



# Truly Parallel

DASGIP® Parallel Bioreactor Systems for cell culture applications

»The DASGIP system offers good integration possibility, most flexibility, and a very small laboratory impact—it's a very compact system.«

Dr. Benjamin Neunstoecklin, Novartis®, Switzerland

**Precise, parallel, perfectly matched.**

DASGIP Parallel Bioreactor Systems for cell culture applications combine the advantages of small working volumes with the full functionality of industrial bioreactors. The modular design of our systems offers flexible solutions for bioprocess development with mammalian, insect and human cells as well as stem cells in laboratory scale.

DASGIP systems are characterized by parallel operation, accurate control and comprehensive information management. They support the seamless integration of external analyzers (PAT), control units or software.

- > Parallel operation reduces development times
- > Modular design and interconnectivity with external devices allow individual solutions
- > Superior DASware® control software and the DASware Software Suite support sophisticated process control, comprehensive data and information management and Design of Experiments (DoE)
- > Advanced process development with consideration of Quality by Design (QbD) standards



**The DASGIP modules enable customized solutions for all requirements:**

- > Continuously variable stirring speeds from 30 rpm
- > Temperature control with active heating and cooling options
- > Accurate control of pH, dissolved oxygen and level/foam
- > Parallel processing in batch, fed-batch and continuous operation by means of high precision speed controlled peristaltic pumps; perfusion feasible
- > Mass flow-controlled gassing with individual mixtures of air, N<sub>2</sub>, O<sub>2</sub> and CO<sub>2</sub>
- > Exhaust analysis with direct calculation of oxygen and carbon dioxide transfer rates and respiratory quotient



**Bioreactors can be adapted to any application:**

- > Autoclavable glass bioreactors as well as BioBLU® Single-Use Bioreactors
- > Special solutions for the cultivation of stem cells
- > Standardized headplates for the use of standard sensors and instruments
- > Headspace and/or submerged gassing
- > Working volumes from 250 mL – 1.5 L



**DASware software—fast tracking bioprocessing development:**

- > DASware control for the reliable control of parallel bioprocesses including parallel recipe management and simultaneous calibration of probes and pumps
- > Other DASware options for comprehensive bioprocess management: supports DoE, flexible data and information processing, also with supervisory process control systems, integration of external analyzers and bioreactor control units as well as remote access to processes and data

**The parallel dimension of cell culture applications—DASGIP and DASbox® systems:**

- > The DASbox Mini Bioreactor System, the perfect scale-down system for parallel operation of up to 24 glass or single-use bioreactors. Ideally suited for DoE and process development. Learn more at [www.eppendorf.group/dasbox-system](http://www.eppendorf.group/dasbox-system)
- > Our modular DASGIP Parallel Bioreactor Systems for the cultivation of animal and human cells in the fields of research and process development. User-friendly handling, accurate control, comprehensive analysis—laboratory systems that meet all requirements.



# Technical data\*

	DASbox® Mini Bioreactor System for Cell Culture	DASGIP® Parallel Bioreactor Systems for Cell Culture
Parallel bioreactors	up to 24	up to 16
Software	DASware control, other DASware optional	DASware control, other DASware optional
Vessels	Glass and single-use bioreactors	Glass and single-use bioreactors
Working volumes	60 – 250 mL (glass)/100 mL – 250 mL (single-use)	250 mL – 1.5 L (glass)/ 320 mL – 1.25 L (single-use)**
Drive	Overhead drive	Overhead drive
Impellers	Marine (glass)/pitched blade (single-use)	Pitched blade
Agitation speed ranges	20 – 2,500 rpm (glass)/20 – 500 rpm (single-use)**	30 – 1,250 rpm (standard)/100 – 1,600 rpm (optional)**
Temperature control	Liquid-free heating and cooling (Peltier)	Integrated in the DASGIP Bioblock (optional: additional cooling fingers)
Standard temperature range	10 – 60°C at 25°C RT	5 K above cooling agent temperature – 99°C (Bioblock)
Feed lines per vessel	2 (standard)/4 (optional)**	Up to 8**
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 (DASGIP MP8)/ 10 – 70 mL/h to 0.4 – 5 L/h (DASGIP MP4)
Gas flow control	TMFC; overlay and/or sparger	TMFC; overlay and/or sparger
Standard gas mixing	Air, N <sub>2</sub> , O <sub>2</sub> and/or CO <sub>2</sub>	Air, N <sub>2</sub> , O <sub>2</sub> and/or CO <sub>2</sub>
Standard gas flow rates	0.04 – 5 sL/h, 0.04 – 3.5 sL/h CO <sub>2</sub>	0.1 – 50 sL/h, 0.1 – 40 sL/h CO <sub>2</sub> ** (DASGIP MX4/4)
pH control	CO <sub>2</sub> /base, and other set-ups	CO <sub>2</sub> /base, and other set-ups
DO control	Cascade (O <sub>2</sub> concentration, gas flow rate) and other set-ups	Cascade (O <sub>2</sub> concentration, gas flow rate) and other set-ups
Level/foam	Optional	Optional
OD measurement	Optional (DASGIP OD4)	Optional (DASGIP OD4)
Exhaust condensation	Liquid-free (Peltier)	Water-cooled or liquid-free (Peltier w/ DASGIP EGC4)
Exhaust analysis	-	Optional (DASGIP GA4)

