eppendorf

Catalog 2016

Bioprocess products

We Know Bioprocessing

With a comprehensive offering of single-use and traditional products for the growth of mammalian, microbial, insect, plant, and algae cells the Eppendorf bioprocess portfolio satisfies the demands of process development through production.

A new scale of bioprocessing – Covering working volumes of 60 mL – 2,400 L
From the parallel mini bioreactor system DASbox® (pp. 14-17) for early stage bioprocess development, the benchtop and parallel bioreactor systems for the laboratory scale (pp. 18-35) to the BioFlo® and CelliGen® sterilize-in-place solutions for production (pp. 36-45): Eppendorf offers users from industry and research extensive bioprocess solutions from a single source and meets the highest quality demands.

Eppendorf bioprocess software – Much more than just bioprocess control
Eppendorf offers BioCommand® (pp. 104-105) and DASware® control (pp. 106-107) Supervisory Control and Data Acquisition (SCADA) software packages for advanced bioprocess control. The comprehensive DASware software packages (pp. 108-115) further provide next generation bioprocess management. They enable interconnectivity with external lab-devices, comprehensive data and information management, Design of Experiments (DoE) and remote control of bioprocesses.

BioBLU® Single-Use 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 our BioBLU Single-Use Vessels (pp. 54-57) are to be operated with the DASbox, DASGIP® Parallel Bioreactor Systems or New Brunswick™ bench scale systems. BioBLU c vessels are designed for the cultivation of human and animal cells as well as stem cells. With the BioBLU f product line Eppendorf offers single-use solutions that perfectly match the demands of microbial fermentation. Adaptor kits are also available for 3rd party bioprocess systems (pp. 58-59). They are easy to install and compatible with popular Applikon® and Sartorius® autoclavable bioprocessing systems.

Table of Contents Bioprocessing

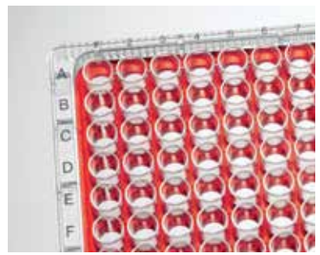
SYSTEMS 12 - 45

VESSELS 46 - 99

SOFTWARE 100 - 117

MONITORING & CONTROL 118 – 133

ACCESSORIES 134 - 169



INDEX 170 - 195

TABLE OF CONTENTS

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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.

Model	DASbox® Mini Bioreactor System	DASGIP® Parallel Bioreactor Systems
Page(s)	14	18
Working volume ranges[1)]	60 – 250 mL	0.2 L - 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)] Rotameter is for overlay only [5)] OD measurement possible via third-party equipment

i For more information go to www.eppendorf.com

Technical specifications subject to change.

BioFlo®/CelliGen® 115 Fermentor/Bioreactor	BioFlo® 320
22	28
0.4 – 10.5 L	0.6 – 10.5 L
■	■
■	■
■	■
■	■
■	■
■	■
■	■
■	■
Up to 3	Up to 8
RPC	BCS
■	■
■	■
■	■
4-gas (air, N_2, O_2, CO_2)	4-gas (air, N_2, O_2, CO_2)
R or TMFC	TMFC
■	■
■[5)]	■[5)]
	■

Model	BioFlo® 415 Fermentor	BioFlo®/CelliGen® 510 Fermentor/Bioreactor
Page(s)	34	38
Working volume ranges[1)]	2.0 – 15.5 L	5.2 – 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	RPC/PLC
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	R or TMFC
Exhaust analysis	■	■
Optical density measurement		■[5)]
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)] Rotameter is for overlay only [5)] OD measurement possible via third-party equipment

i For more information go to www.eppendorf.com

Technical specifications subject to change.

BioFlo® 610 Fermentor	BioFlo®/CelliGen® Pro Fermentor/Bioreactor
40	42
13 – 100 L	18.8 - 520 L (CelliGen) / 32 - 2,400 L (BioFlo)
■	■
■	■
■	■
	■
■	■
RPC	PLC
■	■
■	■
2-gas (air, O_2)	2-gas (air, O_2) (BioFlo)/ 4-gas (air, N_2, O_2, CO_2) (CelliGen)
R or TMFC	R or TMFC
■	■
■[5)]	■[5)]
■	■

Focus Topic: Stem Cells

Expand Your Cells

Controlled cultivation of stem cells in BioBLU® Single-Use Vessels

Great hopes and expectations are linked to stem cells as a tool for drug discovery and to stem cell-derived products in therapeutic applications: Stem cell-based regenerative medicine has the potential to revolutionize human disease treatments.

Although successful expansion of stem cells in vitro has been well established, the large clinical-scale production of these cells remains a bottleneck, potentially limiting the immediate clinical applications of ongoing clinical trials. Controlled bioreactors, widely established in traditional cell culture applications, can be the key to establish and optimize reproducible cultivation processes. Single-use vessels in particular may be a driving force for advanced development and production.

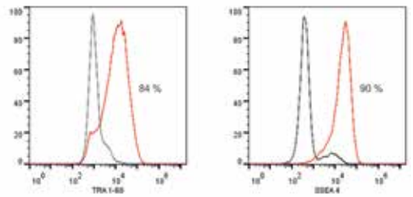


Figure 1: Expression of pluripotency-associated surface markers is retained after expansion in stirred suspension cultures. Flow cytometry revealed that the majority of cells that were harvested at the process endpoint (after day 7) expressed pluripotency-associated surface markers TRA 1-60 and SSEA 4 (gray line represents isotype controls).

Process development: Scalable expansion of human pluripotent stem cells
Human pluripotent stem cells were successfully grown in suspension culture using Eppendorf BioBLU 0.3 Single-Use Vessels. Parallel cultivation with a DASbox® Mini Bioreactor generated reproducible results making it an excellent platform for process optimization.

Eppendorf Application Note No. 292

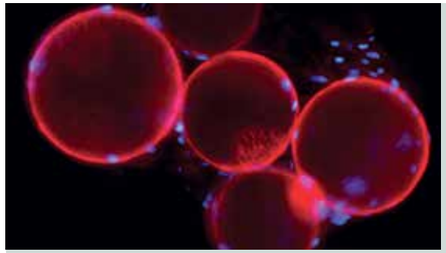


Figure 2: Stem cell marker identification immunoassays for AdMSCs expanded on microcarriers: AdMSCs on microcarrier beads are positive for CD105 stem cell marker, as indicated in red by fluorescence imaging.

Production of human mesenchymal stem cells in clinical scale
The BioBLU 5c Single-Use Vessel offers a precision-controlled environment for the ideal growth of stem cells under simulated physiological conditions. Human adipose-derived mesenchymal stem cells (AdMSCs) were cultivated at 3.75 L working volume resulting in a total cell number yield of
~1.6 billion cells – more than a treatment dose.

Eppendorf Application Note No. 334

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 combinable to operate 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, N_2, O_2, and CO_2, 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

i 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

Accessories

Description	Order no.
DASbox® Autoclavable Carrier, for 4 vessels	76DXBKT4
DASbox® MP8 Feeding Module, for 8 feeds, w/o feed lines and reservoir bottles	76DXMP8
DASbox® Pull-Out system, for 1 base unit	76DXRAIL
DASbox® GA4 Exhaust Analyzing Module, incl. accessories for 4 vessels	
O_2 1 – 50 %, CO_2 0 – 25 %	76DXGA4
O_2 0 – 100 %, CO_2 0 – 25 % (GA4E)	76DXGA4E

Suitable vessels for the DASbox can be found on pages 54 - 57 and 60 - 61.

DASbox® Mini Bioreactor System

Technical specifications				
Model	**DASbox® Cell Culture**	**DASbox® Cell Culture Single-Use**	**DASbox® Microbiology**	**DASbox® Microbiology Single-Use**
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 w/ monitor	Process computer w/ monitor	Process computer w/ monitor	Process computer w/ 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 w/o 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)
Typical dimensions (W × D × H, 4-fold system w/o 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 w/o accessories)	44 kg	44 kg	44 kg	44 kg
Bioreactors				
Vessels	Glass vessels	Single-use vessels	Glass vessels	Single-use vessels
Sterilization	Autoclavable	Pre-sterilized	Autoclavable	Pre-sterilized
Working volume	60 – 250 mL	100 - 250 mL	60 - 250 mL	65 - 250 mL
Total volume	350 mL	380 mL	350 mL	380 mL
Agitation				
Drives	Direct overhead drives	Magnetic overhead drives	Direct overhead drives	Magnetic overhead drives
Agitation 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 & 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	10 – 60°C at 25°C RT	10 – 45°C at 25°C RT	10 – 60°C at 25°C RT	10 – 45°C at 25°C RT
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

i For more information go to www.eppendorf.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.

Technical specifications				
Model	**DASbox® Cell Culture**	**DASbox® Cell Culture Single-Use**	**DASbox® Microbiology**	**DASbox® Microbiology Single-Use**
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)

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

> Advanced process control and parallel operation of up to 16 bioreactors
> Comprehensive information management, integration of external devices and DoE with DASware discover
> Scalable bioreactors with working volumes of 200 mL – 3.8 L
> Direct overhead drives ranging from 30 – 1,600 rpm
> Precise temperature control with the DASGIP Bioblock or heating blankets/cooling fingers
> Variable speed pumps for continuous feeding down to 0.3 mL/h and up to 5 L/h (various models available)
> Suitable also for continuous and cyclic perfusion processes
> Thermal mass flow-controlled gassing with individual gas mixture from air, N_2, O_2, and CO_2
> pH control using CO_2/base, acid/base or individual solutions
> Cascaded DO control
> Optional redox potential monitoring and/or level control foam sensor as well as OD measurement and exhaust analysis

i For more information go to www.eppendorf.com

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

DASGIP Parallel Bioreactor Systems can be operated with up to 16 vessels – with the new DASware control 5.

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	76DG04MBBB
8-fold system with Bioblock	76DG08MBBB
16-fold system with Bioblock	76DG16MBBB
4-fold system with Bioblock, for single-use vessels	76DG04MBSU
8-fold system with Bioblock, for single-use vessels	76DG08MBSU
16-fold system with Bioblock, for 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

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

Suitable vessels for the DASGIP Parallel Bioreactor Systems can be found on pages 54 - 57 and 62 -79.

DASGIP® Parallel Bioreactor Systems

Technical specifications			
Model	**DASGIP® System for Cell Culture**	**DASGIP® System for Microbiology**	**DASGIP® PhotoBioreactor System**
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 w/ monitor	Process computer w/ monitor	Process computer w/ monitor
Power supply	115/230 V, 50/60 Hz	115/230 V, 50/60 Hz	115/230 V, 50/60 Hz
Typical power consumption (4-fold system w/o process computer)	480 W (at 230 V)/ 432 W (at 115 V) (595 W/552 W w/o DASGIP Bioblock)	541 W (at 230 V)/ 467 W (at 115 V) (639 W/584 W w/o DASGIP Bioblock)	490 W (at 230 V)/ 441 W (at 115 V) (605 W/561 W w/o DASGIP Bioblock)
Typical dimensions (W × D × H, 4-fold system w/o 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 w/o accessories)	78 kg (60 kg w/o DASGIP Bioblock)	96 kg (78 kg w/o DASGIP Bioblock)	77 kg (59 kg w/o DASGIP Bioblock
Bioreactors			
Vessels	Glass/single-use vessels	Glass/single-use vessels	Glass vessels
Sterilization	Autoclavable/ pre-sterilized	Autoclavable/ pre-sterilized	Autoclavable
Working volume	200 mL – 1 L to 800 mL – 3.8 L (glass vessels)/ 320 mL – 1.25 L and 1.25 – 3.75 L (single-use)	200 mL – 1.0 L to 800 mL – 3.8 L (glass vessels)/ 250 mL – 1.25 L (single-use)	400 mL – 1.2 L/ 700 mL – 2.7 L
Total volume	1.5 L to 4.6 L	1.3 L to 4.6 L	1.9 L / 3.2 L
Agitation			
Drives	Direct (glass vessels)/ magnetic overhead drives (single-use)	Direct (glass vessels)/ magnetic overhead drives (single-use)	Direct overhead drives
Agitation 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)

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 120 - 135.

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

Technical specifications			
Model	**DASGIP® System for Cell Culture**	**DASGIP® System for Microbiology**	**DASGIP® PhotoBioreactor System**
Monitoring & 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	5 K above cooling agent temperature – 60 °C (heat blankets)/ 5 K above cooling agent temperature – 99 °C (DASGIP Bioblock)	5 K above cooling agent temperature – 60 °C (heat blankets)/ 5 K above cooling agent temperature – 99 °C (DASGIP Bioblock)	5 K above cooling agent temperature – 60 °C (heat blankets)/ 5 K above cooling agent temperature – 99 °C (DASGIP Bioblock)
pH control	CO_2/base, and other set-ups	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
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 w/ DASGIP EGC4)	Water-cooled or liquid-free (Peltier w/ DASGIP EGC4)	Water-cooled
Exhaust analysis	Optional (DASGIP GA4)	Optional (DASGIP GA4)	Optional (DASGIP GA4)

New Brunswick™ BioFlo®/CelliGen® 115

Description
The New Brunswick BioFlo/CelliGen 115 is an easy-to-use benchtop system, with built-in controls for operation as a microbial fermentor or mammalian/animal cell culture bioreactor. This versatility, coupled with the ability to control up to three independent vessels from a single control station, makes it ideally suited for use in R&D labs, universities, teaching facilities, testing labs, and more.

Applications
> Research and development in cell culture and microbiology
> Bench-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
> Suitable for batch, fed-batch, and continuous processes

Product features
> Sophisticated RPC (Reactor Process Controller) software controls up to 32 process parameters
> Control up to three independent vessels from a single station
> Three fixed speed peristaltic pumps can be linked directly to acid, base, foam, level loops for control
> Systems can accommodate up to four rotameters or a Thermal Mass Flow Controller (TMFC) for gas flow control
> Bright, easy to read, built-in industrial touchscreen display for interactive system management and monitoring
> Eight interchangeable, autoclavable glass vessels
> Vessels are available in heat-blanketed (single-walled), or water-jacketed (double-walled) configurations
> Choose between direct and magnetic drive motor options
> Rushton, pitched-blade, marine, and spinfilter impellers are available
> Pre-configured kits include everything you need to get started, from the vessel and control station to cable ties and tubing
> Compatible with BioBLU Single-Use Vessels

i For more information go to www.eppendorf.com

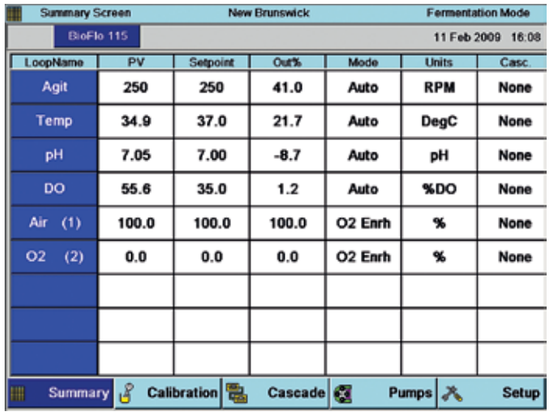
Technical specifications subject to change.

Up to three independent fermentors/bioreactors can be controlled from a single touchscreen interface.

The New Brunswick BioFlo/CelliGen 115 is offered with water-jacketed or heat-blanketed vessels in four sizes.

Control Station		
Width x Depth x Height	39.6 cm x 40.6 cm x 67.0 cm (15.6 in x 16 in x 26.6 in)	
Weight	29.5 kg (65 lb)	
Touchscreen	8.4 in touchscreen	
Communication	2 x USB (software updates, serial communication)	
	RS-485 Modbus (SCADA)	
Operating conditions	10 - 30 °C, up to 80 % RH, non-condensing	
Altitude Limit	2,000 m	
Utility	**Connection**	**Requirement**
Electrical	IEC	100-120 V/60Hz or 208-240 V/ 50 Hz, 15 A, single phase
Water	Stainless-steel quick-connect	10 psig (0.69 bar)
Gas Supply (air, O_2, N_2, CO_2)	push-connect	10 psig (0.69 bar)
Exhaust	0.5 psig (0.035 bar)	
Compatible vessels		
Autoclavable	1, 2, 5 or 10 L, heat-blanketed or water-jacketed	
Single-use	See adaptor kits	
Agitation		
Direct drive (fermentation)	50 - 1,200 rpm	
Direct drive (cell culture)	25 - 400 rpm	
Magnetic drive (cell culture)	25 - 200 rpm	
Impellers		
All vessels	Rushton, pitched-blade , marine or spinfilter	
Temperature		
1, 2 or 5 L	70 °C max	
10 L	65 °C max	
Gassing (sparge)		
Rotameter	1, 2, 3, or 4 Rotameters with manual or automatic gas mix (via solenoid)	
TMFC	1 TMFC with automatic gas mix (via solenoid)	
Sensors		
pH	2 - 12 pH	
DO	0 - 200 % (air saturation)	
Pumps 1, 2, and 3		
60 Hz	14.4 rpm, fixed-speed duty cycle	
50 Hz	12 rpm, fixed-speed duty cycle	

New Brunswick™ BioFlo®/CelliGen® 115



The summary screen displays all of your critical process values on one screen for easy monitoring.

A wide range of accessories allows easy customization.

Contents of Pre-Configured Kits			
	Basic Fermentation Kit	**Advanced Fermentation Kit**	**Advanced Cell Culture Kit**
Master control station w/ touchscreen	■	■	■
Temperature control	■	■	■
Agitation control	■	■	■
pH/DO control		■	■
Foam/level control		■	■
Three fixed-speed pumps		■	■
Manual gas mix	■	■	
Automatic gas mix (four solenoids)			■
Manual gas flow (rotameter qty. shown)	1	2	1

■ = standard

Standard Flow Rates			
Vessel	**Basic Fermentation Kit**	**Advanced Fermentation Kit**	**Advanced Cell Culture Kit**
1 L	0.25 – 2.5 SLPM	0.25 – 2.5 SLPM	0.05 – 0.5 SLPM
2 L	0.2 – 5.0 SLPM	0.2 – 5.0 SLPM	0.12 – 1.2 SLPM
5 L	0.1 – 11.4 SLPM	0.1 – 11.4 SLPM	0.25 – 2.5 SLPM
10 L	2.0 – 20.0 SLPM	2.0 – 20.0 SLPM	0.5 – 5.0 SLPM

i For more information go to www.eppendorf.com

Description
If a pre-configured kit doesn't meet your process requirements, a fully configurable system can be designed by selecting from our available options.

Factory-installed options for New Brunswick™ BioFlo®/CelliGen® 115	
Description	**Order no.**
1. Control Station, Choose the type of controller you want to assemble. You can select a master control station with a touchscreen or a utility station which can only be operated when linked to a master control station.	
100 – 120V Master Control Station	M1369-0120
100 – 120V Utility Control Station	M1369-0121
200 – 240V Master Control Station	M1369-0220
200 – 240V Utility Control Station	M1369-0221
2. Cooling, Decide whether or not you want your system to have the ability to cool your fermentor or bioreactor.	
Cooling valve	M1369-2010
No cooling valve	M1369-2015
3. pH/DO, Select whether or not you need to have pH/DO control.	
pH/DO control	M1369-2020
No pH/DO control	M1369-2025
4. Foam/Level, Select whether or not the system will have foam/level control.	
Foam/level control	M1369-2030
No Foam/level control	M1369-2035
5. Pumps, The system can be configured with three fixed-speed pumps or none depending on your needs.	
Three fixed-speed pumps	M1369-2040
No pumps	M1369-9621
6. Gas Flow, Select whether the system will have manual gas flow (rotameters) or auto gas flow (Thermal Mass Flow Controller) and how the gas will be mixed.	
1 rotameter, manual mix	M1369-2060
2 rotameters, manual mix	M1369-2065
3 rotameters, manual mix	M1369-2070
4 rotameters, manual mix	M1369-2075
1 rotameter, auto mix	M1369-2080
2 rotameters, auto mix	M1369-2085
3 rotameters, auto mix	M1369-2090
4 rotameters, auto mix	M1369-2095
1 TMFC, auto mix	M1369-2141
7. Rotameters, Select the desired flow rate for the rotameters in each position (if needed).	
0.01 – 0.15 SLPM	P0440-5600C3
0.25 – 2.5 SLPM	P0440-5564
0.2 – 5 SLPM	P0440-5562C3
2 – 20 SLPM	P0440-5563C3
0.1 – 11.4 SLPM	P0440-5565
0.12 – 1.2 SLPM	P0440-5566
0.05 – 5 SLPM	P0440-5561

New Brunswick™ BioFlo®/CelliGen® 115

Ordering information

New Brunswick™ BioFlo®/CelliGen® 115

Pre-Configured Kits contain everything you need to get started, including the vessel, control station, and more.

Vessel	Volume range	Voltage	Vessel type	Drive	Order no.
Advanced Fermentation Kit					
1 L	0.4 – 1.0 L	100 – 120 V	Heat Blanket	Direct	M1369-1121
1 L	0.4 – 1.0 L	100 – 120 V	Water Jacket	Direct	M1369-1111
2 L	0.8 – 2.2 L	100 – 120 V	Heat Blanket	Direct	M1369-1122
2 L	0.8 – 2.2 L	100 – 120 V	Water Jacket	Direct	M1369-1112
5 L	2.0 – 5.6 L	100 – 120 V	Heat Blanket	Direct	M1369-1125
5 L	2.0 – 5.6 L	100 – 120 V	Water Jacket	Direct	M1369-1115
10 L	4.0 – 10.5 L	100 – 120 V	Heat Blanket	Direct	M1369-1130
10 L	4.0 – 10.5 L	100 – 120 V	Water Jacket	Direct	M1369-1120
1 L	0.4 – 1.0 L	200 – 240 V	Heat Blanket	Direct	M1369-1151
1 L	0.4 – 1.0 L	200 – 240 V	Water Jacket	Direct	M1369-1161
2 L	0.8 – 2.2 L	200 – 240 V	Heat Blanket	Direct	M1369-1152
2 L	0.8 – 2.2 L	200 – 240 V	Water Jacket	Direct	M1369-1162
5 L	2.0 – 5.6 L	200 – 240 V	Heat Blanket	Direct	M1369-1155
5 L	2.0 – 5.6 L	200 – 240 V	Water Jacket	Direct	M1369-1165
10 L	4.0 – 10.5 L	200 – 240 V	Heat Blanket	Direct	M1369-1150
10 L	4.0 – 10.5 L	200 – 240 V	Water Jacket	Direct	M1369-1160
Advanced Cell Culture Kit					
1 L	0.4 – 1.0 L	100 – 120 V	Heat Blanket	Direct	M1369-1301
1 L	0.4 – 1.0 L	100 – 120 V	Heat Blanket	Magnetic	M1369-1201
1 L	0.4 – 1.0 L	100 – 120 V	Water Jacket	Direct	M1369-1311
1 L	0.4 – 1.0 L	100 – 120 V	Water Jacket	Magnetic	M1369-1211
2 L	0.8 – 2.2 L	100 – 120 V	Heat Blanket	Direct	M1369-1302
2 L	0.8 – 2.2 L	100 – 120 V	Heat Blanket	Magnetic	M1369-1202
2 L	0.8 – 2.2 L	100 – 120 V	Water Jacket	Direct	M1369-1312
2 L	0.8 – 2.2 L	100 – 120 V	Water Jacket	Magnetic	M1369-1212
5 L	2.0 – 5.6 L	100 – 120 V	Heat Blanket	Direct	M1369-1305
5 L	2.0 – 5.6 L	100 – 120 V	Heat Blanket	Magnetic	M1369-1205
5 L	2.0 – 5.6 L	100 – 120 V	Water Jacket	Direct	M1369-1315
5 L	2.0 – 5.6 L	100 – 120 V	Water Jacket	Magnetic	M1369-1215
10 L	4.0 – 10.5 L	100 – 120 V	Heat Blanket	Direct	M1369-1310
10 L	4.0 – 10.5 L	100 – 120 V	Heat Blanket	Magnetic	M1369-1210
10 L	4.0 – 10.5 L	100 – 120 V	Water Jacket	Direct	M1369-1320
10 L	4.0 – 10.5 L	100 – 120 V	Water Jacket	Magnetic	M1369-1220

i For more information go to www.eppendorf.com

Ordering information

New Brunswick™ BioFlo®/CelliGen® 115

Pre-Configured Kits contain everything you need to get started, including the vessel, control station, and more.

