	–	–	P0720-5570C

Ordering information

Description	Order no.
DASGIP® pH/Redox Cable , grey, with AK9 plug, L 3 m	78522020
pH/Redox Cable , with AK9 connector, for BioFlo® 120, 1 m	1390810400
Redox Cable , with AK9 connector, for BioFlo® 320, 1 m	M1379-8105
Cable , ISM® sensor, 1 m	M1379-8108
Redox Cable , with AK9 connector, for BioFlo® 110 and BioFlo®/CelliGen® 115, 1.8 m (6 ft)	P0720-2763
Redox Cable , with AK9 connector, for BioFlo®/CelliGen® 310 and BioFlo® 415, 1 m (40 in)	P0720-2275
Redox Cable , with AK9 connector, for BioFlo®/CelliGen® 510 and BioFlo® 610, 1.4 m (55 in)	P0720-2277
pH/Redox Cable , for BioFlo® and CelliGen® Pro, 1.8 m	M1290-0610
Cable , pH/redox ground wire extension, for retractable sensor housings, 0.6 m	M1290-8012
Transmitter , Mettler Toledo® M300	
redox, panel mounted	P0620-5974
redox, wall mounted	P0620-5975
Secondary DO-pH/Redox Option , for BioFlo®/CelliGen® 310 and BioFlo® 415, field-installed	M1287-3530
Sensor Housing , stainless steel	
for 25 mm Ingold® port, for 120 mm sensor length, with material certificate	P0720-6450C1
InFit® 761, for 25 mm Ingold® port, for 120 mm sensor length, with material certificate	P0720-6240C3
retractable, InTrac® 797, for 25 mm Ingold® port, 325 mm sensor length, with material certificate	P0720-5570C
Ingold® Port Weldment , converts 1 1/2 in sanitary to 25 mm Ingold® port	M1361-9208

For more information go to www.eppendorf.com

Turbidity Sensors

Ordering information	
Description	Order no.
Turbidity Sensor , Mettler Toledo® InPro 8100, autoclavable, 120 mm (cable not included)	P0720-5951
Turbidity Sensor , Mettler Toledo® InPro 8100, autoclavable, 297 mm (cable not included)	P0720-5950
Turbidity Sensor , Mettler Toledo® InPro 8200	
SIP, 120 mm (with cable)	P0720-5961
SIP, 205 mm (with cable)	P0720-5962
SIP, 297 mm (with cable)	P0720-5963
SIP, 407 mm (with cable)	P0720-5960
Turbidity Cable , 5 m	P0720-2430
Transmitter , Mettler Toledo® M800, one-channel, Turbidity	P0620-6571

CO₂ Sensors

Ordering information	
Description	Order no.
CO₂ Sensor , Mettler Toledo® InPro 5000i, ISM®	
120 mm	P0720-6663
220 mm	P0720-6664
320 mm	P0720-6665
CO₂ sensor , Mettler Toledo® InPro 5000, VP Connector	
120 mm	P0720-6480
220 mm	P0720-6481
320 mm	P0720-6482
CO₂ Cable , with VP connector, for Mettler Toledo® transmitter, 3 m (10 ft)	P0720-9660
Transmitter Kit , Mettler Toledo® M400, CO ₂	M1287-3200
Cable , ISM® sensor, 1 m	M1379-8108
CO₂ Membrane Kit , incl. spare o-rings and electrolyte, Mettler Toledo® InPro 5000/InPro 5000i, 4 membrane bodies	P0720-6641

Optical Density Sensors



Optical Density Sensors

- > Accurate measurement of optical absorbance
- > Used with the DASGIP OD4 monitoring module
- > Different optical path lengths for various applications
- > Various sensor lengths available

Model	DASGIP® OD Sensor									
	5 mm	5 mm	5 mm	10 mm	10 mm	10 mm	20 mm	20 mm	20 mm	20 mm
Optical path length	781	781	781	781	781	781	781	781	781	781
Order no.	03411	03408	03414	03412	03409	03415	03413	03410	03416	03416
Sensor length	120	225	335	120		335				335
	mm	mm	mm	mm	225 mm	mm	120 mm	225 mm	mm	
DASbox® MiniBioreactor	■			■			■			
DASGIP® Benchtop Spinner 0.5 L		■			■			■		
DASGIP® Benchtop Spinner 1.5 L		■			■			■		
DASGIP® Bioblock Spinner 0.7 L/Stirrer 1 L		■			■			■		
DASGIP® Bioblock Spinner 1 L/Stirrer 1.5 L		■			■			■		
DASGIP® Bioblock Spinner 1.5 L/Stirrer 1.8 L			■			■				■
DASGIP® Benchtop Bioreactors 2.5 L		■			■			■		
DASGIP® Benchtop Bioreactors 3.5 L			■			■				■
DASGIP® PhotoBioreactors 1.0 L		■			■			■		
DASGIP® PhotoBioreactors 2.5 L		■			■			■		