\* Technical specifications can change without notice. \*\* These specifications depend on the respective configuration, ambient conditions and/or customer requirements.

# Ordering information\*

Description	Order no. (system with glass vessels)	Order no. (system for single-use vessels)
<b>DASbox® Mini Bioreactor System for Cell Culture Applications, max. 5 sL/h gassing</b>		
4-fold system	76DX04CC	76DX04CCSU
8-fold system	76DX08CC	76DX08CCSU
16-fold system	76DX16CC	76DX16CCSU
24-fold system	76DX24CC	76DX24CCSU
<b>DASGIP® Parallel Bioreactor System for Cell Culture, max. 50 sL/h gassing</b>		
4-fold system with Bioblock	76DG04CCBB	76DG04CCSU
8-fold system with Bioblock	76DG08CCBB	76DG08CCSU
16-fold system with Bioblock	76DG16CCBB	76DG16CCSU

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

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# Truly Parallel

DASGIP® Parallel Bioreactor Systems for microbial applications

# »The DASGIP System combines comprehensive monitoring and control of process parameters with parallel bioreactors.«

Dr. Christian Kaiser, Richter-Helm Biologics, Germany

## **Precise, parallel, perfectly matched.**

DASGIP Parallel Bioreactor Systems for microbiology offer the advantages of small working volumes and the full functionality of industrial bioreactors. The modular design of our systems allows flexible solutions for bioprocess development with aerobic and anaerobic bacteria as well as yeasts and fungi in laboratory scale.

DASGIP systems are characterized by parallel operation, accurate control and comprehensive information management. They support the seamless integration of external analyzers (PAT), control units or software.

- > Parallel operation reduces development times
- > Modular design and interconnectivity with external devices allow individual solutions
- > Superior DASware® control software and the DASware Software Suite support sophisticated process control, comprehensive data and information management and Design of Experiments (DoE)
- > Advanced process development with consideration of Quality by Design (QbD) standards



**The DASGIP modules enable customized solutions for all requirements:**

- > Continuously variable stirring speeds up to 1,600 rpm
- > Temperature control with active heating and cooling options
- > Accurate control of pH, dissolved oxygen and level/foam
- > Parallel processing in batch, fed-batch and continuous operation via continuously adjustable peristaltic pumps
- > Mass flow-controlled gassing with individual mixtures of air, N<sub>2</sub>, O<sub>2</sub> and CO<sub>2</sub>
- > Exhaust analysis with real-time calculation of oxygen and carbon dioxide transfer rates and respiratory quotient
- > Parallel absorbance measurement with integrated correlation of offline parameters such as OD<sub>600</sub> and cell dry weight



**Bioreactors can be adapted to any application:**

- > Autoclavable glass bioreactors as well as BioBLU® Single-Use Bioreactors
- > Special solutions for high-cell-density fermentation processes and biofuel and biopolymer research applications
- > Standardized head plates for the use of standard sensors and instruments
- > Working volumes from 200 mL – 1.8 L