Vessel	Volume range	Voltage	Vessel type	Drive	Order no.
Advanced Cell Culture Kit					
1 L	0.4 – 1.0 L	200 – 240 V	Heat Blanket	Direct	M1369-1501
1 L	0.4 – 1.0 L	200 – 240 V	Heat Blanket	Magnetic	M1369-1401
1 L	0.4 – 1.0 L	200 – 240 V	Water Jacket	Direct	M1369-1371
1 L	0.4 – 1.0 L	200 – 240 V	Water Jacket	Magnetic	M1369-1171
2 L	0.8 – 2.2 L	200 – 240 V	Heat Blanket	Direct	M1369-1502
2 L	0.8 – 2.2 L	200 – 240 V	Heat Blanket	Magnetic	M1369-1402
2 L	0.8 – 2.2 L	200 – 240 V	Water Jacket	Direct	M1369-1372
2 L	0.8 – 2.2 L	200 – 240 V	Water Jacket	Magnetic	M1369-1172
5 L	2.0 – 5.6 L	200 – 240 V	Heat Blanket	Direct	M1369-1505
5 L	2.0 – 5.6 L	200 – 240 V	Heat Blanket	Magnetic	M1369-1405
5 L	2.0 – 5.6 L	200 – 240 V	Water Jacket	Direct	M1369-1375
5 L	2.0 – 5.6 L	200 – 240 V	Water Jacket	Magnetic	M1369-1175
10 L	4.0 – 10.5 L	200 – 240 V	Heat Blanket	Direct	M1369-1510
10 L	4.0 – 10.5 L	200 – 240 V	Heat Blanket	Magnetic	M1369-1410
10 L	4.0 – 10.5 L	200 – 240 V	Water Jacket	Direct	M1369-1370
10 L	4.0 – 10.5 L	200 – 240 V	Water Jacket	Magnetic	M1369-1170
Basic Fermentation Kit					
1 L	0.4 – 1.0 L	100 – 120 V	Heat Blanket	Direct	M1369-1101
1 L	0.4 – 1.0 L	100 – 120 V	Water Jacket	Direct	M1369-1621
2 L	0.8 – 2.2 L	100 – 120 V	Heat Blanket	Direct	M1369-1102
2 L	0.8 – 2.2 L	100 – 120 V	Water Jacket	Direct	M1369-1622
5 L	2.0 – 5.6 L	100 – 120 V	Heat Blanket	Direct	M1369-1105
5 L	2.0 – 5.6 L	100 – 120 V	Water Jacket	Direct	M1369-1625
10 L	4.0 – 10.5 L	100 – 120 V	Heat Blanket	Direct	M1369-1110
10 L	4.0 – 10.5 L	100 – 120 V	Water Jacket	Direct	M1369-1630
1 L	0.4 – 1.0 L	200 – 240 V	Heat Blanket	Direct	M1369-1141
1 L	0.4 – 1.0 L	200 – 240 V	Water Jacket	Direct	M1369-1631
2 L	0.8 – 2.2 L	200 – 240 V	Heat Blanket	Direct	M1369-1142
2 L	0.8 – 2.2 L	200 – 240 V	Water Jacket	Direct	M1369-1632
5 L	2.0 – 5.6 L	200 – 240 V	Heat Blanket	Direct	M1369-1145
5 L	2.0 – 5.6 L	200 – 240 V	Water Jacket	Direct	M1369-1635
10 L	4.0 – 10.5 L	200 – 240 V	Heat Blanket	Direct	M1369-1140
10 L	4.0 – 10.5 L	200 – 240 V	Water Jacket	Direct	M1369-1640

Suitable vessels for the New Brunswick BioFlo/CelliGen 115 can be found on pages 80 – 87.

BioFlo® 320

1. Control up to eight (8) 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

i For more information go to www.eppendorf.com

Technical specifications subject to change.

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.

Description
The BioFlo 320 seamlessly blends beauty and utility in one all-inclusive package. A new industrial design, flexibility between interchangeable autoclavable and single-use vessels, intelligent sensors, Ethernet connectivity, and a new 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 new 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 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

Autoclavable Vessels				
Vessel	**1 L**	**3 L**	**5 L**	**10 L**
Total 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
Vessel type	Stainless-steel dished bottom or water jacketed			
Material	Borosilicate glass, 316 L stainless-steel			
Agitation				
Direct Drive	25 – 1,200 rpm			
Magnetic drive (autoclavable vessels)	25 – 500 rpm			
Impellers				
Direct drive	Rushton, pitched-blade or marine			
Magnetic drive	pitched-blade, marine, spinfilter, cell-lift or packed-bed			
Single-use vessels				
Vessel	BioBLU 1	BioBLU 3	BioBLU 14	BioBLU 50
Total volume	1.8 L	5 L	14 L	50 L
Working volume	0.25 – 1.25 L	0.25 – 3.75 L	3.5 – 10.5 L	18 – 40 L
Vessel type	Rigid-walled, stirred-tank			
Agitation				
Magnetic drive	BioBLU 1c: 25 – 500 rpm, BioBLU 1f: 25 – 1,200 rpm, BioBLU 3f: 25 – 1200 rpm, BioBLU 3c/5c/5p & BioBLU 14c: 25 – 200 rpm, BioBLU 50c: 25 – 150 rpm			
Impellers	BioBLU c: Pitched-blade/BioBLU p: Packed-bed/BioBLU f: Rushton-type			
Control station				
Width x Depth x Height	40.6 x 40.6 x 66.0 cm (16 x 16 x 26 in)			
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)			
Temperature				
Water jacketed	5 °C above coolant to 55 °C above ambient (80 °C max)			
Stainless-steel dished 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	
Optical pH	Digital (Presens)		6 – 8	
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		(-)2,000 mV – (+)2,000 mV	
CO_2	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 V, 50/60Hz, 20 A, single phase	
Water	Stainless-steel quick-connect		10 psig (0.69 barg)	
Gas Supply (air, O_2, N_2, CO_2)	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			

i For more information go to www.eppendorf.com

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

Control up to eight units from a single user interface.

Factory installed options for BioFlo® 320	
Description	**Order no.**
1. Validation, Add a control station validation package (if needed). *Cannot be added post sale*.	
Control Station Validation	M1379-0102
2. Base Control Station, All configured units include the same base control station	
Base Control Station	1379963011
3. Orientation, Choose the system orientation that makes sense for your lab space (left- or right-handed), and the number of front-mounted pumps desired	
Left-handed orientation/Three front-mounted peristaltic pumps (3 @ 5 – 25 rpm)	1379963111
Left-handed orientation/Four front-mounted peristaltic pumps (3 @ 5 – 25 rpm/1 @ 20 –100 rpm)	1379963211
Right-handed orientation/Three front-mounted peristaltic pumps (3 @ 5 – 25 rpm)	1379963311
Right-handed orientation/Four front-mounted peristaltic pumps (3 @ 5 – 25 rpm/1 @ 20 – 100 rpm)	1379963411
4. Sparge, Choose one, three or four TMFCs for sparge gas control (high- and low-flow options available for each)	
Sparge, 1 TMFC, 0.002 – 1.0 SLPM	1379501011
Sparge, 1 TMFC, 0.04 – 20 SLPM	1379501111
Sparge, 3 TMFC, 0.002 – 1.0 SLPM	1379501211
Sparge, 3 TMFC, 0.04 – 20 SLPM	1379501311
Sparge, 4 TMFC, 0.002 – 1.0 SLPM	1379501411
Sparge, 4 TMFC, 0.04 – 20 SLPM	1379501511
5. Overlay, Add a dedicated TMFC for overlay/headspace gas control	
Overlay, 1 TMFC, 0.01 – 5 SLPM	1379502111
No overlay module	1379963511
6. Secondary Sensor Module, Add the secondary sensor module, which includes universal connectivity for two additional sensors (Sensors 1 and 2 are included standard)	
Secondary sensor module	1379963611
No secondary sensor module	1379963711
7. Optical pH, Add an optional optical pH sensor module for use with BioBLU Single-Use Vessels	
Optical pH module	1379963811
No optical pH module	1379963911
8. Equipment Connection, Add the equipment connection module, which includes connections for external variable speed pumps and a vessel volume scale (pumps and scales are sold separately)	
Equipment connection module	1379964011
No equipment connection module	1379964111

BioFlo® 320

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.

Accessories

Description	Order no.
Touchscreen	
Pivot arm mount (required to mount monitor to control station)	M1379-9905
Touchscreen monitor (includes desk mount and 1 meter cable set)	M1379-9906
Field Installed Options, Options below do not require a service call for installation	
Sparge drawer, 1 TMFC, 0.002 – 1 SLPM	M1379-5010
Sparge drawer, 1 TMFC, 0.04 – 20 SLPM	M1379-5011
Sparge drawer, 3 TMFC, 0.002 – 1 SLPM	M1379-5012
Sparge drawer, 3 TMFC, 0.04 – 20 SLPM	M1379-5013
Sparge drawer, 4 TMFC, 0.002 – 1 SLPM	M1379-5014
Sparge drawer, 4 TMFC, 0.04 – 20 SLPM	M1379-5015
Overlay drawer, 1 TMFC, 0.01 – 5 SLPM	M1379-5021
Field Installed Options, Options below require a service call for installation	
Secondary sensor module	M1379-9636
Optical pH module	M1379-9638
Equipment connection module	M1379-9640
Stand Alone Accessories	
120U/DV VS pump, for BioFlo 320 (includes M1379-8111)	M1379-9959
Ethernet 16-port HUB	M1379-8060
Scale, vessel volume, 100 kg	M1379-8118
BioFlo® /CelliGen® 310 Replacement Parts	
Direct-drive motor assembly	M1287-0800
Magnetic-drive motor assembly	M1287-0750
RTD	M1294-8013
Foam/level sensor cable	M1297-8032
Sampling assembly	M1287-5042

Suitable vessels for the BioFlo 320 can be found on pages 88 – 96.

i For more information go to www.eppendorf.com

New Brunswick™ BioFlo® 415

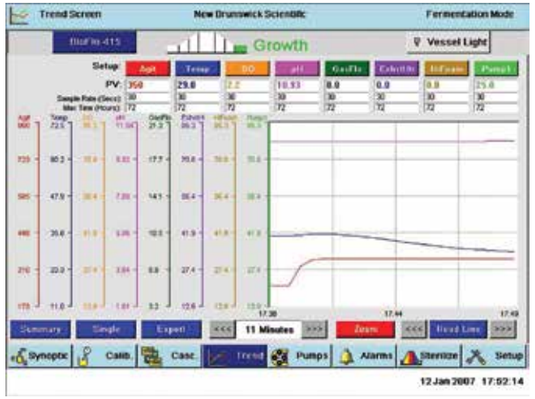
Description
The New Brunswick BioFlo 415 sterilizable-in-place fermentor with advanced touchscreen interface, provides an unprecedented level of convenience and control for research through production applications. This cGMP-compliant, validatable benchtop system is uniquely capable of automatic sterilization using only your lab's water supply and the unit's built-in heater. With the ability to control up to 32 process loops and regulate one to four gasses, it's an ideal system for high-yield production of bacteria, yeasts, and fungi in aerobic and anaerobic cultures.

Applications
> Pilot-scale fermentation of aerobic and anaerobic bacteria, yeasts, and fungi
> Suitable for batch and fed-batch processes

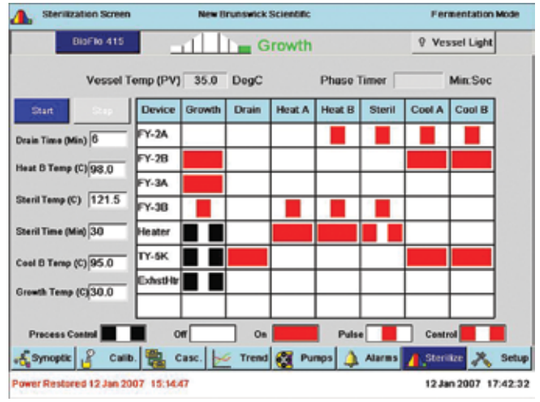
Product features
> Sophisticated RPC (Reactor Process Controller) software controls up to 32 process parameters, trends up to eight loops, and provides built-in security
> Bright, easy-to-read, industrial touchscreen display for interactive system management and monitoring
> Easily integrates your external devices including scales, analyzers or sensors for optimized yields
> User-customizable trend graphs make it easy to track and export data. Trends up to eight loops simultaneously and saves up to ten of your recipes for repeated usage
> Three interchangeable stainless-steel vessels
> One Thermal Mass Flow Controller (TMFC) is standard, with multiple TMFCs optional through customization
> Multiple impeller options are available

i For more information go to www.eppendorf.com

Technical specifications subject to change.



The trend graph screen makes it simple to track and export data on up to eight process variables over a six day span.



Enter and view sterilization parameters and valve sequences from the sterilization screen.

Control Station			
Width x Depth x Height	**5 L**	**10 L**	**15 L**
includes vessel	63.5 x 66.0 x 97.8 cm (25 x 26 x 38.5 in)	63.5 x 66.0 x 114.3 cm (25 x 26 x 45 in)	63.5 x 66.0 x 134.6 cm (25 x 26 x 53 in)
Weight			
Control station	40 kg (88 lb)		
Vessel	21 kg (47 lb)	27 kg (60 lb)	36 kg (80 lb)
Touchscreen	15 in touchscreen		
Communication	2 x USB (software updates, serial communication)		
	RS-485 Modbus (SCADA)		
Operating conditions	10 – 30 °C, up to 80 % RH, non-condensing		
Altitude limit	2,000 m		
Utility	**Connection**	**Requirement**	
Electrical	IEC	200 – 240 V, 50/60Hz, 15 A, single phase	
Water	Stainless-steel quick-connect	2 GPM (9.1 LPM) @ 10 psig (0.69 barg); 5 psig (0.34 barg) max back pressure	
Gas supply (air, O_2, N_2, CO_2)	push-connect	20 psig (1.38 barg)	
Agitation			
Overhead magnetic drive	50 – 1,000 rpm		
Impellers			
Direct drive	Rushton-type		
Temperature			
Water-jacketed	5 °C to 80 °C		
Gassing			
Sparge	1, 2, 3 or 4 TMFC with automatic gas mix (via solenoid), or choice of single rotameter		
Sensors			
pH	2 – 12		
DO	0 – 200 %		
Pumps			
Pumps 1 and 2	12 rpm, fixed-speed duty cycle		
Pump 3	100 rpm, fixed-speed duty cycle		

New Brunswick™ BioFlo® 415

Description
If a pre-configured kit doesn't meet your process requirements, a fully configurable system can be designed by selecting from our available options.

Factory installed options for New Brunswick™ BioFlo® 415

Description	Order no.
1. System Assembly, select one	
5 L Vessel/Control Station	M1360-1110
10 L Vessel/Control Station	M1360-1111
15 L Vessel/Control Station	M1360-1113
2. Sparge Gas Option, select one	
0 TMFC (requires a rotameter); built with 4-gas manifold	M1360-2030
1 TMFC (0.1 – 5 SLPM); built with 4-gas manifold	M1360-2031
1 TMFC (0.5 – 25 SLPM); built with 4-gas manifold	M1360-2032
2 TMFC (0.1 – 5 SLPM)	M1360-2033
2 TMFC (0.5 – 25 SLPM)	M1360-2034
3 TMFC (0.1 – 5 SLPM)	M1360-2035
3 TMFC (0.5 – 25 SLPM)	M1360-2036
4 TMFC (0.01 – 0.5 SLPM)	M1360-2040
4 TMFC (0.02 – 1 SLPM)	M1360-2041
4 TMFC (0.1 – 5 SLPM)	M1360-2037
4 TMFC (0.5 – 25 SLPM)	M1360-2038
3. Select Rotameter, if needed	
1 rotameter (0 – 5 SLPM)	M1360-3520
1 rotameter (0 – 20 SLPM)	M1360-3510
4. Add Secondary pH/DO Board, optional	
Secondary DO-pH/redox board	M1287-3540
5. Select Sensor Kit(s), if needed	
(See Accessories)	
6. Validation Package , optional	
Basic Validation	M1360-0101
Basic Plus Validation	M1360-0102
Enhanced Validation	M1360-0103

SYSTEMS

i For more information go to www.eppendorf.com

Contents of Pre-Configured Kits

	BioFlo® 415 Fermentor
Master Control Station with touchscreen	■
Agitation control	■
Temperature control	■
pH/DO control (pH and DO sensor kits not included, sold separately)	■
Foam/level control	■
Three fixed-speed pumps	■
Seven analog I/O connnections	■
Automatic gas flow (1 TMFC @ 5-25 SLPM)	■
Automatic gas mix (4 solenoids)	■
Stainless-steel vessel assembly	■
Overhead magnetic drive	■
2x Rushton impellers (3x for 15 L)	■

■ = standard, o = optional

Ordering information

New Brunswick™ BioFlo® 415, pre-configured kits include a master control station w/ touchscreen, 1 TMFC (0.5 - 25 SLPM), automatic 4-gas mixing, and vessel assembly.

Vessel	Working volume	Voltage	Order no.
5 L	2.0 – 5.25 L	200 – 240 V	M1360-1120
10 L	4.0 – 10.5 L	200 – 240 V	M1360-1121
15 L	5.0 – 15.5 L	200 – 240 V	M1360-1123

SYSTEMS

Suitable vessels for the New Brunswick BioFlo 415 can be found on pages 97 – 99.

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 processes

Working Volumes
> 5.5 L to 15.6 L
> 10.75 L to 32.0 L

Gas flow
> Rotameter:
  0 – 3 SLPM
  0 – 32 SLPM
  0 – 64 SLPM
> Various combinations of 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
> 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
> Pitched-blade with magnetic drive – For critical cell culture applications
> 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 basket – 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

Probes
> Single or redundant pH/DO control
> Redox control
> Foam/level detection

Addition and sampling
> Resterilizable sampling valve
> Resterilizable addition valves (4 max)
> Resterilizable addition/harvest valve with dip tube (2 max)
> 1.5 inch sanitary fitting 7-port septum
> Addition vessels (glass/stainless steel)
> Decanters
> Sterile sampling assembly (kit of 3)

SCADA software

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

> BioCommand® Track and Trend
> BioCommand® Batch Control
> BioCommand® Batch Control Plus

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
> Allen Bradley® CompactLogix™ PLC Control System
> Sprayballs for clean-in-place of vessel
> External variable-speed pumps
> External Scales
> 8-port serial controller (RS-232)
> Spare parts kits
> Preventative maintenance kits
> Mobile table
> System passivation
> Glycol/chiller heat exchanger

i For more information go to www.eppendorf.com

SYSTEMS

New Brunswick™ BioFlo® 610

Description
The New Brunswick BioFlo 610 is a compact, mobile, pilot-plant fermentor 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 and fed-batch processes

Working Volumes
> 16.0 L to 50.0 L
> 32.0 L to 100.0 L

Gas flow control
> Single gas
> Two gas
> Overlay (valve only)

Gas flow
> Rotameter, 50 L vessels, 9.5 – 95 SLPM
> Rotameter, 100 L vessels, 15.0 – 150 SLPM
> 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

Probes
> Single or redundant pH/DO control
> Redox control
> Foam/level detection

Addition and sampling
> Resterilizable sampling valve
> Resterilizable addition valves (4 Maximum)
> 1.5 inch sanitary fitting 7-port septum
> Addition vessels (glass/stainless steel)
> Sterile sampling assembly (kit of 3)

SCADA software
> BioCommand® Track and Trend
> BioCommand® Batch Control
> BioCommand® Batch Control Plus

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
> 8-port serial controller (RS-232)
> Spare parts kits
> Preventive maintenance kits
> System passivation
> Vessel electropolish
> Low seal pressure switch for double mechanical seal
> Glycol/chiller heat exchangef

i For more information go to www.eppendorf.com

New Brunswick™ BioFlo®/CelliGen® Pro

Description
BioFlo Pro fermentors and CelliGen Pro bioreactors are modular systems designed for quick delivery, dependable operation, and system flexibility, all at an affordable price. 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. Fermentors available in 60, 120, 240, 400, 800, 1,200, and 2,400 liter sizes. Bioreactors available in 60, 120, 240, and 520 liter sizes.

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

i For more information go to www.eppendorf.com

BioFlo® Pro working volumes
> 32 L to 60 L
> 45 L to 120 L
> 68 L to 240 L
> 103 L to 400 L
> 250 L to 800 L
> 375 L to 1,200 L
> 750 L to 2,400 L

CelliGen® Pro working volumes
> 18.75 L to 60 L
> 37.5 L to 120 L
> 75.5 L to 240 L
> 125 L to 520 L

BioFlo® Pro impellers
> Rushton-type
> Pitched-blade
> Marine

CelliGen® Pro impellers
> Pitched-blade
> Marine
> Spinfilter
> Cell-lift (60 L and 120 L only)
> Packed-bed (60 L and 120 L only)

Inlet line
> Two/four gas mixing
> 1/4 TMFC
> Single or dual inlet filters with test integrity ports
> Overlay valve/overlay with TMFC

Exhaust line
> Exhaust condenser
> 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/probes
> pH/DO probes and transmitters
> Redox probe and transmitter
> Retractable probe housing
> Redundant probe 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

Sampling
> Sampling valve (resterilizable)
> Sterile sampling assembly (kit of 3)

BioFlo Pro fermentors offer working volumes of up to 2,400 L.

Vessel volume/weight
> Vessel volume via differential pressure
> Load cells
> Level probe

Additional options
> Clean-in-place option (transfer panel/spray balls)
> Cooling by dedicated heat exchanger for chiller
> Low-seal pressure switch for double-mechanical seal
> Thermometer (digital)
> Electropolish
> Passivation
> Transfer lines (resterilizable)
> Resterilizable addition valves

Data recording
> BioCommand® SCADA Software (Track and Trend, Batch Control, and Batch Control Plus)
> Seven inputs (4-20 mA) for ancillary devices
> DeltaV™ connectivity

Validation packages
> Basic Validation
> Basic Plus Validation
> Enhanced Validation

Parts kits
> Spare parts kits
> Preventative maintenance kit

A Guide to Impeller Selection

When culturing in a stirred-tank reactor, it is critical to choose the impeller type best suited to your process. These pages provide a brief overview of our impellers and how they work, to guide you in selecting the best impeller for your application.

Cell-lift impellers for microcarrier culture

The cell-lift impeller provides uniform circulation for microcarrier cultures. In this ultra-low-shear impeller, the flow is caused by three discharge ports located on the impeller shaft. The rotation of the ports creates a low differential pressure at the base of the impeller tube, lifting microcarriers up through the tube and expelling them out through the ports. This continuous recirculation loop keeps cells uniformly dispersed throughout the vessel. The cell-lift impeller can be used in batch and fed-batch processes of shear-sensitive animal cells. It can also be used for continuous perfusion processes with the addition of a decanting column and a media feed in/broth pump out setup.

Packed-bed impeller for secreted products

The packed-bed impeller is used primarily for manufacturing high yields of secreted products from anchorage-dependent or suspension cultures in perfusion. The basket is comprised of two horizontally positioned, perforated metal screens that extend to the vessel walls. Enclosed between the screens, a bed of Fibra-Cel Disks serves as a solid support matrix for cell growth. Cells growing in the disk bed become immobilized on or between the disks, protected from external shear forces. Medium is circulated by way of a hollow impeller tube with discharge ports positioned above the basket. Rotation of these discharge ports creates a low differential pressure at the base of the impeller tube.

Rushton and Rushton-type impellers ideal for fermentation

The blades of Rushton and Rushton-type impellers are flat and set vertically along the agitation shaft, producing a unidirectional radial flow. These impellers are commonly used in fermentations of cell lines that require high oxygen rates, such as yeast, bacteria, and some fungi.

i For more information go to www.eppendorf.com

Pitched-blade impeller for shear-sensitive cells

The blades are flat, and set at angles of approximately 45°, producing both an axial and radial flow. The combination provides better overall mixing. Pitched-blade impellers are low-shear impellers, designed to gently mix the contents of the culture without causing cell damage. They are commonly used with mammalian, insect, or other shear-sensitive cell lines, growing either in suspension or with the aid of microcarriers. They are also widely used in fermentation processes dealing with highly viscous cultures, such as filamentous bacteria and fungi, and some biofuels processes.