Accessories

Description	Order no.
Compression Fitting, complete, with M18x1.5 male thread, I.D. 12 mm	78532281
Compression Fitting, complete, with Pg 13.5 male thread, I.D. 12 mm	78532284
Cable, for connecting OD sensors to DASGIP® modules, L 3 m	78522037
Cable, for connecting OD sensors to DASGIP® modules, L 5 m	78522054

For more information go to www.eppendorf.com

Technical specifications subject to change.

Level Sensors



Level Sensors

- > Activation of pumps for level control due to level changes
- > Anti foam addition due to foam build-up
- > Used with the DASGIP PHPO monitoring modules with level option

Ordering information

Description	Order no.
DASGIP® Level Sensor , stainless steel with PFA coating	
L 130 mm, Li 20 – 90 mm ¹⁾	78103145
L 200 mm, Li 20 – 160 mm ¹⁾	78103146
L 230 mm, Li 20 – 190 mm ¹⁾	78103147

¹⁾ Li = immersion depth

Accessories

Description	Order no.
Compression Fitting , complete, with M18x1.5 male thread	
I.D. 4 mm	78532279
Compression Fitting , complete, with Pg 13.5 male thread	
I.D. 4 mm	78532282
DASGIP® Level Sensor Cable , L 3 m	78522031

Temperature Sensors



Temperature Sensors

- > Platinum RTD temperature sensors (Pt100)
- > Designed for use with DASGIP bioreactors

Ordering information

Description	Order no.
Platinum RTD Temperature Sensor , 100 Ohm class A	
O.D. 1.6 mm, L 150 mm, cable L 1.8 m	78103314
O.D. 1.6 mm, L 300 mm, cable L 1.3 m	78103308
O.D. 1.6 mm, L 300 mm, cable L 3 m	78103304
O.D. 1.6 mm, L 400 mm, cable L 3 m	78103307
O.D. 4.5 mm, L 230 mm, cable L 3 m (for BioBLU® 3c/5c/5p)	78103318

Your local distributor: www.eppendorf.com/contact
 Eppendorf AG · Barkhausenweg 1 · 22339 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

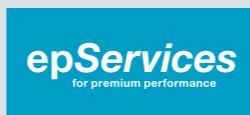
Service



As with all complex technical systems, Eppendorf bioprocess equipment should be maintained regularly to keep all parts in good working order. This maintenance avoids cost-intensive down times and contributes to preservation of value.

- > DASbox® Mini Bioreactor System Performance Plans **164**
- > DASGIP® PHPO and OD4 Performance Plans **166**
- > DASGIP® GA Performance Plans **168**
- > DASGIP® TC4SC4 Performance Plans **170**
- > DASGIP® MP8 and MP4 Performance Plans **172**
- > DASGIP® MX Performance Plans **174**
- > DASGIP® MX4/1, MF4 and Rotameters Performance Plans **176**
- > DASGIP® PBR4 Performance Plans **178**
- > DASGIP® Control System Performance Plans **180**
- > DASGIP® and DASbox® Vessels Performance Plans **182**
- > BioFlo® 120 Performance Plans **184**
- > BioFlo®/CelliGen® 115 Performance Plans **186**
- > BioFlo® 320 Performance Plans **188**
- > BioFlo®/CelliGen® 310 Performance Plans **190**
- > BioFlo® 415 Performance Plans **192**
- > BioFlo®/CelliGen® 510 (RPC/AB) Performance Plans **194**
- > BioFlo® 610 Performance Plans **196**
- > BioFlo® Pro Performance Plans **198**
- > CelliGen® Pro Performance Plans **200**

DASbox® Mini Bioreactor System Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The Eppendorf DASbox is the solution for bioprocessing in small working volumes. In small volumes precision and process reliability are essential. Slight deviations or irregularities influence the process and the cultivated cells and organisms much more than at larger scales. Be on the safe side with calibrated and adjusted mass flow sensors, sensor electronics and actuators.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

eppendorf

Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 373	0082 150 374	0082 150 375	0082 150 379
External Inspection				
General condition of DASbox® and all attached cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General condition of tubing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Inspection				
Check/update of firmware and internal battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check of internal settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Functional Check				
Operational check of all actuators (heating, cooling, gassing, pumps)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of exhaust condenser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of all attached sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification				
Verification of sensor performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification of agitation speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification of gas flow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification of temperature measurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification of exhaust performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration and Adjustment				
Calibration and adjustment of mass flow sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration of electronics of sensors for pH, DO, level, redox, temperature ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