**DASware software—fast tracking bioprocess development:**

- > DASware control for the reliable control of parallel fermentation runs including parallel recipe management and simultaneous calibration of all probes and pumps
- > Other DASware options for comprehensive bioprocess management: supports DoE, flexible data and information processing, also with supervisory process control systems, integration of external analyzers and bioreactor control units as well as remote access to processes and data

**The parallel dimension of microbial fermentation—DASGIP and DASbox® systems:**

- > The DASbox Mini Bioreactor System, the perfect scale-down system for parallel operation of up to 24 glass or single-use bioreactors. Ideally suited for DoE and process development. Learn more at [www.eppendorf.group/dasbox-system](http://www.eppendorf.group/dasbox-system)
- > Our modular DASGIP Parallel Bioreactor Systems for the cultivation of microorganisms in the fields of research and process development. User-friendly handling, accurate control, comprehensive analysis—laboratory systems that meet all requirements.



# Technical data\*

	DASbox® Mini Bioreactor System for Microbiology	DASGIP® Parallel Bioreactor Systems for Microbiology
Parallel bioreactors	up to 24	up to 16
Software	DASware control, other DASware optional	DASware control, other DASware optional
Vessels	Glass and single-use bioreactors	Glass and single-use bioreactors
Working volumes	60 – 250 mL (glass)/65 – 250 mL (single-use)	200 mL – 1.8 L (glass)/250 mL – 1.25 L (single-use)**
Drive	Overhead drive	Overhead drive
Impellers	Rushton-type	Rushton-type
Agitation speed ranges	20 – 2,500 rpm (glass)/20 – 2,000 rpm (single-use)**	100 – 1,600 rpm (standard)/30 – 1,250 rpm (optional)**
Temperature control	Liquid-free heating and cooling (Peltier)	Integrated in the DASGIP Bioblock (optional: additional cooling fingers)
Standard temperature range	10 – 60°C at 25°C RT	5 K above cooling agent temperature – 99°C (Bioblock)
Feeding lines per vessel	2 (standard)/4 (optional)**	Up to 8**
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 (DASGIP MP8)/ 10 – 70 mL/h to 0.4 – 5 L/h (DASGIP MP4)
Gas flow control	TMFC	TMFC/rotameter
Standard gas mixing	Air, N <sub>2</sub> , O <sub>2</sub> and/or CO <sub>2</sub>	Air, N <sub>2</sub> , O <sub>2</sub> and/or CO <sub>2</sub>
Standard gas flow rates	0.2 – 25 sL/h, 0.2 – 18 sL/h CO <sub>2</sub>	0.5 – 250 sL/h, 0.5 – 150 sL/h CO <sub>2</sub> ** (DASGIP MX4/4H)
pH control	Acid and/or base, and other set-ups	Acid and/or base, and other set-ups
DO control	Cascade (agitation speed, O <sub>2</sub> concentration, gas flow rate), and other set-ups	Cascade (agitation speed, O <sub>2</sub> concentration, gas flow rate), and other set-ups
ORP (redox) measurement	Optional (select redox or level)	Optional
Level/foam	Optional (select redox or level)	Optional
OD measurement	Optional (DASGIP OD4)	Optional (DASGIP OD4)
Exhaust condensation	Liquid-free (Peltier)	Water-cooled or liquid-free (Peltier w/DASGIP EGC4)**
Exhaust analysis	Optional (DASGIP GA4)	Optional (DASGIP GA4)

\* Technical specifications can change without notice. \*\* These specifications depend on the respective configuration, ambient conditions and/or customer requirements.

# Ordering information\*

Description	Order no. (system with glass vessels)	Order no. (system for single-use vessels)
<b>DASbox® Mini Bioreactor System for Microbial Applications, max. 25 sL/h gassing</b>		
4-fold system	76DX04MB	76DX04MBSU
8-fold system	76DX08MB	76DX08MBSU
16-fold system	76DX16MB	76DX16MBSU
24-fold system	76DX24MB	76DX24MBSU
<b>DASGIP® Parallel Bioreactor System for Microbial Applications, max. 250 sL/h gassing</b>		
4-fold system with Bioblock	76DG04MBBB	76DG04MBSU
8-fold system with Bioblock	76DG08MBBB	76DG08MBSU
16-fold system with Bioblock	76DG16MBBB	76DG16MBSU

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

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