Marine impeller for shear-sensitive cells

The leading face of the blades on this impeller can be flat or concave, while the back side is convex, producing an axial flow. Marine impellers are used for applications requiring gentle mixing without causing cell damage. Due to their unidirectional flow, however, the k_La of marine impellers tend to be slightly lower than that of impellers which employ both axial and radial mixing.

Spinfilter impeller for all cell lines

Spinfilters are used to keep cells inside the vessel during continuous or perfusion culture. Spinfilters with a low-shear marine impeller are offered for suspension and microcarrier applications. The Spinfilter Kit consists of a screened cage surrounding the impeller shaft, with very small filter pore openings that keep cells isolated outside the cage. Inside the rotating cage, a dip-tube is provided for continuous withdrawal of culture broth. A media feed tube is used outside the cage to provide a steady supply of fresh nutrients. The spinfilter is used with cell lines that are microcarrier-dependent or highly sensitive to shear. They are ideal for production of secreted protein.

Eppendorf AG · 22331 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

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.

Model	BioBLU® Single-Use Vessels	DASbox® Mini Bioreactor
Page(s)	**54**	**60**
Working volumes cell culture	100 – 250 mL, 320 mL – 1.25 L, 1.25 – 3.75 L, 3.5 – 10.5 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, 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	Peltier-cooled
LED illumination		

■ = standard, o = optional

i For more information go to www.eppendorf.com

Technical specifications subject to change.

DASGIP® Bioblock Vessels	DASGIP® Benchtop Bioreactors	BioFlo®/CellGen® 115 Vessels
62	**71**	**80**
200 mL – 1.0 L, 400 mL – 1.2 L, 400 mL – 1.6 L	700 mL – 2.7 L, 800 mL – 3.8 L	0.4 – 10.5 L
200 mL – 1.0 L, 500 mL – 1.5 L, 400 mL – 2.0 L	700 mL – 2.7 L, 800 mL – 3.8 L	0.4 – 10.5 L
DASGIP Bioblock	Benchtop (DASGIP)	BioFlo®/CelliGen® 115
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
		■
■	■	■
Water-cooled	Water-cooled	Water-cooled
o (1.2 L spinner vessel)	o (2.5 L vessel)	o (5 L vessel)

Model	BioFlo® 320 Vessels	BioFlo® 415 Vessels	BioFlo®/CelliGen® 510
Page(s)	89	97	38
Working volumes cell culture	0.6 – 10.5 L	-	5.5 – 32 L
Working volumes microbiology	0.6 – 10.5 L	2.0 – 15.5 L	5.5 – 32 L
Standard set-up	BioFlo® 320	BioFlo® 415	Benchtop/mobile table
Autoclavable	■		
Single-use			
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	Water-cooled/electric heat band
LED illumination	o (3 L and 5 L vessel)		

■ = standard, o = optional

i For more information go to www.eppendorf.com

BioFlo® 610	BioFlo® Pro	CelliGen® Pro
40	42	44
-	-	18.75 – 520 L
16 – 100 L	32 – 2400 L	-
Mobile skid	Skid-mounted	Skid-mounted
		o (up to 120 L)
		o (up to 120 L)
■	■	
■	■	■
		■
■	■	■
		up to 240 L, 500 L is bottom
Bottom drive	Bottom drive	up to 240 L, 500 L is bottom
Water-cooled/electric heat band	Water-cooled/electric heat band	Water-cooled/electric heat band

Focus Topic: Leachables and Extractables

Polymer Expertise by Eppendorf

BioBLU® Single-Use Vessels mitigate leachables and extractables issues

Decades of experience in the field of sophisticated polymer products was central to the development of BioBLU Single-Use Vessels by Eppendorf. They address the widely discussed problems associated with leachables and extractables (L&E) and help to make your laboratory more efficient and safe:

> Vessel body and head plate comprised of single-layer injection-molded plastic: no additives such as softeners are used
> Virgin raw materials: no risk from use of recycled materials
> No middle man: Eppendorf sources all raw materials directly
> β-irradiated vessels: avoids degradation of polymer layers associated with γ-ray-based sterilization
> Raw materials used to produce BioBLU® vessels comply with USP Class VI standards and are BSE/TSE free

Quality control at Eppendorf
Continuous quality monitoring guarantees lot-to-lot consistency and product purity:
> Production area: Particle monitoring and bioburden tests
> Validation and spot tests
> Control of product specifications
> Product release only after all tests have been passed successfully
> Lot-specific certification

Eppendorf offers customers single-use bioreactor solutions with a controlled production process from start to finish for full vendor and material transparency. For instance, raw materials are sourced directly and the molding processes are completed on Eppendorf-owned tooling. Granulate suppliers of Eppendorf do not use or intentionally incorporate the process stabilizer Tris(2,4-di-tert-butylphenyl)phosphite (tDtBPP) into the materials Eppendorf uses for the production of Eppendorf BioBLU Single-Use Vessels. All used granulates are certified to be free of tDtBPP. Even in low concentrations, Bis(2,4-di-tert-butylphenyl)phosphate (bDtBPP) - a degradation product of tDtBPP - has been shown to have dramatic effects on the quality and performance of various cell cultures.[1)]

[*1] Hammond, M et al (2013): Identification of a Leachable Compound Detrimental to Cell Growth in Single-Use Bioprocess Containers, PDA J Pharm Sci Tech Vol. 67 No. 2, 123-134

Leachables and extractables
are defined as substances that can either be extracted from plastic materials under harsh conditions (e.g. extreme temperatures, presence of solvent) or released spontaneously under standard conditions. They may originate from compounds used in polymer manufacturing such as softeners, stabilizers, and antioxidants. Especially cytotoxic effects and altered product characteristics cause safety concerns in biopharmaceutical manufacturing which is why validation and testing of materials is of utmost importance for a reliable drug production process.

BioBLU® 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, across a wide variety of processes, including shear-sensitive cell cultures, robust microbial applications, and adherent cell line development.

Applications

> Insect, mammalian and human suspension cell lines, and stem cells
> Adherent cells
> Bacteria, yeasts, and fungi

Product features

> Single-use, stirred-tank, rigid-walled vessels available in sizes ranging from 65 mL to 40 L working volumes
> All BioBLU c vessel sizes available with pitched-blade impellers for cell culture applications
> BioBLU 5p vessels with packed-bed impeller, pre-loaded with Fibra-Cel Disks
> BioBLU 0.3f and 1f vessels with Rushton-type impellers for microbial applications
> 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 DASbox Mini Bioreactor System, DASGIP Parallel Bioreactor Systems, and New Brunswick CelliGen BLU controllers
> Adaptor kits for legacy and 3rd party bioreactor controllers available
> Validation packages available upon request

i For more information go to www.eppendorf.com

Technical specifications subject to change.

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

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

Ordering information

Description							Order no.
Vessel	**Application**	**Working Volume**	**Sparger**	**Impeller**	**pH**	**Quantity**	
BioBLU® 0.3c	Cell culture	100 mL - 250 mL	Open pipe	1x pitched-blade	Standard	4-pack	78903508
BioBLU® 0.3c	Cell culture	100 mL - 250 mL	Open pipe	1x pitched-blade	Optical[1)]	4-pack	78903507
BioBLU® 0.3f	Microbiology	65 mL - 250 mL	Open pipe	2x Rushton-type	Standard	4-pack	78903509
BioBLU® 1c	Cell culture	320 mL - 1.25 L	Open pipe	2x pitched-blade	Standard	4-pack	78903506
BioBLU® 1c	Cell culture	320 mL - 1.25 L	Open pipe	2x pitched-blade	Optical[1)]	4-pack	78903510
BioBLU® 1c	Cell culture	320 mL - 1.25 L	Open pipe	1x pitched-blade	Standard	4-pack	78903511
BioBLU® 1c	Cell culture	320 mL - 1.25 L	Open pipe	1x pitched-blade	Optical[1)]	4-pack	78903512
BioBLU® 1f	Microbiology	250 mL - 1.25 L	Open pipe	3x Rushton-type	Standard	4-pack	78903505
BioBLU® 1f	Microbiology	250 mL - 1.25 L	Open pipe	2x Rushton-type	Standard	4-pack	78903513
BioBLU® 3c	Cell culture	1.25 L - 3.75 L	Microsparger	1x pitched-blade	Optical	1-pack	1386000100
BioBLU® 3c	Cell culture	1.25 L - 3.75 L	Microsparger	1x pitched-blade	Optical	4-pack	1386000200
BioBLU® 3c	Cell culture	1.25 L - 3.75 L	Macrosparger	1x pitched-blade	Optical	1-pack	1386000300
BioBLU® 3c	Cell culture	1.25 L - 3.75 L	Macrosparger	1x pitched-blade	Optical	4-pack	1386000400
BioBLU® 3f	Microbiology	1.25 L - 3.75 L	Macrosparger	3x Rushton-type	Standard	1-pack	1386000900
BioBLU® 3f	Microbiology	1.25 L - 3.75 L	Macrosparger	3x Rushton-type	Standard	4-pack	1386001000
BioBLU® 5p	Cell culture	3.75 L	Microsparger	Packed-bed	Optical	1-pack	M1363-0119
BioBLU® 5p	Cell culture	3.75 L	Microsparger	Packed-bed	Optical	4-pack	M1363-0120
BioBLU® 5p	Cell culture	3.75 L	Macrosparger	Packed-bed	Optical	1-pack	M1363-0133
BioBLU® 5p	Cell culture	3.75 L	Macrosparger	Packed-bed	Optical	4-pack	M1363-0134
BioBLU® 14c	Cell culture	3.5 L -10.5 L	Microsparger	1x pitched-blade	Optical	1-pack	M1363-0126
BioBLU® 14c	Cell culture	3.5 L -10.5 L	Microsparger	1x pitched-blade	Optical	4-pack	M1363-0128
BioBLU® 14c	Cell culture	3.5 L -10.5 L	Macrosparger	1x pitched-blade	Optical	1-pack	M1363-0122
BioBLU® 14c	Cell culture	3.5 L -10.5 L	Macrosparger	1x pitched-blade	Optical	4-pack	M1363-0124
BioBLU® 50c	Cell culture	18 L - 40 L	Microsparger	1x pitched-blade	Optical	1-pack	M1363-0131
BioBLU® 50c	Cell culture	18 L - 40 L	Microsparger	1x pitched-blade	Optical	4-pack	M1363-0132
BioBLU® 50c	Cell culture	18 L - 40 L	Macrosparger	1x pitched-blade	Optical	1-pack	M1363-0129
BioBLU® 50c	Cell culture	18 L - 40 L	Macrosparger	1x pitched-blade	Optical	4-pack	M1363-0130

[1)] Available end of 2016

BioBLU® Single-Use Vessels

Technical specifications												
Model	**BioBLU® 0.3c**	**BioBLU® 0.3f**	**BioBLU® 1c**	**BioBLU® 1f**	**BioBLU® 3f**	**BioBLU® 3c**	**BioBLU® 5p**	**BioBLU® 14c**	**BioBLU® 50c**
Application	Cell culture	Microbiology	Cell culture	Microbiology	Microbiology	Cell culture	Cell culture	Cell culture	Cell culture
Working volume (total)	100 – 250 mL (380 mL)	65 – 250 mL (380 mL)	320 mL – 1.25 L (1.8 L)	250 mL – 1.25 L (1.8 L)	1.25 – 3.75 L (5 L)	1.25 – 3.75 L (5 L)	3.75 L (5 L)	3.5 – 10.5 L (14 L)	18 – 40 L (50 L)
Sterilization	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated	15 kGy β-irradiated
Material of construction	PS, PC (USP Class VI)	PS, PC (USP Class VI)	PS, PC (USP Class VI)	PS, PC (USP Class VI)	PC (USP Class VI)	PS, PC (USP Class VI)	PS, PC (USP Class VI)	PS, PC (USP Class VI)	PS, PC (USP Class VI)
Material of tubing	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone, C-Flex	Silicone, C-Flex	Silicone, C-Flex	Silicone, C-Flex
Max. operating temperature	40 °C	45 °C	40 °C	45 °C	45 °C	40 °C	40 °C	40 °C	40 °C
Head plate ports									
Pg 13.5	2x	2x	3x	3x	4x	4x	1x	1x	1x
Liquid addition	1x submerged, 1x overlay	1x submerged, 2x overlay	2x submerged, 2x overlay	2x submerged, 3x overlay	1x submerged, 3x overlay	1x submerged, 3x overlay	3x overlay	3x overlay	3x overlay
DO sensor port	1x (permeable gas membrane)	1x (permeable gas membrane)	1x (permeable gas membrane)	1x (permeable gas membrane)	1x (permeable gas membrane)[2]	1x (permeable gas membrane)[2]	1x (permeable gas membrane)	1x (permeable gas membrane)	1x (permeable gas membrane)
Optical pH sensor port	■[2]	–	■[2]	–	–	■	■	■	■
Gas sparge	■	■	■	■	■	■	■	■	■
Gas overlay	■	–	■	–	–	■	■	■	■
Exhaust	■	■	■	■	■	■	■	■	■
Harvest tube	■	■	■	■	■	■	■	■	■
Thermowell	■	■	■	■	■	■	■	■	■
Agitation									
Drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive	Magnetic overhead drive
Impeller type	Pitched-blade	Rushton-type	Pitched-blade	Rushton-type	Rushton-type	Pitched-blade	Packed-bed	Pitched-blade	Pitched-blade
Recommended agitation speed range	20 – 500 rpm	20 – 2,000 rpm	30 – 600 rpm	100 – 1,500 rpm	25 – 1,200 rpm	25 – 200 rpm	25 – 200 rpm	25 – 200 rpm	25 – 150 rpm
Fibra-Cel® Disks	–	–	–	–	–	–	150 g	–	–
Monitoring & Control									
T sensor[1]	Pt100 RTD	Pt100 RTD	Pt100 RTD	Pt100 RTD	Pt100 RTD	Pt100 RTD	Pt100 RTD	Pt100 RTD	Pt100 RTD
pH sensor[1]	Optical pH[3] or standard glass sensor	Standard glass sensor	Optical pH[3] or standard glass sensor	Standard glass sensor	Standard glass sensor	Optical pH or standard glass sensor	Optical pH or standard glass sensor	Optical pH or standard glass sensor	Optical pH or standard glass sensor
DO sensor[1]	Polarographic DO - 4.7/120 mm	Polarographic DO - 4.7/120 mm	Polarographic DO - 4.7/220 mm	Polarographic DO - 4.7/220 mm	Polarographic or optical DO - 12/225 mm	Polarographic DO - 12/225 mm	Polarographic DO - 12/120 mm	Polarographic DO - 12/355 mm	Polarographic DO - 12/526 mm
Exhaust treatment[1]	Liquid-free (Peltier)	Liquid-free (Peltier)	Liquid-free (Peltier)/water-cooled	Liquid-free (Peltier)/water-cooled	Water-cooled	Electric heat band or Peltier	Electric heat band or Peltier	Electric heat band	Electric heat band

[1] Separate items [2] Utilizes 1x Pg 13.5 port. All adaptor kits can be found on pages 58 - 59.

i For more information go to www.eppendorf.com

BioBLU® Single-Use Vessel Adaptor Kits

Description
These 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 or Applikon® and Sartorius® 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®, including overhead drives and DO sensors (w/o pH sensors)	
Peltier condensers, for 4 BioBLU® 0.3	78532298
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP® Bioblock, including magnetic adaptors for overhead drives and DO sensors (w/o CWD4+4, w/o pH/level sensors)	
water-based condensers, for 4 BioBLU®1c	78532329
water-based condensers, for 4 BioBLU® 1f	78532330
EGC4 and Peltier condensers, for 4 BioBLU® 1c	78532299
EGC4 and Peltier condensers, for 4 BioBLU® 1f	78532295
Adaptor Kit: BioBLU® Single-Use Vessels and DASGIP®, benchtop, including magnetic adaptors for overhead drives and DO sensors (w/o CWD4+4, w/o pH/level sensors, w/o heat blankets)	
water-based condensers, for 4 BioBLU® 1c	78532334
115 V, water-based condensers, for 4 BioBLU® 3c/5c/5p	78532331
230 V, water-based condensers, for 4 BioBLU® 3c/5c/5p	78532333
EGC4 and Peltier condensers, for 4 BioBLU® 1c	78532328
115 V, EGC4 and Peltier condensers, for 4 BioBLU® 3c/5c/5p	78532296
230 V, EGC4 and Peltier condensers, for 4 BioBLU® 3c/5c/5p	78532297
Adaptor Kit: BioBLU® Single-Use Vessel and New Brunswick™ BioFlo®/CelliGen® 115, includes vessel heat blanket, pressure relief valve assembly (2), exhaust tube heat blanket, spare tubing	
100 – 240 V, BioBLU® 3c/5c/5p	M1386-9940
100 – 240 V, BioBLU® 3f, requires direct-drive motor of 1 L or 2 L vessel	M1386-9920
100 – 240 V, BioBLU® 3f, requires direct-drive motor of 5 L or 10 L vessel	M1386-9921
100 – 240 V, BioBLU® 14c	M1376-9942
100 – 240 V, BioBLU® 50c	M1376-9951
Adaptor Kit: BioBLU® Single-Use Vessel and New Brunswick™ CelliGen® 310, includes vessel heat blanket, relief valve assembly (2), exhaust heat blanket, heat blanket conversion drawer, motor adaptor, spare tubing	
100 – 120 V, BioBLU® 3c/5c/5p	M1386-9941
100 – 120 V, BioBLU® 14c	M1376-9928
100 – 120 V, BioBLU® 50c	M1376-9953
200 – 240 V, BioBLU® 3c/5c/5p	M1386-9942
200 – 240 V, BioBLU® 14c	M1376-9930
200 – 240 V, BioBLU® 50c	M1376-9954
100 – 240 V, BioBLU® 3f	M1386-9922
Adaptor Kit: BioBLU® Single-Use Vessel and BioFlo 320, includes vessel heat blanket, pressure relief valve assembly (2), exhaust heat blanket, motor adaptor, spare tubing	
BioBLU® 1c/1f	Contact us for details
100 – 240 V, BioBLU® 3c/5c/5p	M1386-9943
100 – 240 V, BioBLU® 3f	M1386-9923

Ordering information

Description	Order no.
Adaptor Kit: BioBLU® Single-Use Vessel and Applikon® ADI 1025 Bio Console, includes vessel heat blanket, pressure relief valve assembly (2), exhaust tube heat blanket, RTD, motor adaptor, spare tubing	
100 – 120 V, BioBLU® 3c/5c/5p	M1386-9944
100 – 120 V, BioBLU® 14c	M1376-9922
100 – 120 V, BioBLU® 50c	M1376-9955
200 – 240 V, BioBLU® 3c/5c/5p	M1386-9945
200 – 240 V, BioBLU® 14c	M1376-9924
200 – 240 V, BioBLU® 50c	M1376-9956
Adaptor Kit: BioBLU® Single-Use Vessel and Applikon® ez-Control, includes vessel heat blanket, pressure relief valve assembly (2), exhaust tube heat blanket, RTD, motor adaptor, spare tubing	
100 – 120 V, BioBLU® 3c/5c/5p	M1386-9946
100 – 120 V, BioBLU® 14c	M1376-9943
100 – 120 V, BioBLU® 50c	M1376-9957
200 – 240 V, BioBLU® 3c/5c/5p	M1386-9947
200 – 240 V, BioBLU® 14c	M1376-9939
200 – 240 V, BioBLU® 50c	M1376-9958
Adaptor Kit: BioBLU® Single-Use Vessel and Sartorius BioStat® B-Plus (Left-Hand), includes vessel heat blanket, relief valve assembly (2), exhaust heat blanket, RTD, heat blanket conversion drawer, motor adaptor, spare tubing	
100 – 120 V, BioBLU® 3c/5c/5p	M1386-9948
100 – 120 V, BioBLU® 14c	M1376-9932
100 – 120 V, BioBLU® 50c	M1376-9959
200 – 240 V, BioBLU® 3c/5c/5p	M1386-9949
200 – 240 V, BioBLU® 14c	M1376-9934
200 – 240 V, BioBLU® 50c	M1376-9960
Adaptor Kit: BioBLU® Single-Use Vessel and Sartorius® BDCU II (Heat Blanket), includes vessel heat blanket, relief valve assembly (2), exhaust heat blanket, RTD, motor adaptor, spare tubing	
100 – 240 V, BioBLU® 3c/5c/5p	M1386-9950
100 – 120 V, BioBLU® 14c	M1376-9964
200 – 240 V, BioBLU® 14c	M1376-9966
Adaptor Kit: BioBLU® Single-Use Vessel and Sartorius® BIOSTAT® B, includes vessel heat blanket, pressure relief valve assembly (2), exhaust heat blanket, motor adaptor, RTD, spare tubing	
100–240 V, BioBLU® 3c/5c/5p	M1386-9951

Accessories

Description	Order no.
Single-use Tri-port, Pg 13.5, 10 pcs	1386010000
Single-use Septum Kit, Pg 13.5, 10 pcs	1386010100
Single-use Compression Fitting, Pg 13.5, 10 pcs	1386010200
Single-use Blind Plug, Pg 13.5, 10 pcs	1386010300
New Brunswick™ OP-76 Optical pH Module, allows you to monitor and control the optical pH signal of your BioBLU® Single-Use Vessels using your existing bioreactor control station.	
New Brunswick™ OP-76 Optical pH Module	M1376-1001
DASGIP® PH4FO Monitoring Module, for fiber-optical pH measurement incl. cables for 4 vessels	76DGPH4FO
DASGIP® EGC4 Exhaust Condenser Controller, for 4 Peltier actuators	76DGEGC4
DASbox® Exhaust Condenser, Peltier, for 1 single-use vessel (BioBLU® 0.3)	76DXCONDSU
DASGIP® Exhaust Condenser, Peltier	
for 1 single-use vessel (BioBLU® 1c)	76DGCONDSU1C
for 1 single-use vessel (BioBLU® 1f)	76DGCONDSU1F
for 1 single-use vessel (BioBLU® 5c, 5p or 14c)	76DGCONDSU5C
DASbox® pH Sensor, for 1 vessel, 120 mm (Hamilton®)	76DXPHHMC120
DASbox® DO Sensor, for 1 single-use vessel,120 mm (DAS)	76DXPODAS120
DASGIP® pH Sensor, for 1 vessel, 220 mm (Hamilton®)	76DGPHHMC220
DASGIP® DO Sensor, for 1 single-use vessel, 220 mm (DAS)	76DGPODAS220
DASGIP® Level/Foam Sensor, for 1 single-use vessel	
incl. compression fitting Pg 13.5 w/ two sensors (220 mm, 120 mm) and media addition	76DGLVLSU

VESSELS

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

Ordering information

DASbox® Mini Bioreactor

Vessel	Working volume (total)	Impellers	Order no.
Cell culture			
350 mL	60 – 250 mL (350 mL)	1x marine	76DS0250ODSS
Microbiology			
350 mL	60 – 250 mL (350 mL)	2x Rushton-type	76SR0250ODLS

i For more information go to www.eppendorf.com

Technical specifications subject to change.