²⁾ Where feature is present

For a complete maintenance of your DASbox® additional services are recommended:

Control system:

- > Essential Check: 0082 150 003
- > Advanced Maintenance: 0082 150 004
- > Premium Service: 0082 150 005

Small scale vessel:

- > Essential Check: 0082 150 333
- > Advanced Maintenance: 0082 150 334
- > Premium Service: 0082 150 335

DASGIP® PHPO and OD4 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime. The most common reasons for failed experiments are incorrect sensor readings or defective sensors. Therefore, it is essential to identify and eliminate these risks before they arise. Preventive maintenance of electronics, cables, and sensors notably diminishes in-process failure. Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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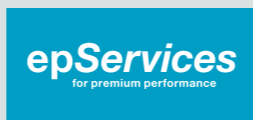
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number (for DASGIP® PHPO)	0082 150 453	0082 150 454	0082 150 455	0082 150 459
Order Number (for DASGIP® OD4)	0082 150 043	0082 150 044	0082 150 045	0082 150 049
External Inspection				
General condition of DASGIP® module and attached cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Inspection				
Check/update of firmware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check/update of internal battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check of internal settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Functional Check				
Operational check of sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of all attached sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification				
Verification of sensor performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration and Adjustment				
Calibration and adjustment of electronics of sensors for pH, DO, level, redox, temperature ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-point calibration of all attached sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-point calibration of all attached sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Cost of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾Separate purchase of IQ/OQ documents will be necessary

²⁾Where feature is present

DASGIP® GA Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The DASGIP GA4 exhaust analyzer supports precise online measurement of exhaust oxygen and carbon dioxide in four discrete analyzer channels. The online monitoring of oxygen transfer rate (OTR), carbon dioxide transfer rate (CTR), and respiratory quotient (RQ) permits direct conclusions on the metabolic state of the culture and allows implementation of online feedback loops. As the GA4 gas sensors have a limited working lifetime, regular maintenance is essential to obtaining reliable experimental data.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 203	0082 150 204	0082 150 205	0082 150 209
External Inspection				
General condition of DASGIP® GA4 module and attached cables	■	■	■	■
Internal Inspection				
Check/update of firmware	■	■	■	
Check/exchange of internal battery	■	■	■	
Check of internal settings	■	■	■	■
Check lifetime of gas sensors	■	■	■	
Verification				
Characterization of gas sensor performance with air	■	■	■	■
Characterization of gas sensor performance with test gas ²⁾	■	■	■	■
Characterization of mass flow sensor performance	■	■	■	■
Calibration and Adjustment				
Calibration and adjustment of mass flow sensors		■	■	
Calibration and adjustment of ambient pressure sensor		■	■	
1-point calibration of gas sensors with air	■			
2-point calibration of gas sensors with air and test gas ²⁾		■	■	■
Documentation				
Check list provided	■	■	■	
Dated service sticker to confirm Eppendorf service	■	■	■	■
IQ/OQ report and certificate				■
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repair/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

²⁾ Test gas has to be provided by customer

Order numbers for additional, inhouse services:

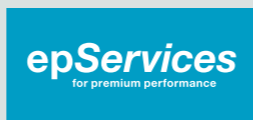
GA4:

- > GA4 sensor train inspection (O₂/CO₂): 77 105 000
- > GA4 sensor train maintenance (O₂/CO₂/flow): 77 105 001
- > GA4 maintenance (4x O₂/CO₂): 77 105 002

GA4E:

- > GA4E sensor train inspection (O₂/CO₂): 77 105 039
- > GA4E sensor train maintenance (O₂/CO₂/flow): 77 105 040
- > GA4E maintenance (4x O₂/CO₂): 77 105 041

DASGIP® TC4SC4 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

Efficient mixing and accurate temperature control are indispensable to achieve optimum growth conditions, especially for mass and heat transfer in microbial cultivation. Mammalian cells require smooth mixing with low shear stress. The DASGIP TC4SC4 module provides individual temperature and agitation controls for four bioreactors.

Their correct functioning is essential for every experiment, because even the smallest deviations can disrupt the experiment, as well as further process development and upscaling. Therefore, regular verification and calibration of motors, temperature sensors, and heating and cooling devices is indispensable for standardized process conditions.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.



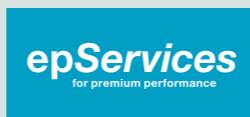
For more information go to www.eppendorf.com

Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 413	0082 150 414	0082 150 415	0082 150 419
External Inspection				
General condition of DASGIP® TC4SC4 module and attached cables	■	■	■	■
Internal Inspection				
Check/update of firmware	■	■	■	
Check/exchange of internal battery	■	■	■	
Check of internal settings	■	■	■	■
Functional Check				
Operational checks of heating	■	■	■	■
Operational check of cooling	■	■	■	■
Operational check of agitation	■	■	■	■
Verification				
Verification of temperature sensor performance	■	■	■	■
Verification of heating performance		■	■	■
Verification of cooling performance		■	■	■
Verification of agitation performance		■	■	■
Calibration				
Calibration and adjustment of temperature electronics	■	■	■	
Calibration and adjustment of temperature sensors	■	■	■	■
Documentation				
Check list provided	■	■	■	
Dated service sticker to confirm Eppendorf service	■	■	■	■
IQ/OQ report and certificate				■
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Cost of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

DASGIP® MP8 and MP4 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

Microbial and cell culture applications require precise flows of feed and buffer. The DASGIP variable-speed pump modules MP4 and MP8 provide four or eight high-precision, speed-controlled miniature peristaltic pumps, respectively.

Our field service engineers ensure accurate functioning of the pumps and accessories with scheduled preventive maintenance. They take equipment usage and condition into account with predictive maintenance techniques to determine when service will be required, thus saving money and downtime. Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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For more information go to www.eppendorf.com

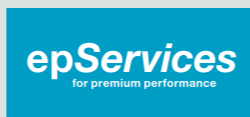
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 083	0082 150 084	0082 150 085	0082 150 089
External Inspection				
General condition of DASGIP® MP module, attached cables, and feed lines ²⁾	■	■	■	■
Internal Inspection				
Check/update of firmware	■	■	■	
Check/exchange of internal battery	■	■	■	
Check for correct calibration parameters		■	■	
Functional Check				
Operational check of all pumps (manual mode)	■	■	■	■
Operational check of all pumps (automatic mode)	■	■	■	■
Verification				
Verification of pump and pump head condition	■	■	■	
Verification of tightness of the feed line manifold ²⁾		■	■	
Verification of tightness of the feed lines ²⁾		■	■	
Documentation				
Check list provided	■	■	■	
Dated service sticker to confirm Eppendorf service	■	■	■	■
IQ/OQ report and certificate				■
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Cost of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾Separate purchase of IQ/OQ documents will be necessary

²⁾Where feed lines are available

DASGIP® MX Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The DASGIP MX4/4 gas mixing system supplies four separate culture vessels with independent mixtures of air, N₂, O₂, and CO₂. Each gas outlet has separate setpoints for flow rate, and concentrations of O₂ and CO₂. Regular maintenance is crucial to ensuring reproducible and reliable gas mixtures for your cell culture applications and microbial fermentations. Fast and precise calibration and adjustment of your gas mixing system can be performed on-site, which minimizes down time.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

eppendorf

Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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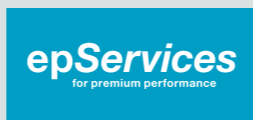
For more information go to www.eppendorf.com

Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 123	0082 150 124	0082 150 125	0082 150 129
External Inspection				
General condition of DASGIP® MX module and attached cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Inspection				
Check/update of firmware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check/exchange of internal battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check of internal settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Functional Check				
Operational check of inline gas filter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of alarm functions on all channels/gasses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of gas inlets/outlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification				
Verification of valve resistance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Characterization of mass flow sensor performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification of gassing system tightness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration and Adjustment				
Calibration and adjustment of inline pressure sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration and adjustment of valve current of flow valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration and adjustment of mass flow sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repair/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾Separate purchase of IQ/OQ documents will be necessary

DASGIP® MX4/1, MF4 and Rotameters Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The DASGIP MX4/1 gas mixing system supplies one culture vessel with an individual mixture of air, N₂, O₂, and CO₂. The DASGIP MF4 gassing module allows mass flow-controlled gassing of up to four vessels with individual flow rates. DASGIP Rotameters WRM and RX2/4 provide four-channel rotameter gassing at an adjustable flow rate from one and two gas supplies, respectively. Regular maintenance is crucial to ensure a reproducible and reliable gas supply. Fast calibration of your gassing system can be performed on-site, which minimizes down time.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.