Technical specifications

Model	Cell culture	Microbiology
Standard set-up	DASbox	DASbox
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
Autoclave dimensions (H x W x D)	360 mm x 90 mm x 90 mm	360 mm x 90 mm x 90 mm
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 size	120 mm	120 mm
T sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Liquid-free (Peltier)	Liquid-free (Peltier)

Contents of vessel kits

	Cell culture	Microbiology
Flat-bottom vessel w/ 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 w/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, o = optional

Accessories

Description	Order no.
DASbox® pH Sensor, for 1 vessel, 120 mm (Hamilton®)	76DXPHHMC120
DASbox® DO Sensor, for 1 vessel, 120 mm (Hamilton®)	76DXPOHMC120
DASbox® DO Sensor, optical, for 1 vessel, 120 mm (Hamilton®)	76DXPOHVF120
DASbox® Redox Sensor, for 1 vessel, 120 mm	76DXRDMTI120
DASbox® Level/Foam Sensor, incl. compression fitting for 1 vessel	76DXLVL
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 120 mm	76DGODOPL05L120
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 120 mm	76DGODOPL10L120
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 120 mm	76DGODOPL20L120
DASbox® Overhead Drive, 20 – 2500 rpm, for 1 vessel	76DXOHD
DASbox® Exhaust Condenser, Peltier, for 1 vessel	76DXCOND
DASbox® Exhaust System, for 1 vessel, OD 6 mm, Pg 13.5	76DXOFF
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 220 mm	76DGDT220
DASGIP® Compression Fitting, for OD 12 mm, w/ Pg 13.5 male thread	76DGCF12
DASGIP® Triple Port, for 1 vessel, Pg 13.5	76DGTRIP

VESSELS

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

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
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
Autoclave dimensions (H x W x D)	510 mm x 250 mm x 150 mm	560 mm x 250 mm x 150 mm	610 mm x 250 mm x 150 mm
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
T sensor	Pt100 RTD	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled	Water-cooled

Contents of Vessel Kits	
Contents	
Flat-bottom vessel w/ 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 w/ filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port w/ liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

i For more information go to www.eppendorf.com

DASGIP® Bioblock Spinner Vessels

Ordering information			
DASGIP® Bioblock Spinner Vessels			
Vessel	**Working volume (total)**	**Impellers**	**Order no.**
0.7 L	250 mL – 700 mL (1.5 L)	1x pitched-blade	76DS0700ODSS
1 L	350 mL – 1.0 L (1.9 L)	2x pitched-blade	76DS1000ODSS
1.5 L	350 mL – 1.5 L (2.3 L)	2x pitched-blade	76DS1500ODSS

Accessories	
Description	**Order no.**
DASGIP® pH Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPHMTI220
320 mm (Mettler Toledo®)	76DGPHMTI320
220 mm (Hamilton®)	76DGPHHMC220
320 mm (Hamilton®)	76DGPHHMC320
DASGIP® DO Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPOMTI220
320 mm (Mettler Toledo®)	76DGPOMTI320
220 mm (Hamilton®)	76DGPOHMC220
320 mm (Hamilton®)	76DGPOHMC320
DASGIP® DO Sensor (optical), for 1 vessel	
220 mm (Hamilton®)	76DGPOHVF220
320 mm (Hamilton®)	76DGPOHVF320
DASGIP® Level/Foam Sensor , incl. compression fitting Pg 13.5 for 1 vessel, 220 mm	76DGLVL220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 220 mm	76DGODOPL05L220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 320 mm	76DGODOPL05L320
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 220 mm	76DGODOPL10L220
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 320 mm	76DGODOPL10L320
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 220 mm	76DGODOPL20L220
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 320 mm	76DGODOPL20L320
DASGIP® Overhead Drive RE30, 30 – 1,250 rpm, digitally encoded, for 1 vessel	76DGRE30
Exhaust Condensation, Pg 13.5, incl. accessories for 1 vessel, OD 30 mm	76DGCOND30
DASGIP® Exhaust System, for 1 vessel, OD 6 mm, Pg 13.5	76DGOFF
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 220 mm	76DGDT220
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 270 mm	76DGDT270
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 320 mm	76DGDT320
DASGIP® Compression Fitting, for OD 12 mm, w/ Pg 13.5 male thread	76DGCF12
DASGIP® Triple Port, for 1 vessel, Pg 13.5	76DGTRIP

i For more information go to www.eppendorf.com

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 – 2.0 L they are perfectly suited for microbial research and process development.

Product features
> Working volumes ranging from 200 mL – 2.0 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

DASGIP® Bioblock Stirrer Vessels

Technical specifications			
Model	**1 L**	**1.5 L**	**1.8 L**
Application	Microbiology	Microbiology	Microbiology
Standard set-up	DASGIP Bioblock	DASGIP Bioblock	DASGIP Bioblock
Bioreactors			
Sterilization	Autoclavable	Autoclavable	Autoclavable
Working volume (total)	200 mL – 1.0 L (1.3 L)	500 mL – 1.5 L (1.9 L)	400 mL – 1.8 L (2.2 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
Autoclave dimensions (H x W x D)	500 mm x 110 mm x 150 mm	570 mm x 110 mm x 150 mm	610 mm x 110 mm x 150 mm
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 size	220 mm	220 mm	320 mm
T sensor	Pt100 RTD	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled	Water-cooled

Contents of Vessel Kits	
Contents	
Flat-bottom vessel w/ 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 w/ filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port w/ liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

Ordering information

DASGIP® Bioblock Stirrer Vessels

Vessel	Working volume (total)	Impellers	Order no.
1 L	200 mL – 1.0 L (1.3 L)	2x Rushton-type	76SR0700ODLS
1.5 L	500 mL – 1.5 L (1.9 L)	2x Rushton-type	76SR1000ODLS
1.8 L	400 mL – 1.8 L (2.2 L)	3x Rushton-type	76SR1500ODLS

i For more information go to www.eppendorf.com

Technical specifications subject to change.

Accessories

Description	Order no.
DASGIP® pH Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPHMTI220
320 mm (Mettler Toledo®)	76DGPHMTI320
220 mm (Hamilton®)	76DGPHHMC220
320 mm (Hamilton®)	76DGPHHMC320
DASGIP® DO Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPOMTI220
320 mm (Mettler Toledo®)	76DGPOMTI320
220 mm (Hamilton®)	76DGPOHMC220
320 mm (Hamilton®)	76DGPOHMC320
DASGIP® DO Sensor (optical), for 1 vessel	
220 mm (Hamilton®)	76DGPOHVF220
320 mm (Hamilton®)	76DGPOHVF320
DASGIP® Redox (ORP) Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGRDMTI220
320 mm (Mettler Toledo®)	76DGRDMTI320
DASGIP® Level/Foam Sensor, incl. compression fitting Pg 13.5 for 1 vessel, 220 mm	76DGLVL220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 220 mm	76DGODOPL05L220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 320 mm	76DGODOPL05L320
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 220 mm	76DGODOPL10L220
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 320 mm	76DGODOPL10L320
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 220 mm	76DGODOPL20L220
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 320 mm	76DGODOPL20L320
DASGIP® Overhead Drive RE40, 100 – 1,600 rpm, digitally encoded, for 1 vessel	76DGRE40
DASGIP® Heat Exchanger, Pg 13.5 for 1 vessel, 220 mm	76DGHE220
DASGIP® Heat Exchanger, Pg 13.5 for 1 vessel, 320 mm	76DGHE320
Exhaust Condensation, Pg 13.5, incl. accessories for 1 vessel, OD 30 mm	76DGCOND30
DASGIP® Exhaust System, for 1 vessel, OD 6 mm, Pg 13.5	76DGOFF
DASGIP® Baffle Cage, for 1 DASGIP® Bioblock Stirrer Vessel (1 L vessel, H 180 mm)	76DGBC0700
DASGIP® Baffle Cage, for 1 DASGIP® Bioblock Stirrer Vessel (1.5 L vessel, H 250 mm)	76DGBC1000
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 220 mm	76DGDT220
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 270 mm	76DGDT270
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 320 mm	76DGDT320
DASGIP® Compression Fitting, for OD 12 mm, w/ Pg 13.5 male thread	76DGCF12
DASGIP® Triple Port, for 1 vessel, Pg 13.5	76DGTRIP

VESSELS

DASGIP® Benchtop Spinner Vessels

Description
DASGIP Spinner Vessels come in two sizes with working volumes of 300 – 600 mL and 600 mL – 1.6 L, respectively. These overhead-driven spinner vessels feature a stainless-steel head plate, pitched-blade impellers, and two side arms. They are perfectly suited for cell culture research and process development.

Product features
> Working volumes ranging from 300 mL – 1.6 L
> Direct overhead drives with 30 – 1,250 rpm, pitched-blade impellers
> Industry standard sensors available for precise monitoring and control of temperature, pH, DO, level, and OD
> Two GL45 side arms

Technical specifications		
Model	**0.5 L**	**1.5 L**
Application	Cell culture	Cell culture
Standard set-up	Benchtop	Benchtop
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	300 – 600 mL (1.4 L)	600 mL – 1.6 L (2.6 L)
Material vessel	Glass	Glass
Head plate	Stainless-steel, screw cap	Stainless-steel, screw cap
Head plate ports	8x Pg 13.5, 2x D6	8x Pg 13.5, 2x D6
Agitation		
Drive	Direct overhead drive	Direct overhead drive
Impellers	1x pitched-blade	1x 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 size	220 mm	220 mm
T sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled

Contents of Vessel Kits	
Contents	
Vessel w/ 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 w/ filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port w/ liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

i For more information go to www.eppendorf.com

DASGIP® Benchtop Spinner Vessels

Ordering information			
DASGIP® Benchtop Spinner Vessels			
Vessel	**Working volume (total)**	**Impellers**	**Order no.**
0.5 L	300 – 600 mL (1.4 L)	1x pitched-blade	76BS0500OGSS
1.5 L	600 mL – 1.6 L (2.6 L)	1x pitched-blade	76BS1000OGSS

Accessories	
Description	**Order no.**
DASGIP® pH Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPHMTI220
220 mm (Hamilton®)	76DGPHHMC220
DASGIP® DO Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPOMTI220
220 mm (Hamilton®)	76DGPOHMC220
DASGIP® DO Sensor (optical), for 1 vessel	
220 mm (Hamilton®)	76DGPOHVF220
DASGIP® Level/Foam Sensor, incl. compression fitting Pg 13.5 for 1 vessel, 220 mm	76DGLVL220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 220 mm	76DGODOPL05L220
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 220 mm	76DGODOPL10L220
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 220 mm	76DGODOPL20L220
DASGIP® Overhead Drive RE30, 30 – 1,250 rpm, digitally encoded, for 1 vessel (Pg 13.5)	76DGRE30G
DASGIP® Heat Blanket, for 1 DASGIP® spinner vessel	
115 V	76DGHBD1000U1
230 V	76DGHBD1000U2
DASGIP® Heat Exchanger, Pg 13.5 for 1 vessel, 220 mm	76DGHE220
Exhaust Condensation, Pg 13.5, incl. accessories for 1 vessel, OD 12 mm	76DGCOND12
DASGIP® Exhaust System, for 1 vessel, OD 6 mm, Pg 13.5	76DGOFF
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 220 mm	76DGDT220
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels, incl. triple port Pg 13.5, 270 mm	76DGDT270
DASGIP® Compression Fitting, for OD 12 mm, w/ Pg 13.5 male thread	76DGCF12
DASGIP® Triple Port, for 1 vessel, Pg 13.5	76DGTRIP

i For more information go to www.eppendorf.com

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 700 mL – 2.7 L and 800 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

DASGIP® Benchtop Bioreactors for Cell Culture

Technical specifications		
Model	**2.5 L**	**3.5 L**
Application	Cell culture	Cell culture
Standard set-up	Benchtop	Benchtop
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	700 mL – 2.7 L (3.2 L)	800 mL – 3.8 L (4.5 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
Autoclave dimensions (H x W x D)	580 mm x 190 mm x 190 mm	660 mm x 190 mm x 190 mm
Agitation		
Drive	Direct overhead drive	Direct overhead drive
Impellers	2x pitched-blade	3x 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 size	220 mm	320 mm
T sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled

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

■ = standard

Ordering information

DASGIP® Benchtop Bioreactors for Cell Culture

Vessel	Working volume (total)	Impellers	Order no.
2.5 L	700 mL – 2.7 L (3.2 L)	2x pitched-blade	76DR03C
3.5 L	800 mL – 3.8 L (4.5 L)	3x pitched-blade	76DR04C

i For more information go to www.eppendorf.com

Accessories

Description	Order no.
DASGIP® pH Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPHMTI220
320 mm (Mettler Toledo®)	76DGPHMTI320
220 mm (Hamilton®)	76DGPHHMC220
320 mm (Hamilton®)	76DGPHHMC320
DASGIP® DO Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPOMTI220
320 mm (Mettler Toledo®)	76DGPOMTI320
220 mm (Hamilton®)	76DGPOHMC220
320 mm (Hamilton®)	76DGPOHMC320
DASGIP® DO Sensor (optical), for 1 vessel	
220 mm (Hamilton®)	76DGPOHVF220
320 mm (Hamilton®)	76DGPOHVF320
DASGIP® Level/Foam Sensor , incl. compression fittings M18x1.5 for 1 vessel, 220 mm	76DGLVL220M
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 220 mm	76DGODOPL05L220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 320 mm	76DGODOPL05L320
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 220 mm	76DGODOPL10L220
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 320 mm	76DGODOPL10L320
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 220 mm	76DGODOPL20L220
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 320 mm	76DGODOPL20L320
DASGIP® Overhead Drive RE30, 30 – 1,250 rpm, digitally encoded, for 1 vessel	76DGRE30
DASGIP® Heat Blanket, for 1 DASGIP® Benchtop Bioreactor (2.5 L vessel)	
115 V	76DGHDR03U1
230 V	76DGHDR03U2
DASGIP® Heat Blanket, for 1 DASGIP® Benchtop Bioreactor (3.5 L vessel)	
115 V	76DGHDR04U1
230 V	76DGHDR04U2
DASGIP® Heat Exchanger, M18x1.5 for 1 vessel	
220 mm	76DGHE220M
320 mm	76DGHE320M
Exhaust Condensation, M18x1.5, incl. accessories for 1 vessel, OD 30 mm	76DGCOND30M
DASGIP® Exhaust System, for 1 vessel, M6 port, D6	76DGOFFD6
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels	
incl. triple port M18x1.5, 220 mm	76DGDT220M
incl. triple port M18x1.5, 270 mm	76DGDT270M
incl. triple port M18x1.5, 320 mm	76DGDT320M
DASGIP® Compression Fitting, for OD 12 mm, w/ M18x1.5 male thread	76DGCF12M
DASGIP® Triple Port, for 1 vessel, M18x1.5	76DGTRIPM

VESSELS

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

Technical specifications		
Model	**2.5 L**	**3.5 L**
Application	Microbiology	Microbiology
Standard set-up	Benchtop	Benchtop
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	700 mL – 2.7 L (3.2 L)	800 mL – 3.8 L (4.5 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
Autoclave dimensions (H x W x D)	580 mm x 190 mm x 190 mm	660 mm x 190 mm x 190 mm
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 size	220 mm	320 mm
T sensor	Pt100 RTD	Pt100 RTD
Exhaust condensation	Water-cooled	Water-cooled

Contents of Vessel Kits	
Contents	
Dished-bottom vessel w/ 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	Sold separately
Thermowell	■
Sampling assembly	■
Triple port w/ liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

i For more information go to www.eppendorf.com

DASGIP® Benchtop Bioreactors for Microbiology

Ordering information

DASGIP® Benchtop Bioreactors for Microbiology

Vessel	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 (4.5 L)	3x Rushton-type	76DR04F

Accessories

Description	Order no.
DASGIP® pH Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPHMTI220
320 mm (Mettler Toledo®)	76DGPHMTI320
220 mm (Hamilton®)	76DGPHHMC220
320 mm (Hamilton®)	76DGPHHMC320
DASGIP® DO Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPOMTI220
320 mm (Mettler Toledo®)	76DGPOMTI320
220 mm (Hamilton®)	76DGPOHMC220
320 mm (Hamilton®)	76DGPOHMC320
DASGIP® DO Sensor (optical), for 1 vessel	
220 mm (Hamilton®)	76DGPOHVF220
320 mm (Hamilton®)	76DGPOHVF320
DASGIP® Redox (ORP) Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGRDMTI220
320 mm (Mettler Toledo®)	76DGRDMTI320
DASGIP® Level/Foam Sensor, incl. compression fittings M18x1.5 for 1 vessel, 220 mm	76DGLVL220M
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 220 mm	76DGODOPL05L220
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 320 mm	76DGODOPL05L320
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 220 mm	76DGODOPL10L220
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 320 mm	76DGODOPL10L320
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 220 mm	76DGODOPL20L220
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 320 mm	76DGODOPL20L320
DASGIP® Overhead Drive RE40, 100 – 1,600 rpm, digitally encoded, for 1 vessel	76DGRE40
DASGIP® Heat Blanket, for 1 DASGIP® Benchtop Bioreactor (2.5 L vessel)	
115 V	76DGHDR03U1
230 V	76DGHDR03U2
DASGIP® Heat Blanket, for 1 DASGIP® Benchtop Bioreactor (3.5 L vessel)	
115 V	76DGHDR04U1
230 V	76DGHDR04U2
DASGIP® Heat Exchanger, M18x1.5 for 1 vessel	
220 mm	76DGHE220M
320 mm	76DGHE320M
Exhaust Condensation, M18x1.5, incl. accessories for 1 vessel, OD 30 mm	76DGCOND30M
DASGIP® Exhaust System, for 1 vessel, M6 port, D6	76DGOFFD6
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels	
incl. triple port M18x1.5, 220 mm	76DGDT220M
incl. triple port M18x1.5, 270 mm	76DGDT270M
incl. triple port M18x1.5, 320 mm	76DGDT320M
DASGIP® Compression Fitting, for OD 12 mm, w/ M18x1.5 male thread	76DGCF12M
DASGIP® Triple Port, for 1 vessel, M18x1.5	76DGTRIPM

i For more information go to www.eppendorf.com

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 400 mL – 1.2 L and 700 mL – 2.7 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

VESSELS

DASGIP® PhotoBioreactor

Technical specifications		
Model	**1.2 L**	**2.5 L**
Application	Phototrophic cultivation	Phototrophic cultivation
Standard set-up	DASGIP Bioblock	Benchtop
Bioreactors		
Sterilization	Autoclavable	Autoclavable
Working volume (total)	400 mL – 1.2 L (1.9 L)	700 mL – 2.7 L (3.2 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 size	220 mm	220 mm
T 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 (1.2 L)/ dished - bottom vessel (2.5 L) w/ 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 w/ filter	Sold separately
Thermowell	■
Sampling assembly	■
Triple port w/ liquid addition tubes	■
Septum kit	■
Inlet filter	■
Silicone tubing	■
Tools (tubing clamp, hex wrench)	■

■ = standard

Ordering information

DASGIP® PhotoBioreactor

Vessel	Working volume (total)	Impellers	Order no.
1.2 L	400 mL – 1.2 L (1.9 L)	2x pitched-blade	76DS1000ODSP
2.5 L	700 mL – 2.7 L (3.2 L)	2x pitched-blade	76DR03P

Accessories

Description	Order no.
DASGIP® PBR4 PhotoBioreactor Illumination Module, for 4 vessels, w/o LED Illumination Devices	76DGPBR4
DASGIP® pH Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPHMTI220
DASGIP® DO Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGPOMTI220
220 mm (Hamilton®)	76DGPOHMC220
DASGIP® DO Sensor (optical), for 1 vessel	
220 mm (Hamilton®)	76DGPOHVF220
DASGIP® Redox (ORP) Sensor, for 1 vessel	
220 mm (Mettler Toledo®)	76DGRDMTI220
DASGIP® Level/Foam Sensor , incl. compression fitting Pg 13.5 for 1 vessel, 220 mm	76DGLVL220
DASGIP® Level/Foam Sensor , incl. compression fittings M18x1.5 for 1 vessel, 220 mm	76DGLVL220M
DASGIP® OD Sensor, 5 mm optical path length for 1 vessel, 220 mm	76DGODOPL05L220
DASGIP® OD Sensor, 10 mm optical path length for 1 vessel, 220 mm	76DGODOPL10L220
DASGIP® OD Sensor, 20 mm optical path length for 1 vessel, 220 mm	76DGODOPL20L220
DASGIP® Overhead Drive RE30, 30 – 1,250 rpm, digitally encoded, for 1 vessel	76DGRE30
DASGIP® Heat Blanket, for 1 DASGIP® spinner vessel	
115 V	76DGHBD1000U1
230 V	76DGHBD1000U2
DASGIP® Heat Blanket, for 1 DASGIP® Benchtop Bioreactor (2.5 L vessel)	
115 V	76DGHDR03U1
230 V	76DGHDR03U2
DASGIP® Heat Exchanger, Pg 13.5 for 1 vessel, 220 mm	76DGHE220
DASGIP® Heat Exchanger, M18x1.5 for 1 vessel, 220 mm	76DGHE220M
Exhaust Condensation, M18x1.5, incl. accessories for 1 vessel, OD 30 mm	76DGCOND30M
DASGIP® Exhaust System, for 1 vessel, OD 6 mm, Pg 13.5	76DGOFF
DASGIP® Exhaust System, for 1 vessel, M6 port, D6	76DGOFFD6
DASGIP® LED Illumination Device, type S (4 sticks w/ 453/572/625/640/660/780 nm)	76DGLED220S
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels	
incl. triple port Pg 13.5, 220 mm	76DGDT220
incl. triple port M18x1.5, 220 mm	76DGDT220M
incl. triple port Pg 13.5, 270 mm	76DGDT270
incl. triple port M18x1.5, 270 mm	76DGDT270M
DASGIP® Dip Tube, for continuous operation of DASGIP® vessels	
incl. triple port Pg 13.5, 320 mm	76DGDT320
incl. triple port M18x1.5, 320 mm	76DGDT320M
DASGIP® Compression Fitting, for OD 12 mm, w/ Pg 13.5 male thread	76DGCF12
DASGIP® Compression Fitting, for OD 12 mm, w/ M18x1.5 male thread	76DGCF12M
DASGIP® Triple Port, for 1 vessel, M18x1.5	76DGTRIPM

i For more information go to www.eppendorf.com

i Further information on the DASGIP PBR4 PhotoBioreactor Illumination Module can be found on page 133.

New Brunswick™ BioFlo®/CelliGen® 115 Vessels

Description
New Brunswick BioFlo/CelliGen 115 vessels feature an autoclavable borosilicate glass body and stainless-steel headplate. Vessels are available in four interchangeable sizes, in both heat-blanketed and water-jacketed configuration. A variety of impellers and multiple industry-standard headplate ports are available for user flexibility.