For more information go to www.eppendorf.com

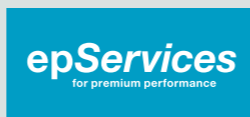
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 163	0082 150 164	0082 150 165	0082 150 169
External Inspection				
General condition of DASGIP® module	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General condition of all attached cables, tubes, and labels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Inspection				
Check/update of firmware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check/exchange of internal battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check of internal settings and parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspection of flow controller ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check of alarm settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check system tightness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Functional Check				
Operational check of pressure sensor and pressure control ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration				
2-point calibration of WRM or RX2/4 ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-point calibration of WRM or RX2/4 ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-point calibration of MX4/1 or MF4 ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8-point calibration of MX4/1 or MF4 ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

²⁾ Where feature is present

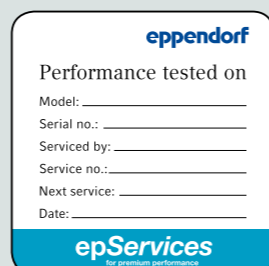
DASGIP® PBR4 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

Phototrophic organisms use different types of chlorophyll. To address their individual requirements, the DASGIP PBR4 enables illumination of photobioreactors with selected wavelengths, ideally matched to the absorption maxima of relevant chlorophyll molecules. The DASGIP PBR4 module provides parallel illumination of up to 4 bioreactors under individual conditions. By selectively varying the light intensities of different wavelength channels, both the spectral composition and the overall intensity of the resulting light can be adjusted according to individual requirements. In addition to a continuous illumination mode the DASGIP PBR4 module supports the configuration of variable day and night cycles as well as the programming of different flash modes.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.



For more information go to www.eppendorf.com

Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 293	0082 150 294	0082 150 295	0082 150 299
External Inspection				
General condition of DASGIP® PBR4 module and all attached cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Inspection				
Check/update of firmware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Check/exchange of internal battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Check of internal settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Functional Check				
Operational check of LED cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of all attached illuminators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of all LED types	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational check of illumination modes		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verification				
Verification of photon intensity values		<input type="checkbox"/>	<input type="checkbox"/>	
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate				<input type="checkbox"/>
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

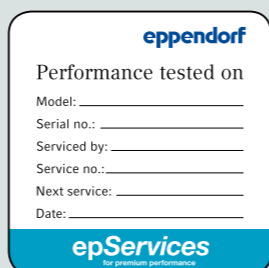
DASGIP® Control System Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The DASGIP control system comprises a process computer and the bioprocess control software DASware® control. It is at the core of all DASGIP Parallel Bioreactor Systems and the DASbox® Mini Bioreactor System. Operating multiple bioreactors in parallel reduces the number of runs needed and therefore accelerates process development. DASware control facilitates the control of up to 24 bioreactors in parallel. Combined with extensive embedded process automation features, intelligent recipe management, and integrated report generating capabilities it offers an unprecedented level of integral process documentation.

Our field service engineers ensure accurate functioning of your process computer, implement updates of DASware control, and maintain your database, to ensure the best performance of your control system. Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.



For more information go to www.eppendorf.com

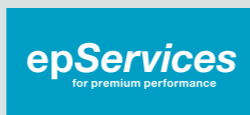
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 003	0082 150 004	0082 150 005	0082 150 009
External Inspection				
General condition of DASGIP® process computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General condition of all attached cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Inspection				
Check database size	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check DTP-Insight firmware version	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check process computer settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check/update of firmware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Update of minor release	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Functional Check				
Check automatic export function	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform database export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UPS capacity check ²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assistance				
Scripting support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

²⁾ Where feature is present

DASGIP® and DASbox® Vessels Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime. Eppendorf offers autoclavable, overhead-driven glass vessels for microbial and cell culture applications. They feature multi-port stainless steel head plates and Rushton-type or pitched-blade impellers and cover working volumes of 60 mL – 3.8 L. Stirrer assemblies and head plates are equipped with numerous seals and O-rings to ensure a safe and sterile connection between the different parts. To ensure culture sterility, it is essential to exchange them on a regular basis. A preventive maintenance of the vessel and the stirring assembly notably diminishes contamination and performance problems. Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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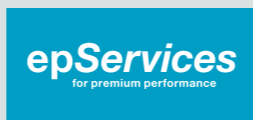
For more information go to www.eppendorf.com

Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification/Operational Qualification (IQ/OQ) ¹⁾
Order Number	0082 150 333	0082 150 334	0082 150 335	0082 150 339
External Inspection				
General condition of DASGIP® or DASbox® vessel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General condition of all O-rings and seals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General conditions of all reusable parts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General condition of all vessel filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance				
O-ring exchange training	<input type="checkbox"/>			
Exchange of all O-rings on vessel		<input type="checkbox"/>	<input type="checkbox"/>	
Maintenance of stirrer assembly		<input type="checkbox"/>	<input type="checkbox"/>	
Functional Check				
Operational check of vessel		<input type="checkbox"/>	<input type="checkbox"/>	
Documentation				
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ/OQ report and certificate				<input type="checkbox"/>
Supporting Information				
Contract period	one year	one year	one year	n/a
Number of preventive services included	one	one	one	n/a
Costs of repairs/parts replacement outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a