Product features
> Working volume range between 0.4 – 10.5 L
> Magnetic and direct overhead drive options
> Rushton, pitched-blade and marine impellers as well as spinfilters available
> Industry-standard sensor technology for precise measurement of pH, and DO

Technical specifications				
Vessel	**1 L**	**2 L**	**5 L**	**10 L**
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
Material	Borosilicate glass, 316 L stainless steel			
Agitation				
Drive	Overhead direct or magnetic drive			
Agitation speed ranges	50 – 1,200 rpm (direct drive fermentation) 25 – 400 rpm (direct drive cell culture) 25 – 200 rpm (magnetic drive cell culture)			
Impellers	Rushton, pitched-blade, marine or spinfilter			
Gassing				
Gas supply	Sparger			
Sparger type	Ring or microsparger			
Monitoring and control				
Temperature sensor	Pt100 RTD			
Temperature control	Heat blanket or water-jacketed			
Exhaust condensation	Water-cooled			
Recommended sensor lengths				
pH[1)]	200 mm	225 mm	325 mm	425 mm
DO[1)]	160 mm	220 mm	320 mm	420 mm
Redox[1)]	200 mm	200 mm	325 mm	425 mm
Head plate port				
6 mm	1	6	7	7
12 mm	9	7	8	8
19 mm	0	0	1	1
Total	10	13	16	16
Autoclave dimensions (with exhaust condenser)				
Heat blanket vessels				
Outer diameter	24.0 cm (9.4 in)	24.0 cm (9.4 in)	37.0 cm (14.6 in)	29.0 cm (11.4 in)
Height	56.0 cm (22.0 in)	56.0 cm (22.0 in)	65.0 cm (25.6 in)	74.0 cm (29.1 in)
Water-jacketed vessels				
Outer diameter	29.0 cm (11.4 in)	29.0 cm (11.4 in)	29.0 cm (11.4 in)	29.0 cm (11.4 in)
Height	52.0 cm (20.5 in)	56.5 cm (22.2 in)	68.0 cm (26.8 in)	80.0 cm (31.5 in)

[1)] Requires 12 mm compression fitting (M1273-5040)

i For more information go to www.eppendorf.com

New Brunswick™ BioFlo®/CelliGen® 115 Vessel Kits

Contents of Vessel Kits

	Basic Fermentation Vessel Kit		Advanced Fermentation Vessel Kit		Advanced Cell Culture Vessel Kit	
Contents	**Heat blanket**	**Water jacket**	**Heat blanket**	**Water jacket**	**Heat blanket**	**Water jacket**
Dished-bottom vessel w/ stainless-steel head plate	■	■	■	■	■	■
Vessel stand	■		■		■	
Agitation motor (50 – 1,200 rpm)	■	■	■	■		
Agitation motor (25 – 200 rpm)					magnetic drive	magnetic drive
Agitation motor (25 – 400 rpm)					direct drive	direct drive
Heat blanket	■		■		■	
Water jacket		■		■		■
Cooling coil	■		■		■	
Thermowell/RTD	■	■	■	■	■	■
pH/DO sensor kit	o	o	■	■	■	■
Foam/level sensor	o	o	■	■	■	■
Baffle assembly	■	■	■	■		
Rushton impellers (qty. 2)	■	■	■	■	o	o
Pitched-blade impeller (qty. 1)	o	o	o	o	■	■
Ring sparger	■	■	■	■	■	■
Microsparger	o	o	o	o	o	o
Exhaust condenser	o	o	■	■	■	■
Sampling assembly	o	o	■	■	■	■
Tri-port adaptor	o	o	■	■	■	■
Septum kit	o	o	■	■	■	■
Liquid addition tube	o	o	■	■	■	■
Addition bottles (qty. 2)	o	o	■	■	■	■
Harvest tube	■	■	■	■	■	■

■ = standard, o = optional

i For more information go to www.eppendorf.com

Ordering information

New Brunswick™ BioFlo®/CelliGen® 115 Vessel Kits

Vessel	Vessel type	Volume range	Drive	Order no.
Advanced Fermentation Vessel Kit				
1 L	Heat blanket	0.4 – 1.0 L	Direct	M1369-1601
1 L	Water jacket	0.4 – 1.0 L	Direct	M1369-1611
2 L	Heat blanket	0.8 – 2.2 L	Direct	M1369-1602
2 L	Water jacket	0.8 – 2.2 L	Direct	M1369-1612
5 L	Heat blanket	2.0 – 5.6 L	Direct	M1369-1605
5 L	Water jacket	2.0 – 5.6 L	Direct	M1369-1615
10 L	Heat blanket	4.0 – 10.5 L	Direct	M1369-1610
10 L	Water jacket	4.0 – 10.5 L	Direct	M1369-1620
Advanced Cell Culture Vessel Kit				
1 L	Heat blanket	0.4 – 1.0 L	Direct	M1369-1041
1 L	Heat blanket	0.4 – 1.0 L	Magnetic	M1369-1051
1 L	Water jacket	0.4 – 1.0 L	Direct	M1369-1021
1 L	Water jacket	0.4 – 1.0 L	Magnetic	M1369-1031
2 L	Heat blanket	0.8 – 2.2 L	Direct	M1369-1042
2 L	Heat blanket	0.8 – 2.2 L	Magnetic	M1369-1052
2 L	Water jacket	0.8 – 2.2 L	Direct	M1369-1022
2 L	Water jacket	0.8 – 2.2 L	Magnetic	M1369-1032
5 L	Heat blanket	2.0 – 5.6 L	Direct	M1369-1045
5 L	Heat blanket	2.0 – 5.6 L	Magnetic	M1369-1055
5 L	Water jacket	2.0 – 5.6 L	Direct	M1369-1025
5 L	Water jacket	2.0 – 5.6 L	Magnetic	M1369-1035
10 L	Heat blanket	4.0 – 10.5 L	Direct	M1369-1050
10 L	Heat blanket	4.0 – 10.5 L	Magnetic	M1369-1060
10 L	Water jacket	4.0 – 10.5 L	Direct	M1369-1030
10 L	Water jacket	4.0 – 10.5 L	Magnetic	M1369-1040
Basic Fermentation Vessel Kit				
1 L	Heat blanket	0.4 – 1.0 L	Direct	M1369-1001
1 L	Water jacket	0.4 – 1.0 L	Direct	M1369-1011
2 L	Heat blanket	0.8 – 2.2 L	Direct	M1369-1002
2 L	Water jacket	0.8 – 2.2 L	Direct	M1369-1012
5 L	Heat blanket	2.0 – 5.6 L	Direct	M1369-1005
5 L	Water jacket	2.0 – 5.6 L	Direct	M1369-1015
10 L	Heat blanket	4.0 – 10.5 L	Direct	M1369-1010
10 L	Water jacket	4.0 – 10.5 L	Direct	M1369-1020

VESSELS

New Brunswick™ BioFlo®/CelliGen® 115 Vessels

Sensors

> pH sensor kits
> DO sensor kits
> Foam/level sensor kits and cables

Ordering information

Description	Order no.
pH Sensor Kit	
1 L pH Sensor Kit	M1369-9970
2 L pH Sensor Kit	M1369-9977
5 L pH Sensor Kit	M1369-9982
10 L pH Sensor Kit	M1369-9985
DO Sensor Kit	
1 L DO Sensor Kit	M1369-9974
2 L DO Sensor Kit	M1369-9979
5 L DO Sensor Kit	M1369-9986
10 L DO Sensor Kit	M1369-9988
Foam/Level Sensor Kits	
1 L Foam/Level Sensor Kit	M1369-9947
2 L Foam/Level Sensor Kit	M1369-9951
5 L/10 L Foam/Level Sensor Kit	M1369-9960
Replacement Foam/Level Cable and Adaptor	
Foam/Level Sensor Cable	M1369-8035
12 mm Foam/Level Sensor Compression Adaptor	M1273-5042

Internal Accessories

> Impellers
> Microspargers

Ordering information

Description	Order no.
Impellers	
1 L/2 L Pitched-Blade Impeller - upflow	M1273-9206
1 L/ 2 L Pitched-Blade Impeller - downflow	M1273-9290
5 L/10 L Pitched-Blade Impeller - upflow	M1273-9207
5 L/10 L Pitched-Blade Impeller - downflow	M1230-9212
1 L/2 L Marine Impeller	M1273-9901
5 L/10 L Marine Impeller	M1273-9902
1 L/2 L Rushton Impeller	M1273-9291
5 L Rushton Impeller	M1273-9292
10 L Rushton Impeller	M1273-9293
1 L Spinfilter - suspension	M1273-3201
2 L Spinfilter - suspension	M1273-3202
5 L Spinfilter - suspension	M1273-3205
10 L Spinfilter - suspension	M1273-3210
1 L Spinfilter - microcarrier	M1273-3211
2 L Spinfilter - microcarrier	M1273-3212
5 L Spinfilter - microcarrier	M1273-3215
10 L Spinfilter - microcarrier	M1273-3220
Microspargers	
1 L Sintered Microsparger - heat-blanketed vessel	M1273-5007
1 L Sintered Microsparger - water-jacketed vessel	M1273-5003
2 L Sintered Microsparger	M1273-5004
5 L Sintered Microsparger	M1273-5005
10 L Sintered Microsparger	M1273-5006

i For more information go to www.eppendorf.com

New Brunswick™ BioFlo®/CelliGen® 115 Vessels

External Accessories

> Motor assemblies
> Heat blankets and water jacket heaters
> Glass vessels
> Exhaust condensers
> Headplate accessories
> Sampling assemblies

Ordering information

Description	Order no.
Motor Assemblies	
1 L/2 L Direct Drive Fermentation Motor Assembly	M1369-3120
5 L/10 L Direct Drive Fermentation Motor Assembly	M1369-3125
Direct Drive Cell Culture Motor Assembly (all vessels)	M1369-3135
Magnetic drive Cell Culture Motor Assembly (all vessels)	M1369-3130
Replacement Heat Blankets	
1 L Heat Blanket	M1369-8021
2 L Heat Blanket	M1369-8022
5 L Heat Blanket	M1369-8020
10 L Heat Blanket	M1369-8023
Water Jacket Heaters	
1 L/2 L Water Jacket Heater	M1369-3107
5 L/10 L Water Jacket Heater	M1369-3108
Replacement Glass Vessels	
1 L Heat-Blanketed Replacement Glass Vessel	M1273-9907
2 L Heat-Blanketed Replacement Glass Vessel	M1273-9909
5 L Heat-Blanketed Replacement Glass Vessel	M1273-9916
10 L Heat-Blanketed Replacement Glass Vessel	M1273-9918
1 L Water-Jacketed Replacement Glass Vessel	M1273-9908
2 L Water-Jacketed Replacement Glass Vessel	M1273-9915
5 L Water-Jacketed Replacement Glass Vessel	M1273-9917
10 L Water-Jacketed Replacement Glass Vessel	M1273-9919
Exhaust Condensers	
1 L/2 L/5 L Exhaust Condenser	M1273-9945
10 L Exhaust Condenser	M1273-9957
Headplate Adaptors/Plugs	
Tri-port Adaptor	M1273-9961
12 mm Compression Adaptor	M1273-5040
Septum Kit	M1273-3031
Adaptor - 6 mm port to 6 mm tube	M1273-5054
6 mm Addition Tube	M1273-9575
Adaptor - 12 mm port to 6 mm tube	M1273-5056
Adaptor - 12 mm port to 12 mm tube	M1273-5058
6.35mm Port Plug	M1273-9405
12mm Port Plug	M1273-9406
19mm Port Plug	M1273-9407

Ordering information

Description	Order no.
Sampling Assemblies	
1 L Sampling Assembly	M1273-9946
2 L Sampling Assembly	M1273-9949
5 L Sampling Assembly	M1273-9953
10 L Sampling Assembly	M1273-9956

Kits

> Spare parts kit
> Retrofitting kits

Ordering information

Description	Order no.
Spare Parts Kits	
1 L/2 L Spare Parts Kit - heat-blanketed vessel	M1273-9991
5 L/10 L Spare Parts Kit - heat-blanketed vessel	M1273-9992
1 L/2 L Spare Parts Kit - water-jacketed vessel	M1273-9998
5 L/10 L Spare Parts Kit - water-jacketed vessel	M1273-9999
Head plate port washers/O-rings	M1273-9900
Retro Kits, convert New Brunswick BioFlo/CelliGen 110 vessels for use with a New Brunswick BioFlo/CelliGen 115 controller	
Water-Jacketed/Magnetic drive (all vessel sizes)	M1369-9911
Water-Jacketed/Direct Drive (all vessel sizes)	M1369-9914
1 L/2 L Heat Blanket/Direct Drive	M1369-9912
5 L/10 L Heat Blanket/Direct Drive	M1369-9913
Start-up kit , with tubing connectors, cable ties, clamps	M1369-0300
Additional Accessories	
Water Regulator/Filter Kit (single system)	M1117-2040
Air Regulator/Filter Kit (single system)	M1230-3030
Bearing Housing Cap (10 pack)	M1273-9936
Addition Bottle Kit (250 mL)	M1273-9989
Addition Bottle Kit (500 mL)	M1273-9990
Addition Bottle Holder	M1273-9940
O-Ring Lubricant	P0860-1050
Silicone Tubing Clamp	P0160-4460
Angled Autoclave Rack	M1273-9266
Polysulfone Quick Connect - 1/4 in (female)	P0240-2680
Polysulfone Quick Connect - 1/4 in (male)	P0240-2670

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

i For more information go to www.eppendorf.com

Technical specifications				
Vessel	**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 L	1.9 – 5.6 L	3.5 – 10.5 L
Material	Borosilicate glass, 316 L stainless steel, EPDM o-rings			
Agitation				
Drive	Overhead direct or magnetic drive			
Agitation speed ranges	25 – 1200 rpm (direct drive) 25 – 500 rpm (magnetic drive)			
Impellers	2 x Rushton, 1 x pitched-blade, 1 x marine, spinfilter, cell-lift or packed-bed			
Gassing				
Gas supply	Overlay and/or sparger			
Sparger type	Ring or microsparger			
Monitoring and control				
Temperature control				
Temperature sensor	Pt100 RTD			
Exhaust condensation	Water-Cooled			
Recommended sensor lengths				
pH[1)]	200 mm	225 mm	225 mm	325 mm
pH (packed-bed)	200 mm	200 mm	200 mm	225 mm
DO[1)]	220 mm	220 mm	320 mm	320 mm
DO (packed-bed)	120 mm	120 mm	220 mm	220 mm
Redox[1)]	200 mm	200 mm	200 mm	325 mm
CO_2[1)]	220 mm	220 mm	320 mm	320 mm
Head plate port				
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 condenser)				
Stainless-steel dished-bottom vessels				
Outer diameter	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	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)] Requires 12 mm compression fitting (M1287-5030)

Ordering information

Description	Order no.
Vessel Bundles, include vessel with bearing housing assembly, motor assembly, vessel connection kit, impeller kit (direct drive vessel bundles only) - sensors and sensor cables sold separately	
1 L Vessel Bundle, stainless-steel dished bottom, direct drive	M1379-0300
3 L Vessel Bundle, stainless-steel dished bottom, direct drive	M1379-0301
5 L Vessel Bundle, stainless-steel dished bottom, direct drive	M1379-0302
10 L Vessel Bundle, stainless-steel dished bottom, direct drive	M1379-0303
1 L Vessel Bundle, water-jacketed, magnetic drive	M1379-0310
3 L Vessel Bundle, water-jacketed, magnetic drive	M1379-0311
5 L Vessel Bundle, water-jacketed, magnetic drive	M1379-0312
10 L Vessel Bundle, water-jacketed, magnetic drive	M1379-0313

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
> Sensors and cables sold separately
> Eight independently controlled process gas supplies

Ordering information

Description	Order no.
Vessel Validation	M1379-0103
Vessel Connection Kit	M1379-0115
Direct Drive Vessel Assemblies	
1 L, stainless-steel dished-bottom	M1379-1001
3 L, stainless-steel dished-bottom	M1379-1002
5 L, stainless-steel dished-bottom	M1379-1003
10 L, stainless-steel dished-bottom	M1379-1004
1 L, water-jacketed	M1379-1005
3 L, water-jacketed	M1379-1006
5 L, water-jacketed	M1379-1007
10 L, water-jacketed	M1379-1008
Magnetic drive Vessel Assemblies	
1 L, stainless-steel dished-bottom	M1379-1101
3 L, stainless-steel dished-bottom	M1379-1102
5 L, stainless-steel dished-bottom	M1379-1103
10 L, stainless-steel dished-bottom	M1379-1104
1 L, water-jacketed	M1379-1105
3 L, water-jacketed	M1379-1106
5 L, water-jacketed	M1379-1107
10 L, water-jacketed	M1379-1108
Motor Assemblies	
Direct-Drive Motor, autoclavable vessels	M1379-0800
Magnetic-Drive Motor, autoclavable vessels	M1379-0750
Direct Drive Impeller Kits	
1 L Rushton	M1379-1011
3 L Rushton	M1379-1012
5 L Rushton	M1379-1013
10 L Rushton	M1379-1014
1 L Pitched-Blade	M1379-1015
3 L Pitched-Blade	M1379-1016

i For more information go to www.eppendorf.com

Ordering information

Description	Order no.
5 L Pitched-Blade	M1379-1017
10 L Pitched-Blade	M1379-1018
1 L Marine	M1379-1019
3 L Marine	M1379-1020
5 L Marine	M1379-1021
10 L Marine	M1379-1022
Magnetic drive Impeller Kits	
1 L Pitched-Blade	M1379-5068
3 L Pitched-Blade	M1379-5069
5 L Pitched-Blade	M1379-5070
10 L Pitched-Blade	M1379-5071
1 L Marine	M1379-5072
3 L Marine	M1379-5073
5 L Marine	M1379-5074
10 L Marine	M1379-5075
1 L Spinfilter - 10 µm	M1379-1125
3 L Spinfilter - 10 µm	M1379-1126
5 L Spinfilter - 10 µm	M1379-1127
10 L Spinfilter - 10 µm	M1379-1128
1 L Spinfilter - 75 µm	M1379-1135
3 L Spinfilter - 75 µm	M1379-1136
5 L Spinfilter - 75 µm	M1379-1137
10 L Spinfilter - 75 µm	M1379-1138
1 L Cell-Lift - 80 µm	M1379-1110
3 L Cell-Lift - 80 µm	M1379-1111
5 L Cell-Lift - 80 µm	M1379-1112
10 L Cell-Lift - 80 µm	M1379-1113
Air Wash Kit (required with Cell-Lift Impeller Kits)	M1287-1150
1 L Packed-bed	M1379-1140
3 L Packed-bed	M1379-1141
5 L Packed-bed	M1379-1142
10 L Packed-bed	M1379-1143
Baffle Assemblies, included in direct drive vessel assemblies	
1 L Baffle	M1287-9217
3 L Baffle	M1287-9218
5 L Baffle	M1287-9219
10 L Baffle	M1287-9220
Decanter Kit	
1 L Decanter Kit	M1287-1190
3 L Decanter Kit	M1287-1191
5 L Decanter Kit	M1287-1192
10 L Decanter Kit	M1287-1193
BioFlo® /CelliGen® 310 Replacement Parts	
Direct-drive motor assembly	M1287-0800
Magnetic-drive motor assembly	M1287-0750
RTD	M1294-8013
Foam/level sensor cable	M1297-8032
Sampling assembly	M1287-5042

BioFlo® 320 Vessels

Sensors

> Your BioFlo 320 can accommodate up to four universal connections for feedback sensors
> pH , DO, Redox, CO_2
> ISM sensor information below, for analog sensor information please see Sensors section

Ordering information	
Description	**Order no.**
pH/Redox Sensors, ISM	
12/120 mm	P0720-6656
12/225 mm	P0720-6657
12/325 mm	P0720-6658
12/425 mm	P0720-6659
Polarographic DO Sensors, ISM	
12/120 mm	P0720-6652
12/220 mm	P0720-6653
12/320 mm	P0720-6654
12/420 mm	P0720-6655
Optical DO Sensor, ISM	
12/120mm	P0720-6651
12/220 mm	P0720-6660
12/320 mm	P0720-6661
12/420 mm	P0720-6662
CO_2 Sensors, ISM	
12/120 mm	P0720-6663
12/220 mm	P0720-6664
12/320 mm	P0720-6665
Cables	
pH/DO/Redox/CO_2 ISM Sensor, 1 m	M1379-8108
Analog pH Sensor, 1 m	M1379-8104
Analog Redox Sensor, 1 m	M1379-8105
Analog DO Sensor, 1 m	M1379-8106
Optical DO ISM Sensor, 1 m	M1379-8107
Foam/Level Sensor Cable	M1379-8109
Sensors	
Foam/Level Sensor, 372 mm	M1273-5036
Foam/Level Sensor, 206 mm	F5-137C
RTD, all sizes (except BioBLU 1)	M1379-8100

i For more information go to www.eppendorf.com

Impellers

> Choose from a variety of impellers for your process needs
> Rushton, Pitched-Blade, and Marine

Ordering information	
Description	**Order no.**
Replacement Impellers - Direct Drive Only	
1 L Rushton	M1379-9295
3 L Rushton	M1379-9296
5 L Rushton	M1379-9297
10 L Rushton	M1379-9298
10 L Pitched-Blade	M1379-9230
10 L Marine	M1379-9954
Replacement Impellers - Direct or Magnetic drive	
1 L Pitched-Blade	M1287-9227
3 L Pitched-Blade	M1287-9228
5 L Pitched-Blade	M1287-9229
1/3 L Marine	M1287-9950
5 L Marine	M1287-9952
Replacement Impellers - Magnetic drive Only	
10 L Pitched-Blade	M1287-9230
10 L Marine	M1287-9954
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

BioFlo® 320 Vessels

Ordering information	
Description	**Order no.**
Head Plate Adaptors	
Septum Adaptor Kit, Pg 13.5	M1287-5031
Sensor Adaptor Kit, Pg 13.5 to 12 mm	M1287-5030
Single Addition Adaptor, Pg 13.5	M1287-5043
Tri-port (3 x 3.2 mm) Adaptor, Pg 13.5	M1287-5035
Foam/Level Sensor Adaptor, Pg 13.5	M1287-5032
Consumables	
User's Kit	M1379-0110
Head plate O-ring Kit	M1379-0121
Filter, Acro50, 10-pack	M1379-0140
Filter, Acro300, 3-pack	P0200-4130
Kynar Connection Kit, assorted	M1379-0122
Teflon Ferrule Kit, assorted	M1379-0116
Polysulfone Connection Kit, assorted	M1379-0135
Luer Connector (Qty. 10)	M1379-0130
Needle-free Sampling Valve (Qty. 10)	M1379-0131
Hosebarb, sparge/overlay (Qty. 4)	M1379-0145
Tubing Clamp, Plastic (Qty. 20)	M1379-0155
Cable Tie Kit	P0700-8125
O-Ring, for 1 L Head Plate/Heat Exchanger Base (stainless-steel dished-bottom vessel)	P0280-8002
O-Ring, for 3 L Head Plate/Heat Exchanger Base (stainless-steel dished-bottom vessel) or 1 L Base Plate (water-jacketed vessel)	P0280-8082
O-Ring, for 5 L Head Plate/Heat Exchanger Base (stainless-steel dished-bottom vessel) or 3 L Base Plate (water-jacketed vessel)	P0280-8122
O-Ring, for 10 L Head Plate/Heat Exchanger Base (stainless-steel dished-bottom vessel) or 5 L Base Plate (water-jacketed vessel)	P0280-8182
O-Ring, for 10 L Base Plate (water-jacketed vessel)	P0280-8242
Replacement Head Plates	
1 L Head Plate	M1287-6950
3 L Head Plate	M1287-6951
5 L Head Plate	M1287-6952
10 L Head Plate	M1287-6953
Replacement Direct Drive Assemblies	
1 L Direct Drive Bearing Assembly	M1379-4031
3 L Direct Drive Bearing Assembly	M1379-4032
5 L Direct Drive Bearing Assembly	M1379-4033
10 L Direct Drive Bearing Assembly	M1379-4034
Replacement Magnetic drive Assemblies	
Bearing Housing Assembly, all sizes	M1379-4035
1 L Magnetic drive Shaft	M1287-5050
3 L Magnetic drive Shaft	M1287-5051
5 L Magnetic drive Shaft	M1287-5052
10 L Magnetic drive Shaft	M1287-5053
Replacement Magnetic drive Adaptors	
Magnetic drive Coupling, autoclavable	M1379-9403

Ordering information	
Description	**Order no.**
Magnet, autoclavable	P0660-1171
Magnetic drive Coupling, BioBLU	M1374-9102
Magnet, BioBLU	P0660-1172
Magnetic drive Coupling, (BioBLU 1 only)	M1379-9412
Magnet (BioBLU 1 only)	M1379-9656
Replacement Exhaust Condenser	
1 L Exhaust Condenser	M1287-5039
3 L/5 L Exhaust Condenser	M1287-5041
10 L Exhaust Condenser	M1287-5045
Single-Use Vessel Accessories	
Magnetic drive, single-use (BioBLU 1)	M1379-0850
Magnetic drive, single-use (BioBLU 5, 14, 50)	M1379-9931
Heat Blanket, BioBLU® 1c (100 - 240 V)	M1379-8200
Relief Valve Assembly, 6.4 psig	M1379-1176
Vessel Stand, BioBLU® 1	M1379-4000
Heat Blanket, BioBLU® 5	M1379-8116
Heat Blanket, BioBLU® 14	M1379-8114
Heat Blanket, BioBLU® 50	M1379-8117
Exhaust Heat Blanket, BioBLU®	M1379-8115
RTD, BioBLU® 1	M1379-8112
DASGIP® DO Sensor, for 1 single-use vessel, 220 mm (DAS)	76DGPODAS220
DASGIP® EGC4 Exhaust Condenser Controller, for 4 Peltier actuators	76DGEGC4
DASGIP® Exhaust Condenser, Peltier, for 1 single-use vessel (BioBLU® 1c)	76DGCONDSU1C
Media /Supplement Addition Kits	
500 mL Media/Supplement Addition Kit	P0640-8860
1 L Media/Supplement Addition Kit	P0640-8861
5 L Media/Supplement Addition Kit	P0640-8862
10 L Media/Supplement Addition Kit	P0640-8863
„Y" Connector for custom manifolds	P0620-0947
Replacement Parts	
Optical pH sensor and cable, BioBLU® 5c	P0300-2371
Optical pH sensor and cable, BioBLU® 14c	P0300-2370
Optical pH sensor and cable, BioBLU® 50c	P0300-2374
Optical pH sensor and cable, BioBLU® 5p (packed-bed vessel)	P0300-2372
Additional Accessories	
Regulator Tower (4-gas)	M1363-5002

i For more information go to www.eppendorf.com

VESSELS

BioFlo® 320 Vessels

Ordering information	
Description	**Order no.**
Replacement Glass Vessel	
1 L, stainless-steel dished bottom	M1287-9930
3 L, stainless-steel dished bottom	M1287-9931
5 L, stainless-steel dished bottom	M1287-9932
10 L, stainless-steel dished bottom	M1287-9933
1 L, water-jacketed	M1287-9920
3 L, water-jacketed	M1287-9921
5 L, water-jacketed	M1287-9922
10 L, water-jacketed	M1287-9923
Replacement Macrosparge Elements	
1 L Macrosparge	M1287-9475
3 L Macrosparge	M1287-9476
5 L Macrosparge	M1287-9477
10 L Macrosparge	M1287-9478
Replacement Microsparge Elements	
1 L Microsparge	M1287-5010
3 L Microsparge	M1287-5011
5 L Microsparge	M1287-5012
10 L Microsparge	M1287-5013
Replacement Thermowells	
1 L Thermowell	M1287-9213
3 L Thermowell	M1287-9214
5 L Thermowell	M1287-9215
10 L Thermowells	M1287-9216
Replacement Sample Tube	
1 L Sample Tube	M1287-9486
3 L Sample Tube	M1287-9487
5 L Sample Tube	M1287-9488
10 L Sample Tube	M1287-9489
Replacement Harvest Tube	
1 L Harvest Tube	M1287-9482
3 L Harvest Tube	M1287-9483
5 L Harvest Tube	M1287-9484
10 L Harvest Tube	M1287-9485
Accessories/Kits	
Perfusion Kit, all sizes	M1379-1185
1 L Spare Parts Kit, stainless-steel dished bottom	M1287-6020
3 L Spare Parts Kit, stainless-steel dished bottom	M1287-6021
5 L Spare Parts Kit, stainless-steel dished bottom	M1287-6022
10 L Spare Parts Kit, stainless-steel dished bottom	M1287-6023
1 L Spare Parts Kit, water-jacketed	M1287-6030
3 L Spare Parts Kit, water-jacketed	M1287-6031
5 L Spare Parts Kit, water-jacketed	M1287-6032
10 L Spare Parts Kit, water-jacketed	M1287-6033
Water Connection Kit, all Sizes	M1287-9911

i For more information go to www.eppendorf.com

New Brunswick™ BioFlo® 415 Vessels

Description
New Brunswick BioFlo 415 Vessel Kits include jacketed stainless-steel pressure vessel, top magnetic drive motor, exhaust condenser, and sparger assembly with SIP inlet filter housing, foam/level sensor kit, and bottom drain valve.