¹⁾ Separate purchase of IQ/OQ documents will be necessary

BioFlo® 120 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The Eppendorf BioFlo 120 offers simplicity and ease of use, without sacrificing capability. No matter if you are in an academic, governmental or industrial research setting, or working with bacteria, yeast, fungi, mammalian, insect or plant cells, the BioFlo 120 is an attractive solution to meet your needs. It features an extensive range of glass and BioBLU® Single-Use Vessel options (250 mL – 40 L). Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

eppendorf

Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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For more information go to www.eppendorf.com

Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)	Operational Qualification (OQ)	IQ/OQ
Order Number	0082 140 043	0082 140 044	0082 140 045	0082 140 047	0082 140 048	0082 140 049
External Inspection and Maintenance						
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment						
Check motor and bearing housing for speed and operation ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, washers, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect cooling valve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect gas sequencing valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks						
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check gas flow and mixing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest firmware revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation						
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information						
Contract period	one year	one year	one year	n/a	n/a	n/a
Number of preventive services included	one	one	one	n/a	n/a	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a	n/a	n/a

Note: For customers using BioBLU® Single-Use Vessels please select the Essential Check only. Please contact your local Eppendorf representative for other service contract options.

¹⁾ Customers using single-use vessels must provide a vessel for these tests.

BioFlo®/CelliGen® 115 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The Eppendorf BioFlo/CelliGen 115 is an easy-to-use benchtop system, with built-in controls for operation as a microbial fermentor or mammalian cell culture bioreactor. It features an extensive range of glass and BioBLU Single-Use Vessel options. Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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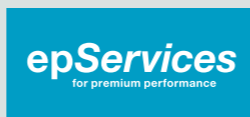
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE
Order Number	0082 140 003	0082 140 004	0082 140 005
External Inspection and Maintenance			
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment			
Check motor and bearing housing for speed and operation ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, washers, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect cooling valve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect gas sequencing valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks			
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check gas flow and mixing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation			
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information			
Contract period	one year	one year	one year
Number of preventive services included	one	one	one
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time

Note: For customers using BioBLU® Single-Use Vessels please select the Essential Check only. Please contact your local Eppendorf representative for other service contract options.

¹⁾ Customers using single-use vessels must provide a vessel for these tests.

BioFlo® 320 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The BioFlo 320, next-generation bioprocess control station, is designed as a universal platform capable of meeting the ever changing needs of all segments of biotech and pharmaceutical sciences. The BioFlo 320 is suitable for microbial and cell culture, scale up and scale down, and batch, fed batch, and perfusion processes. It features an extensive range of glass and BioBLU Single-Use Vessel options (250 mL – 40 L). Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

eppendorf

Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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For more information go to www.eppendorf.com

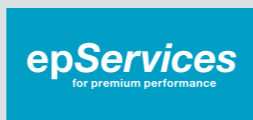
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)	Operational Qualification (OQ)	IQ/OQ
Order Number	0082 140 123	0082 140 124	0082 140 125	0082 140 167	0082 140 168	0082 140 169
External Inspection and Maintenance						
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment						
Check motor and bearing housing for speed and operation ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check water circulation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect gas sequencing valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks						
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check gas flow and mixing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation						
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information						
Contract period	one year	one year	one year	n/a	n/a	n/a
Number of preventive services included	one	one	one	n/a	n/a	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a	n/a	n/a

Note: For customers using BioBLU® Single-Use Vessels please select the Essential Check only. Please contact your local Eppendorf representative for other service contract options.

¹⁾ Customers using single-use vessels must provide a vessel for these tests.

BioFlo®/CelliGen® 310 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The BioFlo/CelliGen 310 is a benchtop, autoclavable fermentor/bioreactor with advanced controller and touchscreen interface. The system can operate glass vessels of four sizes ranging from 0.6 L to 10 L, as well as BioBLU Single-Use Vessels covering working volumes of 1.25 L to 40 L.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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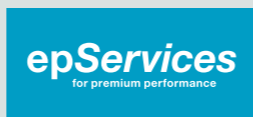
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE
Order Number	0082 140 083	0082 140 084	0082 140 085
External Inspection and Maintenance			
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment			
Check motor and bearing housing for speed and operation ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check water circulation system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect gas sequencing valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks			
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run ¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation			
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information			
Contract period	one year	one year	one year
Number of preventive services included	one	one	one
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time

Note: For customers using BioBLU® Single-Use Vessels please select the Essential Check only. Please contact your local Eppendorf representative for other service contract options.

¹⁾ Customers using single-use vessels must provide a vessel for these tests.