Product features
> Three interchangeable stainless-steel vessels
> One Thermal Mass Flow Controller (TMFC) is standard, with multiple TMFCs optional through customization
> Multiple impeller options are available

New Brunswick™ BioFlo® 415 Vessel Kits

Technical specifications			
Vessel	**5 L**	**10 L**	**15 L**
Volume	7 L	14 L	19.5 L
Working volume	2.0 – 5.25 L	4.0 – 10.5 L	5.0 – 15.5 L
Material	316 L stainless steel	316 L stainless steel	316 L stainless steel
Agitation			
Drive	Overhead magnetic drive	Overhead magnetic drive	Overhead magnetic drive
Agitation speed ranges	50 – 1,000 rpm	50 – 1,000 rpm	50 – 1,000 rpm
Impellers	2x Rushton	2x Rushton	3x Rushton
Gassing			
Gas supply	Overlay and/or sparger	Overlay and/or sparger	Overlay and/or sparger
Sparger type	Ring	Ring	Ring
Monitoring and control			
T sensor	Pt100 RTD	Pt100 RTD	Pt100 RTD
Temperature control	Water jacket w/ heat band	Water jacket w/ heat band	Water jacket w/ heat band
Exhaust condensation	Water-cooled	Water-cooled	Water-cooled
Recommended sensor lengths			
pH	325 mm	425 mm	625 mm
DO	320 mm	420 mm	625 mm
Redox	325 mm	425 mm	625 mm
Head plate port			
12 mm	5	6	6
Pg 13.5 ports	2	2	2
19 mm	1	1	1
Total	8	9	9

Ordering information

Description	Order no.
BioFlo® 415 Spare Vessel Assembly Kits, includes jacketed stainless-steel pressure vessel, top magnetic drive motor, exhaust condenser, and sparger assembly with SIP inlet filter housing, foam/level sensor kit, and bottom drain valve.	
5 L Vessel, magnetic drive assembly	M1360-2020
10 L Vessel, magnetic drive assembly	M1360-2021
15 L Vessel, magnetic drive assembly	M1360-2023

i For more information go to www.eppendorf.com

Technical specifications subject to change.

Accessories

Description	Order no.
pH Sensor Kits	
Secondary DO - pH/Redox Board	M1287-3540
5 L pH Sensor Kit	M1294-9820
10 L pH Sensor Kit	M1294-9824
15 L pH Sensor Kit	M1294-9828
DO Sensor Kits	
5 L DO Sensor Kit	M1294-9822
10 L DO Sensor Kit	M1294-9826
15 L DO Sensor Kit	M1294-9830
DO Membrane Replacement Kit - Hamilton®	P0720-6570
Redox Sensor Kits	
5 L Redox Sensor Kit	M1360-9832
10 L Redox Sensor Kit	M1360-9834
15 L Redox Sensor Kit	M1360-9836
Impeller Kits	
5 L Pitched-Blade Impeller (upflow)	M1273-9206
5 L Pitched-Blade Impeller (downflow)	M1273-9290
10 L Pitched-Blade Impeller (upflow)	M1294-9940
10 L Pitched-Blade Impeller (downflow)	M1294-9941
15 L Pitched-Blade Impeller (upflow)	M1294-9942
15 L Pitched-Blade Impeller (downflow)	M1294-9943
5 L Marine Impeller	M1294-9948
10 L Marine Impeller	M1294-9944
15 L Marine Impeller	M1294-9945
Miscellaneous	
19mm 7-Port Septum	M1294-5023
19mm to Pg 13.5 Adaptor	M1294-9544
19mm Sensor Adaptor	M1294-9542
Water Regulator/Filter Kit	M1273-5001
18 Gauge Needle (3.8 cm Length) - Pack of 100	P0440-0064
Baffle Plug Kit	M1294-9954
Sampling Assembly	M1294-5013
Spare Parts Kit	M1360-9969
Air Regulator/Filter Kit	M1273-5002
Luer-Lock Syringe Connector	P0240-5000

VESSELS

Software

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 the new DASware control 5 as the key to parallel processing.

Model	New Brunswick™ BioCommand® SCADA Software	DASware® control	DASware® migrate
Page(s)	**104**	**106**	**108**
Suitable systems[1]	All New Brunswick systems	DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]	DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]
Process control	■	■	
Number of parallel units per controller	5	DASbox: up to 24 DASGIP: up to 16	
Automated data logging	■	■	
Data historian	■	■	
Remote control and monitoring (web browser)	■	■	
Remote control and monitoring (iPhone®, iPod touch®, iPad®)			
Event logging	o	■	
Online charts/trending	■	■	
Analyzer integration	o		
Integration to 3rd party control systems	■		
Design of Experiments			
Configurable database queries and recipes	■[3]		
Cross-system and historical comparison			
Automated Microsoft® Excel® and Adobe® PDF export	■	■	
Integration of 3rd party bioreactor control units			■
Validation	o	IQ/OQ package optional	

[1] Systems: NB=New Brunswick, DG=DASGIP, [2] via DASware migrate, [3] recipes only

■ = standard, o = optional

DASware® access	DASware® analyze	DASware® connect	DASware® design	DASware® discover
109	**110**	**112**	**113**	**114**
DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]	DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]	DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]	DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]	DASbox, DG, NB (BioFlo/CelliGen 115, BioFlo 320, CelliGen BLU, BioFlo 415)[2], 3rd party[2]
				■
■				■
■				■
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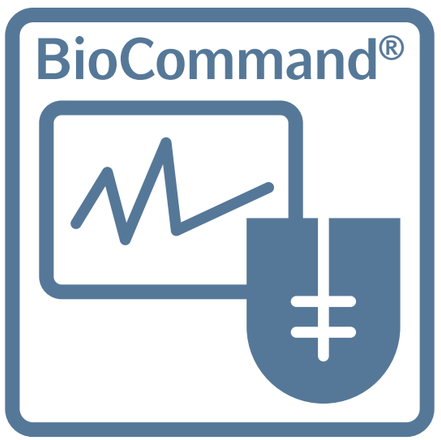
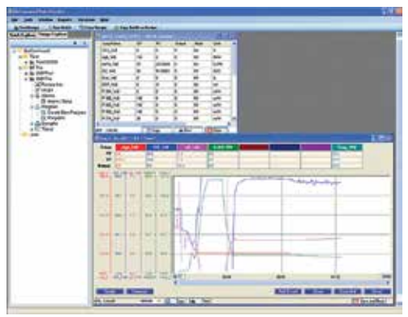
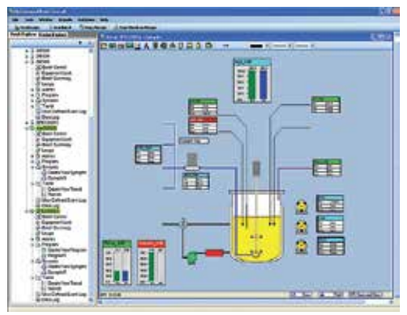
i For more information go to www.eppendorf.com

New Brunswick™ BioCommand® SCADA Software





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.

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 meet 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.

Product features
> New Brunswick BioCommand Track and 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-out 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 FDA-validated processes.
> New Brunswick OPC Server: used to interface and connect OPC-compliant third-party equipment to CelliGen/BioFlo 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.

Ordering information

Description	Order no.
New Brunswick™ BioCommand® Track & Trend	M1326-0000
New Brunswick™ BioCommand® Batch Control	M1326-0010
New Brunswick™ BioCommand® Batch Control Plus	M1326-0020
New Brunswick™ OPC Server	M1291-0011

Accessories

Description	Order no.
RS-232 8-Port interface box, converts up to eight RS-232 COM ports into USB	M1287-0020
New Brunswick™ BioCommand® Converter Cable, converts RS-232 signal to RS-422 to facilitate BioCommand communication with controller	M1286-8010
New Brunswick™ BioCommand® Converter, converts RS-232 serial pin-out to RS-422 cable connection	P0460-7550
New Brunswick™ BioCommand® Interconnecting Cable, one cable is included with each BioCommand package. Purchase one additional cable for each additional process controller. Multiple cables may be connected for longer lengths. Length each: 16 meters	M1171-8010
New Brunswick™ BioCommand® Multi-Controller Adapter Kit, contains one RS-422 serial cable (M1171-8010), one RS-232/RS-422 converter (P0460-7550) and one BioCommand® cable (M1286-8010).	M1286-0100

i For more information go to www.eppendorf.com

SOFTWARE

DASware® control

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

Improved functionality, faster data processing and a new fresh look: DASGIP Control is now DASware control 5

SOFTWARE

Description
DASGIP Control is now DASware control 5! 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
> 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 3rd 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

Ordering information

Description	Order no.
DASware® control, incl. PC, OS, and licenses	
for 4-fold DASGIP® system	76DGCS4
for 8-fold DASGIP® system	76DGCS8
for 16-fold DASGIP® system	76DGCS16
for 4-fold DASbox® system	76DXCS4
for 8-fold DASbox® system	76DXCS8
for 16-fold DASbox® system	76DXCS16
for 24-fold DASbox® system	76DXCS24
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	76DGCSP4
for 8-fold DASGIP® system	76DGCSP8
for 16-fold DASGIP® system	76DGCSP16
for 4-fold DASbox® system	76DXCSP4
for 8-fold DASbox® system	76DXCSP8
for 16-fold DASbox® system	76DXCSP16
for 24-fold DASbox® system	76DXCSP24
DASware® control professional Upgrade, incl. database update and licenses	
for 4-fold DASGIP® system	76DGCSP+4
for 4-fold DASbox® system	76DXCSP+4

i For more information go to www.eppendorf.com

DASware® migrate

DASware control and powerful Microsoft Excel reporting as well as the suite of DASware solutions. All relevant process parameters can be simultaneously controlled, monitored and online visualized within a single user interface. DASware migrate easily integrates DASGIP GA exhaust analyzer, DASGIP OD4 biomass monitor, DASGIP MP8 precision multi pumps, and gas mixing modules DASGIP MX4/4 into 3rd party bioreactor controllers. Thereby, DASware migrate provides all crucial advantages of the DASware bioprocessing software to users in microbiology and cell culture.

Product features
> Access to the complete DASware software solution suite (seperate licenses)
> Comprehensive information management and process data historian, shared recipes
> Powerful Microsoft® Excel® report generator provides recipe information, process information as well as event reporting
> Facilitates DoE approaches, process automation as well as data management and storage consistent with QbD guidelines
> Allows for integration of DASGIP GA4 exhaust analyzer, DASGIP OD4 biomass monitor, DASGIP MP8 precision multi pumps, and gas mixing modules DASGIP MX4/4 with New Brunswick or 3rd party bioreactor controllers
> Optionally enables integration of 3rd party autosamplers and analyzers with direct feedback from the system according to online measured analytical data
> Optional remote control of bioprocesses via PC, Notebook, iPhone®, iPod touch® or iPad®

Description
DASware migrate provides the ability to operate a set of bioreactor units collectively – including shared recipes and process data and information management. It has been proven effective in the integration not only of Eppendorf New Brunswick BioFlo/CelliGen 115 and 310 as well as BioFlo 415 and CelliGen BLU, but also external bioreactor controllers such as Sartorius® BIOSTAT® Bplus DCU and Qplus and Applikon® 1010, 1030 & ez-Control.
Utilizing this solution enables access to the advanced features of

Ordering information

Description	Order no.
DASware® migrate, license for 1 vessel	
for New Brunswick controllers	76DWMIGNB
for 3rd party systems	76DWMIGTP
DASware® migrate, incl. PC, OS	
package to operate New Brunswick™ systems (up to 16 vessels)	76DWMIGNBPC
package to operate 3rd party systems (up to 16 vessels)	76DWMIGTPPC

i For more information go to www.eppendorf.com

DASware® access

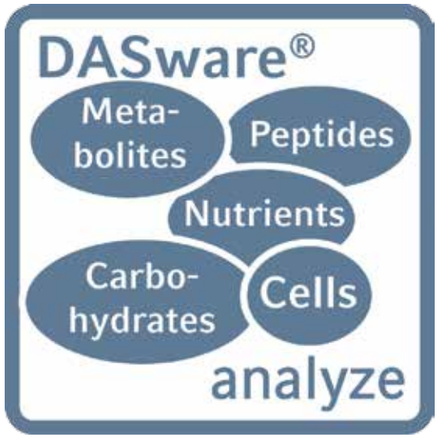
Description
DASware access provides an unprecedented level of freedom and flexibility in the management of bioprocesses. Each DASware control system on-site is accessible remotely by one or more remote clients simultaneously. Depending on the user-defined configuration and associated authentication either 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.

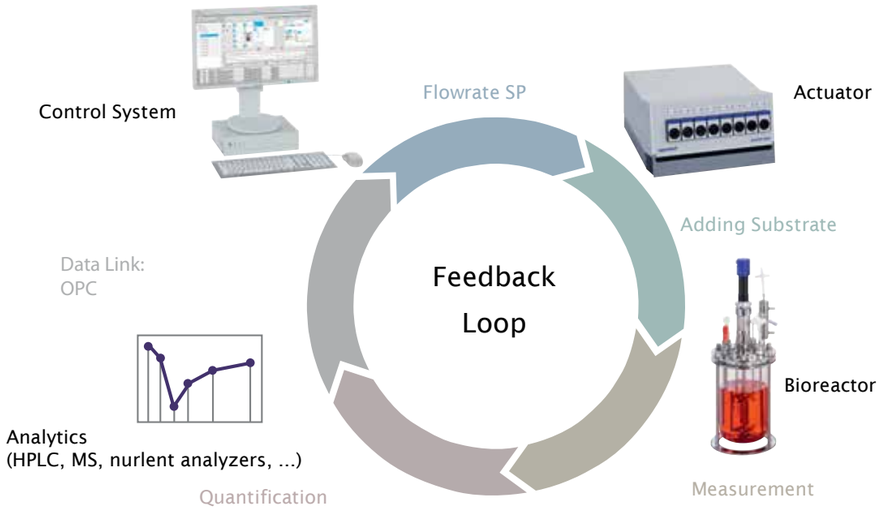
Product features
> Remote monitoring and control of bioprocesses with multiple clients at the same time
> Remote access to online charts/trending
> Used via Wi-Fi, Intranet, VPN & 3G/4G with PC and Notebook or with the DASGIP iApp for iPhone, iPod touch and iPad (available in the App Store®)
> Supports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

DASware® analyze





Sensor

DASware® analyze seamlessly integrates 3rd party analyzers - allowing real-time measurement and feedback loops.

SOFTWARE

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 3rd 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

Learn how a mass spectrometer was integrated with an 8-fold DASGIP Parallel Bioreactor System at Gevo®.

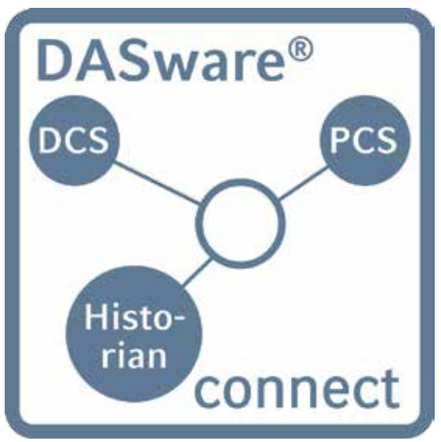
i For more information go to www.eppendorf.com

Ordering information

Description	Order no.
DASware® analyze, OPC client standard (OPC DA e.g. for ext. analyzer)	
for 1 vessel	76DWANA
DASware® analyze, serial/Modbus integration (e.g. for ext. biomass sensors)	
license for 1 vessel	76DWANAM
DASware® analyze, OPC client professional incl. 1x tunneller lic. (OPC DA e.g. for ext. 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

SOFTWARE

DASware® connect



SOFTWARE

Description
DASware connect was designed to integrate DASGIP Parallel Bioreactor Systems, New Brunswick bioreactors and fermentors and 3rd party bioreactor controllers 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 from 3rd party products.

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

i For more information go to www.eppendorf.com

DASware® design

SOFTWARE

Description
DASGIP bioreactor systems serve as an ideal platform to carry out Design of Experiments (DoE) on bioreactors in parallel. There is a multitude of 3rd party DoE software tools available on the market – DASware design automatically compiles DoE information from such tools into recipes and feedback response information into DoE and multivariate analysis and reporting tools.
DASware design 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 the most powerful 3rd party DoE tools like JMP®, MODDE® (Umetrics), Minitab®, and Design-Expert® (Stat-Ease®). 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

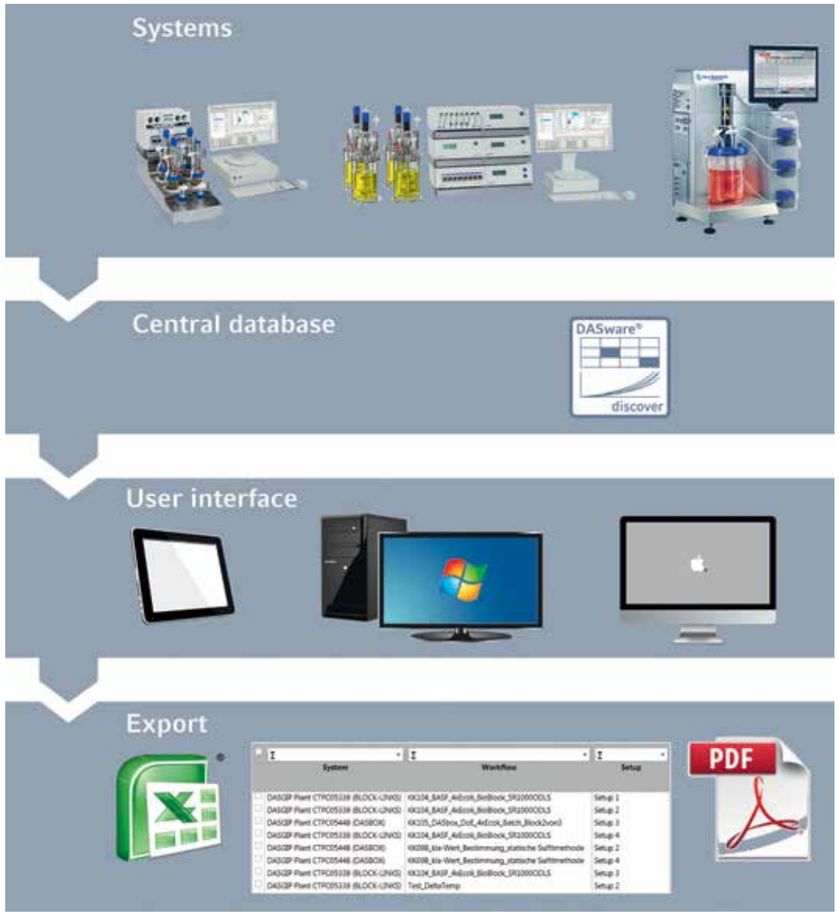
Description	Order no.
DASware® design, DoE and local information management	
license for 1 vessel	76DWDOE

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.

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 DASGIP and 3rd party systems

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



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

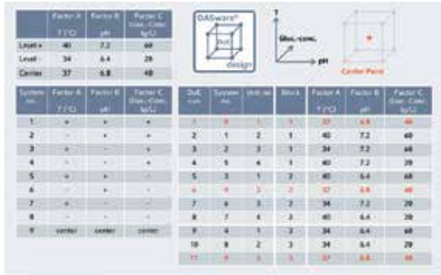
i For more information go to www.eppendorf.com

Focus Topic: DoE

DoE Bioprocess Development

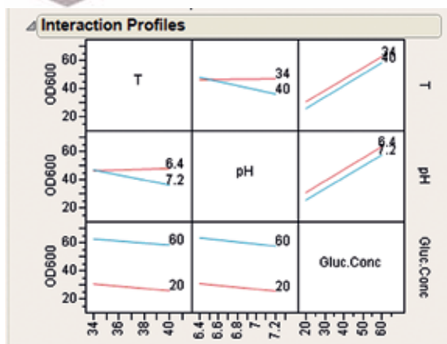
DASware®: The effective route to Design of Experiments in early-stage bioprocess development

State-of-the-art pharmaceutical process development follows the Quality by Design (QbD) principles even in early process development. Risk analysis is used to identify the critical process parameters considered to have an impact on product quality. Design of Experiments (DoE) and multivariate analysis (MVA) are structured approaches to the development and optimization of processes. The comprehensive Eppendorf DASware design software easily applies DoE to bioreactor systems.



Design space and resource mapping
Upper and lower levels for each factor (e.g. pH, temperature, feed stock concentration) are defined. The DASware DoE builder then creates a full-factorial design chart. Alternatively, the design can be created using common 3rd party DoE software and later imported into DASware with a single mouse click. Resource mapping automatically compiles individual, process-specific instructions with DoE information and available hardware resources.

Parallel bioprocess operation
Using the DASbox Mini Bioreactor System multiple process runs can be carried out in parallel. All critical process values are monitored and documented.



DoE analysis
The biomass production (OD_{600}) can serve as response value. Analysis and a consistency check are performed using the comprehensive DASGIP information manager, along with user-friendly chart displays. Via simple exports, the data can also be analyzed with renowned 3rd party DoE tools.

Source: JMP®

Gathering full process understanding, and tracking any interfering factors and interacting parameters at an early stage of product/process development are the keys to a shorter time to market. Eppendorf bioprocess software eases DoE approaches and supports user-friendly and comprehensive documentation, data analysis and information management.

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.




Model	DASGIP® PHPO	DASGIP® OD4	DASGIP® GA	DASGIP® TC4SC4
Page(s)	122	124	125	126
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

SELECTION GUIDE

i For more information go to www.eppendorf.com




DASGIP® MP	DASGIP® MX	DASGIP® MF4	DASGIP® PBR4
129	130	132	133
4	4 /1	4	4
■	■	■	■
			■
■			
	TMFC	TMFC	
	1/2/4 gas (air, N_2, O_2, CO_2)	1 gas (e.g. air, N_2, O_2, CO_2)	

SELECTION GUIDE

Eppendorf AG · 22331 Hamburg · Germany · eppendorf@eppendorf.com · www.eppendorf.com

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.