BioFlo® 415 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The BioFlo 415 is an economical sterilize-in-place fermenter available in three vessel sizes with working volumes from 2 L to 15 L. The system's built-in electrical heaters make the BioFlo 415 particularly suitable for those labs where a steam source is not present.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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Technical specifications subject to change.

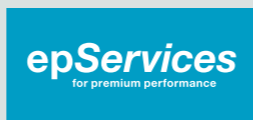
Service Operation	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)
Order Number	0082 140 164	0082 140 165	0082 140 167
External Inspection and Maintenance			
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify loop PI settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check valve operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check hoses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment			
Check motor and bearing housing for speed and operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect solenoid valves operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect gas sequencing valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace rupture disk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test TMFC for operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks			
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation			
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information			
Contract period	one year	one year	n/a
Number of preventive services included	one	one	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	discount on parts, labor, travel time	n/a

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BioFlo®/CelliGen® 510 (RPC/AB) Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The BioFlo/CelliGen 510 is a sterilize-in-place pilot/production-scale fermentor/bioreactor that can be placed on a laboratory bench or on a mobile cart. The system can be controlled by the Eppendorf RPC controller or an Allen Bradley Programmable Logic Controller (PLC).

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Performance tested on

Model: _____

Serial no.: _____

Serviced by: _____

Service no.: _____

Next service: _____

Date: _____

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Technical specifications subject to change.

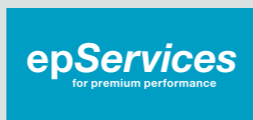
Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)	Operational Qualification (OQ)	IQ/OQ
Order Number	0082 140 293	0082 140 294	0082 140 295	0082 140 297	0082 140 298	0082 140 299
External Inspection and Maintenance						
Check installation environment	■	■	■	■		■
Verify utility connections	■	■	■	■		■
Inspect addition pump heads and motors	■	■	■	■		■
Inspect motor cables and sensor cables	■	■	■	■		■
Check vessel for damage and leaks	■	■	■	■		■
Verify loop PI settings	■	■	■	■		■
Check valve operation	■	■	■	■		■
Check hoses	■	■	■	■		■
Internal Equipment						
Check motor and bearing housing for speed and operation	■	■	■		■	■
Rebuild bearing housing		■	■			
Replace o-rings, gaskets, and ferrules	■	■	■			
Rebuild solenoid, pneumatic, hand-operated, addition, sample, and harvest valves	■	■	■			
Inspect angle seat valves, gas sequencing valves, and circulating pump	■	■	■			
Replace rupture disk	■	■	■			
Test TMFC for operation	■	■	■		■	■
System Checks						
Calibrate pH and DO loops with simulator	■	■	■	■	■	■
Verify motor speed	■	■	■	■	■	■
Verify temperature	■	■	■	■	■	■
Perform pressure hold	■	■	■	■	■	■
Perform test run	■	■	■	■	■	■
Check for latest software revision	■	■	■	■	■	■
Verify valve sequence	■	■	■		■	■
Documentation						
Check list provided	■	■	■			
Dated service sticker to confirm Eppendorf service	■	■	■	■	■	■
IQ report and signed documentation				■		■
OQ report and signed documentation					■	■
Supporting Information						
Contract period	one year	one year	one year	n/a	n/a	n/a
Number of preventive services included	one	one	one	n/a	n/a	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a	n/a	n/a

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SERVICE

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BioFlo® 610 Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The BioFlo 610 is a compact, mobile, pilot/production fermentor for technology transfer and small-scale production. A modular design and wide variety of standard and optional components provide the flexibility to customize the system to meet your process requirements. The BioFlo 610 is available in two vessel sizes with working volumes of 16 L to 100 L.

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Model: _____

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Service no.: _____

Next service: _____

Date: _____

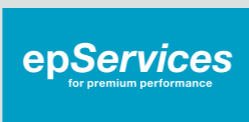
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Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)	Operational Qualification (OQ)	IQ/OQ
Order Number	0082 140 333	0082 140 334	0082 140 335	0082 140 337	0082 140 338	0082 140 339
External Inspection and Maintenance						
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify loop PI settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check valve operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check hoses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment						
Check motor and bearing housing for speed and operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild solenoid, pneumatic, hand-operated, addition, sample, and harvest valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect angle seat valves, gas sequencing valves, and circulating pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace rupture disk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test TMFC for operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks						
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform pressure hold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify valve sequence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation						
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information						
Contract period	one year	one year	one year	n/a	n/a	n/a
Number of preventive services included	one	one	one	n/a	n/a	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a	n/a	n/a

BioFlo® Pro Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The BioFlo Pro fermentor is a modular system designed for quick delivery, dependable operation, and system flexibility. Systems are available in seven vessel sizes with working volumes from 32 L to 2,400 L. All BioFlo Pro fermentors utilize industry-standard components including an Allen Bradley® Compact Programmable Logic Controller (PLC).

Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Model: _____

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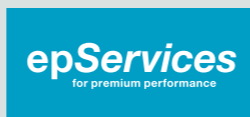
Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)	Operational Qualification (OQ)	IQ/OQ
Order Number 60L Vessel	0082 140 373	0082 140 374	0082 140 375	0082 140 377	0082 140 378	0082 140 379
Order Number 120 L Vessel	0082 140 463	0082 140 464	0082 140 465	0082 140 377	0082 140 378	0082 140 379
Order Number 240 L Vessel	0082 140 503	0082 140 504	0082 140 505	0082 140 377	0082 140 378	0082 140 379
Order Number 400 L Vessel	0082 140 543	0082 140 544	0082 140 545	0082 140 377	0082 140 378	0082 140 379
Order Number 800 L/1,200 L/2,400 L Vessels	0082 140 593	0082 140 594	0082 140 595	0082 140 377	0082 140 378	0082 140 379
External Inspection and Maintenance						
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify loop PI settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check valve operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check hoses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment						
Check motor and bearing housing for speed and operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild solenoid, pneumatic, hand-operated, addition, sample, and harvest valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect angle seat valves, gas sequencing valves, and circulating pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace rupture disk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test TMFC for operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check PLC battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks						
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform pressure hold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify valve sequence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation						
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information						
Contract period	one year	one year	one year	n/a	n/a	n/a
Number of preventive services included	one	one	one	n/a	n/a	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a	n/a	n/a

SERVICE

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CelliGen® Pro Performance Plans



Bioprocess systems include several sophisticated technologies. Peak performance requires smooth interplay of the subsystems and fully functioning consumable parts. Regular maintenance by qualified engineers helps to ensure reliable operation, while deferring it can cause unreliable results, expensive repairs, and prolonged downtime.

The CelliGen Pro bioreactor is a modular system designed for quick delivery, dependable operation, and system flexibility. Systems are available in four vessel sizes with working volumes from 19 L to 520 L. All CelliGen Pro bioreactors utilize industry-standard components including an Allen Bradley® Compact Programmable Logic Controller (PLC). Eppendorf Bioprocess Performance Plans help you to maintain the optimal performance of your equipment over years of frequent use.

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Model: _____

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Technical specifications subject to change.

Service Operation	ESSENTIAL CHECK	ADVANCED MAINTENANCE	PREMIUM SERVICE	Installation Qualification (IQ)	Operational Qualification (OQ)	IQ/OQ
Order Number 60L Vessel	0082 140 413	0082 140 414	0082 140 415	0082 140 417	0082 140 418	0082 140 419
Order Number 120 L Vessel	0082 140 693	0082 140 694	0082 140 695	0082 140 417	0082 140 418	0082 140 419
Order Number 240 L Vessel	0082 140 743	0082 140 744	0082 140 745	0082 140 417	0082 140 418	0082 140 419
Order Number 520 L Vessel	0082 140 643	0082 140 644	0082 140 645	0082 140 417	0082 140 418	0082 140 419
External Inspection and Maintenance						
Check installation environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify utility connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect addition pump heads and motors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect motor cables and sensor cables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check vessel for damage and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify loop PI settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check valve operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check hoses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Equipment						
Check motor and bearing housing for speed and operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild bearing housing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace o-rings, gaskets, and ferrules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rebuild solenoid, pneumatic, hand-operated, addition, sample, and harvest valves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspect angle seat valves, gas sequencing valves, and circulating pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace rupture disk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test TMFC for operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check PLC battery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Checks						
Calibrate pH and DO loops with simulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify motor speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform pressure hold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform test run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check for latest software revision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify valve sequence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation						
Check list provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dated service sticker to confirm Eppendorf service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OQ report and signed documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting Information						
Contract period	one year	one year	one year	n/a	n/a	n/a
Number of preventive services included	one	one	one	n/a	n/a	n/a
Cost of repairs/parts replaced outside scope of preventive maintenance visit (where Eppendorf product warranty has expired)	not included	not included	discount on parts, labor, travel time	n/a	n/a	n/a

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BioBLU® 1c, BioBLU® 3c, BioBLU® 5c, BioBLU® 5p, BioBLU® 14c, BioBLU® 50c	US 9,347,912
Impeller for BioFlo® 510, BioFlo® 610, BioFlo® Pro	US 8,292,591

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