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

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

i For more information go to www.eppendorf.com

Technical specifications

Model	PH4PO4	PH4PO4L	PH8PO8	PH4RD4	PH4PO4RD4L
Power supply	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz
Dimensions (W × D × H) / Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in
Weight	8 kg	8 kg	8.2 kg	8 kg	9.4 kg
Typical power consumption	31 W (230 V) / 20 W (115 V)	31 W (230 V) / 20 W (115 V)	31 W (230 V) / 20 W (115 V)	31 W (230 V) / 20 W (115 V)	31 W (230 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
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, w/o sensors	
pH and DO	76DGPH4PO4
DASGIP® PH4PO4L Monitoring Module, for 4 vessels, w/o sensors	
pH and DO with level/anti foam option	76DGPH4PO4L
DASGIP® PH8PO8 Monitoring Module, for 8 vessels w/o sensors, pH and DO	76DGPH8PO8
DASGIP® PH4RD4 Monitoring Module, for 4 vessels w/o sensors, pH and redox	76DGPH4RD4
DASGIP® PH4PO4RD4L Monitoring Module, for 4 vessels, w/o sensors, pH, DO and redox with level/anti foam option	76DGPH4PO4RDL

Accessories

Description	Order no.
DASGIP® Cable for DO Sensor, for 1 vessel, T82 connector	76DGPOT82
DASGIP® Cable for Level Sensor, for 1 vessel	76DGLVLC
DASGIP® Cable for DO Sensor (optical), for 1 vessel, VP8 connector	76DGPOVP8
DASGIP® Cable for pH/Redox Sensor, for 1 vessel, AK9 connector	76DGPHRDAK9
DASGIP® Platinum RTD Temperature Sensor, 100 Ohm class A	
OD 1.6 mm, L 300 mm, cable L 3 m	78103304

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 OD_{600} 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

MONITORING & CONTROL

Technical specifications	
Model	**DASGIP® OD4**
Power supply	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 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, w/o sensors	76DGOD4
DASGIP® OD4 Stand-Alone Monitoring Module for Optical Density Measurement, for 4 vessels, incl. transmitter and cables, w/o sensors incl. EasyAccess Software	76DMOD4

i For more information go to www.eppendorf.com

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. Systems of up to sixteen bioreactors can be monitored. 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 3rd party systems.

Product features
> Online calculation of OTR, CTR and RQ allowing for direct feedback
> Available with two alternative electrochemical O_2 sensors to best serve individual customer's needs (1 – 50 % O_2 or 0 – 100 % O_2)
> Can be operated as a stand-alone solution with EasyAccess Software
> Humidity and temperature compensation (rHT option)

MONITORING & CONTROL

Technical specifications		
Model	**DASGIP® GA4**	**GA4E**
Power supply	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 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
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, incl. rHT and accessories for 4 vessels	
O_2 1 – 50 %, CO_2 0 – 25 %	76DMGA4
O_2 0 – 100 %, CO_2 0 – 25 % (GA4E)	76DMGA4E
DASGIP® GA1 Stand-Alone Exhaust Analyzing Module, incl. rHT and accessories for 1 vessel, O_2 1 – 50 %, CO_2 0 – 25 %	76DMGA1
DASGIP® GA2 Stand-Alone Exhaust Analyzing Module, incl. rHT and accessories for 2 vessels, O_2 1 – 50 %, CO_2 0 – 25 %	76DMGA2

Accessories

Description	Order no.
DASGIP® Relative Humidity and Temperature Sensors, incl. accessories for DASGIP® GA4 Exhaust Analyzing Module for 4 vessels	76DGGA4RHT

DASGIP® TC4SC4 for Temperature and Agitation Control

Technical specifications

Model	TC4SC4D	TC4SC4B	SC4D
Power supply	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 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

Description
DASGIP TC4SC4 Modules for Temperature and Agitation Control provide individual stirring speed and temperature control for 4 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

Ordering information

Description	Order no.
DASGIP® TC4SC4 Temperature and Agitation Control Module, for 4 vessels, w/o sensors	
for Bioblock and overhead drives (TC4SC4B)	76DGTC4SC4B
for heat blankets and overhead drives (TC4SC4D)	76DGTC4SC4D
DASGIP® SC4D Agitation Control Module, for 4 vessels	
for overhead drives	76DGSC4D
DASGIP® TC4SC4 Stand-Alone Temperature and Agitation Control Module, for 4 vessels, w/o sensors	
for overhead drives (TC4SC4D), incl. EasyAccess Software	76DMTC4SC4D

Accessories

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

i For more information go to www.eppendorf.com

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 independant 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**
Power supply	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	425 × 520 × 130 mm / 16.7 × 20.4 × 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)
Temperature control range	5 K above cooling agent temperature – 99°C

Ordering information

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

Accessories

Description	Order no.
Accessories for DASGIP® CWD4+4, for 4-fold system	76DGCWD44UM
Accessories for DASGIP® CWD4, for 4-fold system	76DGCWD4UM
DASGIP® Cooling Water Distribution Unit , incl. connection cable	
for 4 condenser ports	76DGCWD4
for 4 condenser-/ and 4 cooling finger ports	76DGCWD44
DASGIP® Inline Water Filter, 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**
Power supply	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 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 feed lines	PTFE	PTFE/C-Flex
Inner diameter pump head tubing (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® MP8 Multi Peristaltic Pump Module, for 8 feeds, w/o feed lines and addition bottles	76DGMP8
DASGIP® MP4 Multi Peristaltic Pump Module, for 4 feeds, w/o feed lines and addition bottles	76DGMP4
DASGIP® MP8 Stand-Alone Multi Peristaltic Pump Module, for 8 feeds, w/o feed lines and addition bottles, incl. EasyAccess Software	76DMMP8
DASGIP® MP4 Stand-Alone Multi Peristaltic Pump Module, for 4 feeds, w/o feed lines and addition bottles, incl. EasyAccess Software	76DMMP4
DASGIP® MP8 Multi Peristaltic Pump Module, for 8 feeds	
w/o feed lines and reservoir bottles, incl. analog EI option	76DGMP8X

Accessories

Description	Order no.
Package to Support MP4/MP8 Calibration, incl. balance	
for 4 vessels	76DGMPAC4
for 8 vessels	76DGMPAC8
DASware® control Option External I/O, 4x analog input and output per vessel, for 1 vessel	76DGSWEIO
DASGIP® Option Gravimetric Dosing, of one feed	
for 4 vessels	76DGBAL4
for 8 vessels	76DGBAL8

DASGIP® MX Modules for TMFC Gas Mixing

Technical specifications

Model	MX4/4	MX4/4H	MX4/1
Power supply	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 7.5 in	300 × 320 × 190 mm / 11.8 × 15.6 × 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	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 – 1,200 sL/h (CO_2: 40 - 720 sL/h)

Description

The DASGIP MX4/4 gas mixing system supplies 4 separate culture vessels with an individual mixture of air, nitrogen, oxygen and carbon dioxide. Each gas outlet has separate set points for flow rate, O_2 and CO_2 concentration. 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, N_2, O_2 and CO_2
> 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

Ordering information

Description	Order no.
DASGIP® MX4/4 Gas Mixing Module, for 4 vessels, mass flow controller	
0.1 – 50 sL/h, 0.1 – 40 sL/h CO_2	76DGMX44
0.5 – 250 sL/h, 0.5 – 150 sL/h CO_2 (MX4/4H)	76DGMX44H
DASGIP® MX4/1 Gas Mixing Module, for 4 vessels (4x MX4/1), mass flow controller	
1 – 30 sL/h	76DGMX41F030
4 – 120 sL/h	76DGMX41F120
10 – 300 sL/h	76DGMX41F300
20 – 600 sL/h	76DGMX41F600
40 – 1,200 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	
1 – 30 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F030
4 – 120 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F120
10 – 300 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F300
20 – 600 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F600
40 – 1,200 sL/h, incl. 2x 30 m gas tube and EasyAccess Software	76DMMX41F1200

MONITORING & CONTROL

MONITORING & CONTROL

i For more information go to 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 (WRMH)	76DGWRMH

Accessories

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

DASGIP® MF4 for TMFC Gas Supply

> Gassing with four separate thermal mass flow-controlled (TMFC) channels
> Selectable gas types, including air, N_2, O_2, CO_2
> 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

i 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 wavelenghts
> 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**
Power supply	110 – 240 V, 50/60 Hz
Dimensions (W × D × H)	300 × 320 × 190 mm / 11.8 × 15.6 × 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, w/o LED Illumination Devices	76DGPBR4
DASGIP® PBR4 Stand-Alone PhotoBioreactor Illumination Module, for 4 vessels, w/o LED Illumination Devices, incl. EasyAccess Software	76DMPBR4

Accessories

Description	Order no.
DASGIP® Vessel DR03P, pitched-blade impeller, dip tube, 700 mL – 2.7 L, overhead drive, photobioreactor	76DR03P
DASGIP® Vessel DS1000ODSP, 2x pitched-blade impeller, 400 mL – 1.2 L, 2x GL45 side arms, overhead drive, photobioreactor	76DS1000ODSP
DASGIP® LED Illumination Device, type S (4 sticks w/ 453/572/625/640/660/780 nm)	76DGLED220S

Accessories

Sensors, exhaust condensers, chillers, and more

Accessories for DASGIP® Systems

DASGIP® Process Computer

> Intel Core® i5
> SSD ≥ 128 GB
> 22'' LCD monitor
> Microsoft® Windows® 7, Office 2013

Ordering information

Description	Order no.
DASGIP® Process Computer, incl. accessories, DASware control, PC hardware and OS software	76DGPCS

Uninterruptable Power Supply for DASGIP® Products

> Uninterruptable power supplies and replacement batteries

Ordering information

Description	Order no.
Uninterruptible Power Supply, Eaton® 5130I, 230 V, 50 Hz, 1750 W	78535268
Uninterruptible Power Supply, APC BackUPS BR1500G, 115 V, 60 Hz, 1500 W	78535267
Replacement Battery RBC33, for UPS BR1500(I/LCD)	78110007

ACCESSORIES

i For more information go to www.eppendorf.com

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® Cooling Water Distribution Unit , incl. connection cable	
for 4 condenser ports	76DGCWD4
for 4 condenser-/ and 4 cooling finger ports	76DGCWD44
Accessories for DASGIP® CWD4+4, for 4-fold system	76DGCWD44UM
Accessories for DASGIP® CWD4, for 4-fold system	76DGCWD4UM
DASGIP® Inline Water Filter, incl. accessories for 4-fold or 8-fold systems	76DGIWF

Serial Device Servers for DASGIP® Products

> Connects up to eight serial devices to the Ethernet

Ordering information

Description	Order no.
Ethernet to Serial (RS-232-422-485) Device Server	
8 ports (NPort 5650-8-DT)	78700900
2 Ports (NPort 5250A)	78700916
2 Ports (NPort 5250A), US	78700936

Accessories

Description	Order no.
Patch Cable S-STP, Cat. 6, Gray, L 3 m	78700901
USB to RS-485 Adapter, e.g. for Modbus	78110004

ACCESSORIES

DASGIP® EGC for Exhaust Condensation

Description
The new 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 now be utilized with the larger vessels of the Eppendorf BioBLU family, BioBLU 1c, 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, 5c, and 5p

Ordering information

Description	Order no.
DASGIP® EGC4 Exhaust Condenser Controller, for 4 Peltier actuators	76DGEGC4

ACCESSORIES

i For more information go to www.eppendorf.com

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 new DASGIP EGC4 module now makes this technology available 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, 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® 5 Single-Use Vessels	78201326

ACCESSORIES

DASGIP® Feeding Accessories

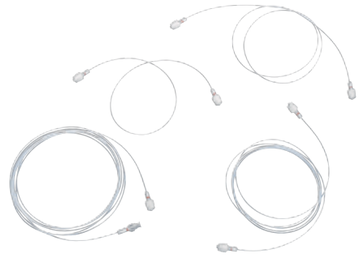
DASGIP® Pump Head Tubings

> 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, Bioprene®	
ID 0.25/W 0.85 mm, male/female	78510198
ID 0.5/W 1.05 mm, male/female	78510117
ID 0.5/W 1.05 mm, female/female	78510118
ID 1.0/W 1.05 mm, male/female	78510109
ID 1.0/W 1.05 mm, female/female	78510236
ID 2.0/W 0.8 mm, male/female	78510197
Pump Head Tubing, for DASGIP® MP8 pump, PharMed®, ID 0.25/W 0.85 mm, female/female	78510119
Pump Head Tubing, for DASGIP® MP8 pump, Peripren, ID 2.0/W 0.8 mm, female/female	78510237
Pump Head Tubing, for DASGIP® MP4 pump, Marprene®	
ID 0.5/W 1.6 mm, female/female	78510292
ID 0.8/W 1.6 mm, female/female	78510293
ID 1.6/W 1.6 mm, female/female	78510295
ID 2.4/W 1.6 mm, female/female	78510296
ID 3.2/W 1.6 mm, female/female	78510297
ID 4.8/W 1.6 mm, female/female	78510298

i For more information go to www.eppendorf.com

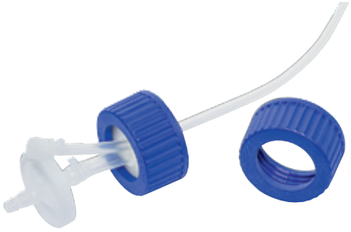


DASGIP® Feed Lines

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

Ordering information

Description	Order no.
Feed Line PTFE, uncolored w/ 2x Luer lock fittings	
ID 0.8 mm, L 0.5 m, male/male	78510240
ID 0.8 mm, L 1 m, male/male	78510241
ID 0.8 mm, L 3 m, male/male	78510243
Feed Line C-Flex®, w/ 2x Luer lock fittings	
ID 0.8 mm, L 1 m, male/male	78510309
ID 0.8 mm, L 2 m, male/male	78510310



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®	
male Luer lock	78510285
female Luer lock	78510286

Accessories for New Brunswick™ Systems

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, an eight-port RS-232 serial box, and OPC server software designed specifically to communicate with BioCommand.
> This kit is designed to communicate with Mettler Toledo scales which use SICS level 0 communication protocol.

Ordering information

Description	Order no.
Interface Kit for RS-232 Device	
RS-232 OPC Server Kit	M1295-0002

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 probes, exhaust analyzers

Ordering information

Description	Order no.
Analog Input/Output Module	
100 – 240 V/50/60 Hz	M1372-1001

ACCESSORIES

i For more information go to www.eppendorf.com

Recirculating Chiller

> For use with most Eppendorf benchtop fermentors and bioreactors
> 1170 Watt heat removal capacity for the 230 V, 50 Hz unit, at 20 °C
> Positive-displacement pump, 7.6 liter reservoir, digital controller display, level indicator, integrated funnel and air filter

Ordering information

Description	Order no.
Recirculating Chiller	
230 V/50 Hz	P0620-2798
120 V/60 Hz	P0620-2796
Recirculating Chiller, Accessories	
Plumbing Package	P0620-0959
Pressure Regulator (0-20 psi)	P0620-2799
Pressure Gauge (0-30 psi)	M1287-9918

Benchtop Scales

> Benchtop scales combine a robust design for long life, integrated display, and the precision needed to meet a variety of needs.
> Seamless integration with New Brunswick™ RPC controllers (requires RS-232 device interface kit
> Offered in 6, 15, and 30 kg capacities

Ordering information

Description	Order no.
Bench-top Scales, combine a robust design for long life, integrated display, and the precision needed to match your process, all in one easy-to-use affordable package. (Requires RS-232 device interface kit)	
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
RS-232 8-Port Interface Box, converts up to eight RS-232 COM ports into USB, e.g. required when connecting scales	M1287-0020
Replacement RS-232 Cable (included with scale)	P0440-4230

ACCESSORIES

Accessories for New Brunswick™ Systems

Ordering information

Description	Order no.
120U pump, 0 – 200 rpm variable-speed pump may be remotely controlled using most BioFlo/CelliGen benchtop bioprocess controllers	
Flying Leads (for 310, 415, 510 and 610)	M1287-9959
Lumberg (for 510 Allen-Bradley®)	M1287-9978
323U pump, 3 – 400 rpm variable-speed pump with front panel auto/manual control. Accepts 4 – 20 mA signals for automatic start/stop operation and reversible pumping by remote control	
Turk (for CelliGen®/BioFlo® Pro)	M1287-9956
Lumberg (for 510 Allen-Bradley)	M1287-9957
Flying Leads (for 310, 415, 510 and 610)	M1287-9958
520U/N pump, Flow rates up to 3.5 L/min. Large capacity 0.1 – 220 rpm variable speed pump with front panel auto/manual control. Accepts external signals up to 60 V or 32 mA for automatic start/stop operation and reversible pumping by remote control. NEMA-4X (IP66)-rated (for CelliGen®/BioFlo® Pro)	M1364-9950

Ordering information

Description	Order no.
Replacement Silicone Tubing	
I.D. 1.6 mm, O.D. 4.8 mm, length 15.2 m	M0740-2396
I.D. 2.4 mm, O.D. 6.4 mm, length 15.2 m	M0740-2430
I.D. 3.2 mm, O.D. 6.4 mm, length 7.6 m	M0740-2445
I.D. 4.8 mm, O.D. 7.9 mm, length 7.6 m	M0740-2505
I.D. 6.4 mm, O.D. 9.8 mm, length 7.6 m	M0740-2542
I.D. 8.0 mm, O.D. 11.1 mm, length 15.2 m	M0740-2590
I.D. 9.5 mm, O.D. 16.6 mm, length 7.6 m	M0740-2721C3
Replacement Polyurethane Tubing	
I.D. 2.0 mm, O.D. 4.8 mm, length 15.2 m	M0740-3110
I.D. 3.2 mm, O.D. 6.4 mm, length 7.6 m	M0740-3113C3
I.D. 3.2 mm, O.D. 6.4 mm, length 15.2 m	M0740-3111C3

i For more information go to www.eppendorf.com

Ordering information

Description	Order no.
Resterilizable Quick Connect, for SIP units	
19 mm	M1153-9633
25 mm	M1153-9639
Hypodermic Needle	
107.95 mm long, 3.26 mm diameter, 12 needles	P0440-0061A
Autoclavable Sample Vials, case of 72	
25 mL Autoclavable Sample Vials with caps	M1227-9935
40 mL Autoclavable Sample Vials with caps	P0640-0500
Addition Vessels, includes stainless-steel vessel with dip tube, stainless-steel process valve, silicone tubing and 0.2 µm vent filter	
4 L Addition Vessel Kit	M1290-0550
7.5 L Addition Vessel Kit	M1290-0551
11 L Addition Vessel Kit	M1290-0552
19 L Addition Vessel Kit	M1290-0553
Addition/Harvest bottle kit for aerobic processes, includes a clear Pyrex glass bottle with aseptic reservoir cap including a full length stainless-steel dip tube and 0.2 µm vent filter, for aerobic processes	
0.25 L	M1362-9905
0.5 L	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, includes a clear Pyrex glass bottle with aseptic reservoir cap including (2) full length stainless-steel dip tubes and (2) 0.2 µm vent filters, for anaerobic processes	
0.25 L	M1362-9913
0.5 L	M1362-9914
1 L	M1362-9915
2 L	M1362-9916
5 L	M1362-9917
10 L	M1362-9918
Angled Autoclave Rack, BioFlo® 320	
Low profile, 10 L only	M1227-9231
all vessel sizes	XMF-8624
Angled Autoclave Rack, BioFlo®/ CelliGen® 115	
5/10 L	M1273-9266

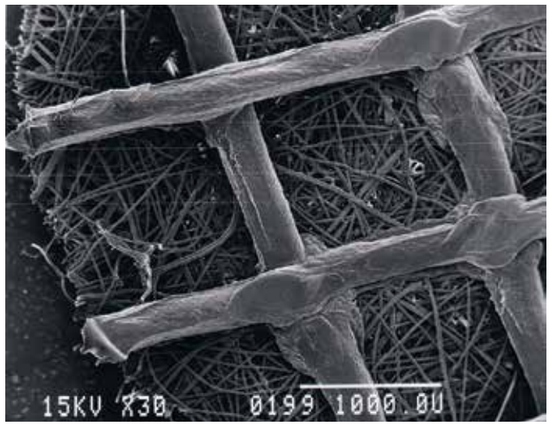
Fibra-Cel® Disks

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.

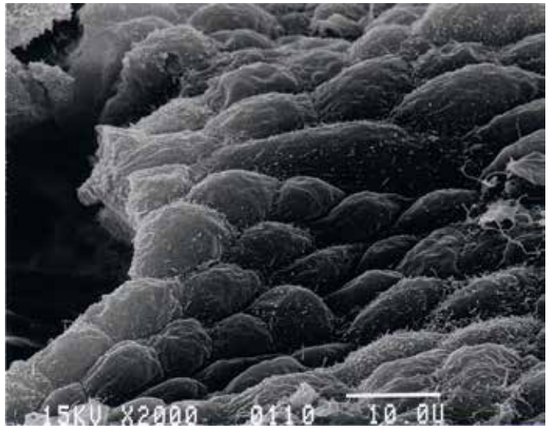
Applications
> **Hybridoma:** DA4-4, 123A, 127A, GAMMA, 67-9-B
> **Anchorage-Dependent:** 3T3, COS, Human Osteosarcoma, MRC-5, BHK, VERO, CHO, rCHO-tPA, rCHO - Hep B Surface Antigen, HEK 293, rHEK 293, rC127 - Hep B Surface Antigen, Normal Human Fibroblasts, Stroma, Hepatocytes
> **Insect:** Tn-368, 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 susceptibility to shear forces from impeller blades and sparger gas bubbles
> Higher mass transfer of nutrients and oxygen versus standard microcarrier systems
> Manufactured to cGMP guidelines, composed of USP Class VI polypropylene and polyester non-woven fiber

i For more information go to www.eppendorf.com



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, a solid support growth matrix for mammalian, animal, and insect cells	
50 g	M1292-9984
250 g	M1292-9988

DO Sensors

DO Sensors

> Accurate monitoring of dissolved oxygen
> Used with DASGIP/DASbox PHPO monitoring module series and New Brunswick control units, respectively
> Standard clark electrodes as well as optical sensors
> Various sensor lengths available

Model	Mettler Toledo® Ingold InPro 6800			Hamilton® VisiFerm™			Hamilton® OxyFerm		
Order no.	781 08018	781 08026	781 08022	781 08031	781 08032	781 08033	781 08023	781 08039	781 08040
Sensor length	120 mm	220 mm	320 mm	120 mm	225 mm	325 mm	120 mm	225 mm	325 mm
Port connection	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5
Plug type	Straight T82	Straight T82	Straight T82	VP8	VP8	VP8	Straight T82	Straight T82	Straight T82
DASbox® MiniBioreactor	■			■			■		
DASGIP® Benchtop Spinner 0.5 L		■			■			■	
DASGIP® Benchtop Spinner 1.5 L		■			■			■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L		■			■			■	
DASGIP® Bioblock Spinner 1.2 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 1.2 L		■			■			■	
DASGIP® PhotoBioreactors 2.5 L		■			■			■	

Ordering information

Description	Order no.
DO Sensor DASGIP® D4.7, incl. cable L 3 m and storage chamber	
for BioBLU® 0.3, L 162 mm	78108046
for BioBLU® 1, L 278 mm	78108051

Accessories

Description	Order no.
DASGIP® DO Cable, L 3 m, with plug type T82	78522040
DASGIP® DO Cable, L 3 m, with plug type VP8 for VisiFerm®	78522042
DO Membrane Kit, incl. spare o-rings and electrolyte, Hamilton®, 3 membrane bodies	78108042
DO Membrane Kit, incl. spare o-rings and electrolyte, Mettler Toledo®, 4 membrane bodies	78108003
Sensor Cap, for VisiFerm™ optical DO sensor	78108034

i For more information go to www.eppendorf.com

Model	Mettler Toledo® Ingold (InPro 6800)							Hamilton®
Order no.	P0720-6270	P0720-6280	P0720-6281	P0720-6580	P0720-6282	P0720-6283	P0720-6284	P0720-6520
Sensor length	80 mm	120 mm	160 mm	160 mm	220 mm	320 mm	420 mm	625 mm
Port connection	25 mm	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5
Plug type	Angled T82	Angled T82	VP	Angled T82	Angled T82	Angled T82	Angled T82	Angled T82
BioFlo®/CelliGen® 115 1 L				6				
BioFlo®/CelliGen® 115 2 L					6			
BioFlo®/CelliGen® 115 5 L						6		
BioFlo®/CelliGen® 115 10 L							6	
BioFlo® 320 1 L/3 L					7			
BioFlo® 320 5 L/10 L						7		
BioFlo® 320 (packed-bed) 1 L		7						
BioFlo® 320 (packed-bed) 3 L		7						
BioFlo® 320 (packed-bed) 5 L					7			
BioFlo® 320 (packed-bed) 10 L					7			
BioFlo® 415 5 L						5		
BioFlo® 415 10 L							5	
BioFlo® 415 15 L								5
BioFlo®/CelliGen® 510 all vessels		6, 9 & 11						
BioFlo® 610 all vessels		6, 9 & 11						
BioFlo®/CelliGen® Pro all vessels		4 & 8				4 & 10		
BioFlo® 4500 all vessels	1 & 9	1 & 9				1 & 10		
BioFlo® 5000 all vessels	2 & 9	2 & 9				2 & 10		

Ordering information

Description	Ref.	Order no.
DO cable, BioFlo® 4500, 110 (except 1.3 L)	1	P0720-2331
DO cable, BioFlo® 5000	2	M1131-8009
DO cable, BioFlo® 110 (1.3 L)	3	P0720-2332
DO cable, BioFlo® and CelliGen® Pro	4	P0720-2342
DO cable, DO cable for BioFlo® 310, 410, 415 and CelliGen® 310	5	P0720-2333
DO cable, for BioFlo®/CelliGen® 115, BioFlo®/CelliGen® 510, and BioFlo® 610	6	P0720-2336
DO cable, for BioFlo® 320	7	M1379-8106
12 mm probe housing, 25 mm Ingold port, with material certificate, BioFlo/CelliGen pro only	8	P0720-6450C1
Probe housing, 25 mm Ingold port, with material certificate	9	P0720-6240C3
InTrac® 797 stainless-steel retractable probe housing, 25 mm Ingold port, 325 mm probe length, with material certificate	10	P0720-5570C
Ingold® port weldment, converts 1.5“ sanitary to 25 mm	11	M1361-9208

DO Sensors

Ordering information	
Description	**Order no.**
DO cable, for Mettler-Toledo® Model 4500	
3 m	P0720-2560
5 m	P0720-2561
DO probe cap	P0720-5567
DO Membrane Kit for Inpro 6000 series	
includes 4 membranes, O-rings, & 25 mL electrolyte	P0720-6268
includes 1 membrane, O-rings, & 25 mL electrolyte	P0720-6339
pH & DO simulator/calibrator, for checking integrity of pH & DO electronics & cables	P0720-5631

Ordering information	
Description	**Order no.**
Optical DO Sensor, ISM	
12/120mm	P0720-6651
12/220 mm	P0720-6660
12/320 mm	P0720-6661
12/420 mm	P0720-6662
Accessories	
Optocap BT O2T (replacement)	P0720-6621
i-Link Cable (sensor to PC connection)	P0720-9663
Probe adapter	
VP to T-82 adaptor	P0720-6470
Accessories	
Power adaptor (VP to T-82 connector)	P0720-9771

ACCESSORIES

i For more information go to www.eppendorf.com

pH Sensors

pH Sensors

> Electrodes for accurate monitoring of pH
> Used with DASGIP/DASbox PHPO monitoring module series and Brunswick control units, respectively — New
> Various sensor lengths available

Model	Mettler Toledo® Ingold			Hamilton® EasyFerm Plus		
Order no.	**78103207**	**78103220**	**78103209**	**78103205**	**78103230**	**78103231**
Sensor length	**120 mm**	**225 mm**	**325 mm**	**120 mm**	**225 mm**	**325 mm**
Port connection	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5
Plug type	K8S	K8S	K8S	K8	K8	K8
BioBLU® 0.3	■			■		
BioBLU® 1		■			■	
DASbox® MiniBioreactor	■			■		
DASGIP® Benchtop Spinner 0.5 L		■			■	
DASGIP® Benchtop Spinner 1.5 L		■			■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L		■			■	
DASGIP® Bioblock Spinner 1.2 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 1.2 L		■			■	
DASGIP® PhotoBioreactors 2.5 L		■			■	

Ordering information	
Description	**Order no.**
DASGIP® pH/Redox Cable, L 3 m, with AK9 plug	78522020
DASGIP® Adaptor, Pg 13.5 female thread to M18x1.5 male thread	77102016

ACCESSORIES

pH Sensors

Model	Mettler Toledo® Ingold					Hamilton®
Order no.	**P0720-5581**	**P0720-5582**	**P0720-5584**	**P0720-5580**	**P0720-5583**	**P0720-6540**
Sensor length	120 mm	200 mm	225 mm	325 mm	425 mm	625 mm
Port connection	25 mm	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5
Plug type	K9	K9	K9	K9	K9	K9
Type	Gel	Gel	Gel	Gel	Gel	Gel
BioFlo®/CelliGen® 115 1 L		4				
BioFlo®/CelliGen® 115 2 L			4			
BioFlo®/CelliGen® 115 5 L				4		
BioFlo®/CelliGen® 115 10 L					4	
BioFlo® 320 1 L		5				
BioFlo® 320 3 L/5 L			5			
BioFlo® 320 10 L				5		
BioFlo® 320 (packed-bed) 1 L/3 L/5 L		5				
BioFlo® 320 (packed-bed) 10 L			5			
BioFlo® 415 5 L				3		
BioFlo® 415 10 L					3	
BioFlo® 415 15 L						3
BioFlo®/CelliGen® 510 all vessels	4, 9 & 11					
BioFlo® 610 all vessels	4, 9 & 11					
BioFlo®/CelliGen® Pro all vessels	6 & 8			6, 7 & 10		
BioFlo® 4500 all vessels	2 & 9			2 & 10		
BioFlo® 5000 all vessels	1 & 9			1 & 10		

Ordering information

Description	Ref.	Order no.
AK9 cable, for BioFlo® 5000	1	P0720-2093
AK9 cable, pH sensor cable, BioFlo® 110, 4500, 3 ft	2	P0720-2095
pH cable, pH cable for BioFlo® 310, 410, 415 and CelliGen® 310	3	P0720-2273
pH cable, for BioFlo®/CelliGen® 115, BioFlo®/CelliGen® 510, and BioFlo® 610	4	P0720-2276
pH cable, for BioFlo® 320	5	M1379-8104
pH/Redox cable, for BioFlo® and CelliGen® Pro	6	M1290-0610
pH/Redox cable ground wire extension, for retractable probe housings (325 mm)	7	M1290-8012
12 mm probe housing, 25 mm Ingold port, with material certificate, BioFlo®/CelliGen® pro only	8	P0720-6450C1
Probe housing, 25 mm Ingold® port, with material certificate	9	P0720-6240C3
InTrac® 797 stainless-steel retractable probe housing, 25 mm Ingold® port, 325 mm probe length, with material certificate	10	P0720-5570C
Ingold® port weldment, converts 1.5" sanitary to 25 mm	11	M1361-9208

i For more information go to www.eppendorf.com

Turbidity Sensors for New Brunswick™ Products

Ordering information

Description	Order no.
Turbidity Sensor	
Autoclavable, 12 mm/120 mm Length InPro® 8100 (cable not included)	P0720-5951
Autoclavable, 12 mm/297 mm Length InPro® 8100 (cable not included)	P0720-5950
SIP, 12 mm/120 mm Length InPro® 8200 with cable	P0720-5961
SIP, 12 mm/205 mm Length InPro® 8200 with cable	P0720-5962
SIP, 12 mm/297 mm Length InPro® 8200 with cable	P0720-5963
SIP, 12 mm/407 mm Length InPro® 8200 with cable	P0720-5960
Turbidity Cable, 5 m	P0720-2430
Turbidity Transmitter	
M800, One-Channel	P0620-6571

CO_2 Sensors for New Brunswick™ Products

Ordering information

Description	Order no.
CO_2 sensor, VP connector	
12 mm/120 mm	P0720-6480
12 mm/220 mm	P0720-6481
12 mm/320 mm	P0720-6482
CO_2 Accessories	
CO_2 Cable	P0720-9660
M400 CO_2 Transmitter	M1287-3200

Redox Sensors

Redox Sensors

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

Model	Mettler Toledo® Ingold (DPAS)		
Order no.	**78103224**	**78103225**	**78103226**
Sensor length	**120 mm**	**225 mm**	**325 mm**
Type	Gel	Gel	Gel
Port connection	Pg 13.5	Pg 13.5	Pg 13.5
Plug type	K8S	K8S	K8S
DASbox® MiniBioreactor	■		
DASGIP® Mini Spinner	■		
DASGIP® Benchtop Spinner 0.5 L		■	
DASGIP® Benchtop Spinner 1.5 L		■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L		■	
DASGIP® Bioblock Spinner 1.2 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 1.2 L		■	
DASGIP® PhotoBioreactors 2.5 L		■	

Accessories

Description	Order no.
DASGIP® pH/Redox Cable, L 3 m, with AK9 plug	78522020

ACCESSORIES

i For more information go to www.eppendorf.com

Model	Mettler Toledo® Ingold®			Hamilton®		
Order no.	**P0720-5780**	**P0720-5781**	**P0720-5782**	**P0720-6532**	**P0720-6531**	**P0720-6530**
Sensor length	120 mm	200 mm	325 mm	325 mm	425 mm	625 mm
Port connection	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5	Pg 13.5
Plug type	K8	K8	K8	K8	K8	K8
Type	Gel	Gel	Gel	Gel	Gel	Gel
BioFlo®/CelliGen® 115 1 L/2 L		1				
BioFlo®/CelliGen® 115 5 L			1	1		
BioFlo®/CelliGen® 115 10 L					1	
BioFlo® 320 1 L		4		4		
BioFlo® 320 3 L/5 L			4	4		
BioFlo® 320 10 L			4	4		
BioFlo® 415 5 L			2	2		
BioFlo® 415 10 L					2	
BioFlo® 415 15 L						2
BioFlo® 510 all vessels	3, 8 & 10					
BioFlo® 610 all vessels	3, 8 & 10					
BioFlo® Pro all vessels	5 & 7		5, 5 & 9	5, 6 & 9		

Ordering information

Description	Ref.	Order no.
Redox cable, for BioFlo®/CelliGen® 110/115	1	P0720-2763
Redox cable, Redox cable for BioFlo® 310, 410 and 415	2	P0720-2275
Redox cable, for BioFlo®/CelliGen® 510 and BioFlo® 610	3	P0720-2277
Redox cable, for BioFlo® 320	4	M1379-8105
pH/Redox cable, for BioFlo® and CelliGen® Pro	5	M1290-0610
pH/Redox cable ground wire extension, for retractable probe housings (325 mm)	6	M1290-8012
12 mm probe housing, 25 mm Ingold® port, with material certificate, BioFlo®/CelliGen® pro only	7	P0720-6450C1
Probe housing, 25 mm Ingold® port, with material certificate	8	P0720-6240C3
InTrac® 797 stainless-steel retractable probe housing, 25 mm Ingold® port, 325 mm probe length, with material certificate	9	P0720-5570C
Ingold® port weldment, converts 1.5“ sanitary to 25 mm	10	M1361-9208

Ordering information

Description	Order no.
Redox transmitter, required with BioFlo® 115 Redox probes	
panel mount	P0620-5974
Redox transmitter, required with BioFlo® 115 Redox probes	
wall mount	P0620-5975

ACCESSORIES

Optical Density Sensors for DASGIP® Products

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								
Optical path length	5 mm			10 mm			20 mm		
Order no.	781 03411	781 03408	781 03414	781 03412	781 03409	781 03415	781 03413	781 03410	781 03416
Sensor length	120 mm	225 mm	335 mm	120 mm	225 mm	335 mm	120 mm	225 mm	335 mm
DASbox® MiniBioreactor	■			■			■		
DASGIP® Benchtop Spinner 0.5 L		■			■			■	
DASGIP® Benchtop Spinner 1.5 L		■			■			■	
DASGIP® Bioblock Spinner 1 L/ Stirrer 1 L		■			■			■	
DASGIP® Bioblock Spinner 1.2 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 1.2 L		■			■			■	
DASGIP® PhotoBioreactors 2.5 L		■			■			■	

ACCESSORIES

Accessories

Description	Order no.
DASGIP® Compression Fitting, all parts included	
ID 12 mm with M18x1.5 male thread	78532281
ID 12 mm with Pg 13.5 male thread	78532284
DASGIP® OD Sensor Cable, L 3 m	78522037
DASGIP® OD Sensor Cable, L 5 m	78522054

i For more information go to www.eppendorf.com

Level Sensors for DASGIP® Products

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	78103145
L 200 mm, Li 20–160 mm	78103146
L 230 mm, Li 20–190 mm	78103147

Accessories

Description	Order no.
DASGIP® Compression Fitting, all parts included	
ID 4 mm with M18x1.5 male thread	78532279
ID 4 mm with Pg 13.5 male thread	78532282
DASGIP® Level Sensor Cable, L 3 m	78522031

Temperature Sensors for DASGIP® Products

Temperature Sensors

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

ACCESSORIES

Ordering information

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

Accessories for DASGIP® Vessels

DASGIP® Head Plates

> Stainless-steel, electropolished
> All wetted parts laser-labeled with part numbers and material certificates
> Ports DASGIP Bioblock Vessels: 1x M30, 7x Pg 13.5, 1x thermowell
> Ports DASGIP Benchtop Bioreactors: 1x M30, 8x M18x1.5, 8x D6 - All M18 ports adjustable to Pg 13.5 instruments via adapter
> Ports DASbox Mini Bioreactor: 6x Pg 13.5, 4x 4 mm dip tubes, 1x thermowell
> Ports DASGIP Benchtop Spinner Vessels: 8x Pg 13.5, 2x D6

Model	Stainless-steel Head Plate			
Order no.	78107301	78107156	78107157	78107249
Diameter outer	77 mm	100 mm	100 mm	190 mm
Pg 13.5 ports	6	8	7	-
D4 ports	4	-	-	-
D6 ports	-	2	1	8
M30 ports	-	-	1	1
M18 ports	-	-	-	8
Thermowell included	1	-	-	-
DASbox® MiniBioreactor	■			
DASGIP® Benchtop Spinner 0.5 L		■		
DASGIP® Benchtop Spinner 1.5 L		■		
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L			■	
DASGIP® Bioblock Spinner 1.2 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 1.2 L			■	
DASGIP® PhotoBioreactors 2.5 L				■

DASGIP® Compression Fittings

> Available with Pg 13.5 and M18 threads
> Inner Diameter 4 mm, 6 mm or 12 mm

ACCESSORIES

i For more information go to www.eppendorf.com

Ordering information

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

Accessories

Description	Order no.
Back Ferrule, PFA	
for OD 4 mm DASGIP® compression fitting	78706352
for OD 6 mm DASGIP® compression fitting	78706354
for OD 12 mm DASGIP® compression fitting	78706356
Front Ferrule, PFA	
for OD 4 mm DASGIP® compression fitting	78706351
for OD 6 mm DASGIP® compression fitting	78706353
for OD 12 mm DASGIP® compression fitting	78706355
DASGIP® Triple Port, w/ 3x OD 4 mm tubing	
w/ Pg 13.5 male thread, all parts included	78706414
w/M18x1.5 male thread, all parts included	77102018

DASGIP® Blind Plugs and Septa

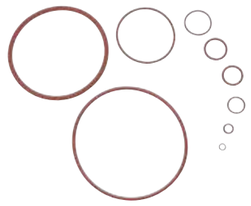
> Stainless-steel
> Pg 13.5, M18 and M6 threads
> Silicon septa available for addition, inoculation or sampling

Ordering information

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

ACCESSORIES

Accessories for DASGIP® Vessels



O-Rings

> O-Rings are available in different materials and sizes.

Ordering information

Description	Order no.
O-Ring, VMQ70/Si820, red	
4x1.5 (IDxd)	78706417
5x1.5 (IDxd)	78706429
6x1.5 (IDxd)	78706416
6x2 (IDxd)	78706407
12x1.5 (IDxd)	78706419
14x2 (IDxd)	78706406
20x2 (IDxd)	78706458
24x2 (IDxd)	78706440
31x2.5 (IDxd)	78706439
68x3 (IDxd)	78201138
75x4 (IDxd)	78201094
88x3 (IDxd)	78706408
135x4 (IDxd)	78706460
O-Ring, VMQ70/Si973, red , 4x1 (IDxd)	78706415
O-Ring, VMQ50/Si50, blue, 8x1.5 (IDxd)	78706465
O-Ring, VMQ65/Si840, blue, 18x2.5 (IDxd)	78706447
O-Ring, NBR70/P583, black, 166.75x2 (IDxd)	78706478
O-Ring, NBR/P583, black, 178x2 (IDxd)	78706477

Valves

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

Ordering information

Description	Order no.
DASGIP® Sampling Accessory, w/ swabable valve for vessels type BS/DS/SR/DR	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, w/ Luer lock female inlet and male outlet	78200078

i For more information go to www.eppendorf.com

DASGIP® Overhead Drives

> Powerful overhead drives for advanced agitation
> Available for microbial and cell culture applications, for single-use and autoclavable bioreactors

Ordering information

Description	Order no.
DASbox® Overhead Drive, 20 – 2,500 rpm	
w/ cable L 1.6 m	78525185
DASbox® Overhead Drive (magnetic), 20 – 2,500 rpm	
for BioBLU® 0.3, w/ cable L 1.6 m	78525186
DASGIP® Overhead Drive RE30, 30 – 1,250 rpm	
for head plate port with M30 thread	78525187
for head plate port with Pg 13.5 thread	78525262
DASGIP® Overhead Drive RE30 (magnetic), 30 – 1,250 rpm	
for BioBLU® 1	78525189
for BioBLU® 5	78525263
DASGIP® Overhead Drive RE40, 100 – 1,600 rpm	
for head plate port with M30 thread	78525188
DASGIP® Overhead Drive RE40 (magnetic), 100 – 1,600 rpm	
for BioBLU® 1	78525198
for BioBLU® 5	78525199
Cable for DASGIP® Overhead Drive RE30/RE40	
L 1.3 m	78525121
L 3 m	78525112

Accessories for DASGIP® Vessels

DASGIP® Impellers

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

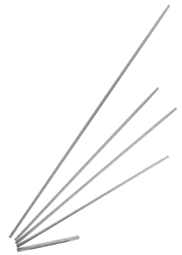
Model	6-Blade Rushton-Type Impeller, stainless-steel		3-blade impeller, 30° pitch, stainless-steel		Marine impeller, stainless-steel
Order no.	78107304	78100557	78532236	78100576	78107325
Diameter inner	5 mm	8 mm	8 mm	10 mm	5 mm
Diameter outer	30 mm	46 mm	50 mm	50 mm	30 mm
DASbox® MiniBioreactor	■				■
DASGIP® Benchtop Spinner 0.5 L				■	
DASGIP® Benchtop Spinner 1.5 L				■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L		■	■		
DASGIP® Bioblock Spinner 1.2 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 1.2 L			■		
DASGIP® PhotoBioreactors 2.5 L			■		

Model	DASGIP® Lipseal Stirrer Assembly					
Order no.	78525116	78525119	78525118	78525123	78107334	78107335
Seat	M30	M30	M30	Pg 13.5	Pg 13.5	Pg 13.5
Stirrer shaft diameter	8 mm	8 mm	8 mm	5 mm	5 mm	5 mm
Stirrer shaft inner length	186 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 Spinner 1 L/Stirrer 1 L	■					
DASGIP® Bioblock Spinner 1.2 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 1.2 L		■				
DASGIP® PhotoBioreactors 2.5 L			■			

Accessories

Description	Order no.
Adaptor	
H 12 mm, complete, for use of impeller w/ ID 5 mm on shaft w/ OD 10 mm	77102047

i For more information go to www.eppendorf.com



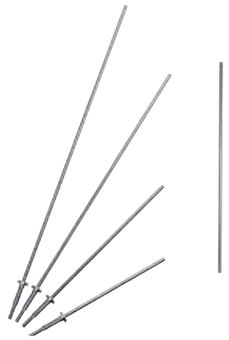
DASGIP® Stainless-steel Pipes

> 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				
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 1 L/Stirrer 1 L		■			
DASGIP® Bioblock Spinner 1.2 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 1.2 L			■		
DASGIP® PhotoBioreactors 2.5 L				■	

ACCESSORIES

Accessories for DASGIP® Vessels



DASGIP® Thermowells

> Easy and sterile insertion of temperature sensors
> Various lenghts available

Model	Thermowell, M6, stainless-steel				
Order no.	**77102027**	**77102028**	**77102029**	**77102030**	**77102031**
Diameter inner	2 mm	2 mm	2 mm	2 mm	2 mm
Inner length	163 mm	213 mm	238 mm	263 mm	313 mm
Length	200 mm	250 mm	275 mm	300 mm	350 mm
DASGIP® Benchtop Spinner 0.5 L	■				
DASGIP® Benchtop Spinner 1.5 L		■			
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L	■				
DASGIP® Bioblock Spinner 1.2 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 1.2 L			■		
DASGIP® PhotoBioreactors 2.5 L			■		

ACCESSORIES

i For more information go to www.eppendorf.com

Technical specifications subject to change.

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.
Heat Blanket, for DASGIP® vessel 0.5 – 3L w/ Pt100, 95x260 mm, 100 W	
230 V	78525162
115 V	78525163

Caps for DASGIP® Vessels and Bottles

> Various sizes available, closed or with ports

Ordering information

Description	Order no.
Screw Cap for OD 100 mm neck, PBT, w/ hole ID 90 mm w/o gasket	78903225
Screw Cap for OD 80 mm neck, PBT, w/ hole ID 73 mm, w/o gasket	78903226
GL45 Screw Cap, PBT, with port D 34 mm	78903224
GL45 Screw Cap, PBT, closed, incl. PTFE-coated silicone washer	78106122

Accessories

Description	Order no.
Silicone Washer, PTFE-coated	
for GL45, ID 32 mm, OD 42 mm, d 3 mm	78106307

ACCESSORIES

Accessories for DASGIP® Vessels

DASGIP® Exhaust Condensers

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

Model	Condenser	
Order no.	77102049	77102050
Diameter outer	12 mm	30 mm
DASGIP® Benchtop Spinner 0.5 L	■	
DASGIP® Benchtop Spinner 1.5 L	■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L		■
DASGIP® Bioblock Spinner 1.2 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 1.2 L		■
DASGIP® PhotoBioreactors 2.5 L		■

DASGIP® Cooling Fingers

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

Model	Cooling Finger	Cooling Finger
Order no.	77102037	77102036
Diameter outer	12 mm	12 mm
Inner length	240 mm	325 mm
Length	295 mm	380 mm
DASGIP® Benchtop Spinner 0.5 L	■	
DASGIP® Benchtop Spinner 1.5 L	■	
DASGIP® Bioblock Spinner 1 L/Stirrer 1 L	■	
DASGIP® Bioblock Spinner 1.2 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 1.2 L	■	
DASGIP® PhotoBioreactors 2.5 L		■

DASGIP® LED Illumination Devices

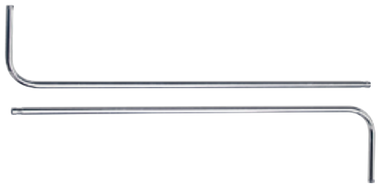
> For illumination of DASGIP PhotoBioreactors, providing optimum light conditions for growth and photosynthesis
> Diodes emitting light of specific wavelengths, aligned to the relevant chlorophyll absorption wavelengths
> Individual control of up to four PhotoBioreactors with the DASGIP PBR4

Ordering information

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

i For more information go to www.eppendorf.com

Accessories for DASGIP® Vessels



DASGIP® Spargers

> For submerged gassing
> Stainless-steel

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

ACCESSORIES

i For more information go to www.eppendorf.com

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 1 L/Stirrer 1 L		■			
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DASGIP® Benchtop Bioreactors 3.5 L					■
DASGIP® PhotoBioreactors 1.2 L			■		
DASGIP® PhotoBioreactors 2.5 L				■	

Ordering information

Description	Order no.
Micro Sparger, stainless-steel, pore size 10 µm, OD 6 mm, w/ OD4 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

Accessories

Description	Order no.
DASGIP® Compression Fitting, all parts included	
ID 4 mm with Pg 13.5 male thread	78532282
ID 4 mm with M18x1.5 male thread	78532279
ID 6 mm with Pg 13.5 male thread	78532283
ID 6 mm with M18x1.5 male thread	78532280

ACCESSORIES

Index

Index

Index

Index of order numbers

Index of order numbers

Index of order numbers

Index of order numbers

INDEX

Index of order numbers

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