

DASGIP Parallel Bioreactor Systems

Unparalleled Results in Cell Culture Application

Technology

DASGIP Parallel Bioreactor Systems provide advanced bioreactor technology to research and development scientists by combining the conveniences of simple systems such as shaking flasks with benefits of large-scale bioreactors.

Small working volumes allow high experimental throughput while precision and comprehensive process control result in highly scalable and reproducible output. Users working with CHO cells, stem cells and other eukaryotic cell lines have experienced the superior performance and benefits of DASGIP systems.

Components

DASGIP Systems consist of modular components with flexibility to work as stand-alone modules with other bioreactors.

■ Process Control

The integrated control software provides easy operation and parallel work flows, serving up to 16 vessels within one set-up. Critical parameters such as pH are monitored and controlled by preset values, profiles or by triggered automation. Comprehensive documentation and customized software packages are available to meet individual requirements such as continuous or repeated batch, perfusion or in-depth metabolic studies.

■ Temperature and Agitation Control

Temperature and agitation control of 4 vessels in one TCSC module. Options such as magnetic stirring, overhead drive, heating and cooling are available for flexibility in culture process.

■ pH, DO and Level Control

DASGIP PHPO sensors modules monitor pH, DO and volume level. This module provides reliable measurements for precise gas supply, anti-foam control and feed delivery.



Systems Cell Culture

■ Substrate Feed

The Multipump Modules MP4 and MP8 utilize highly precise peristaltic pumps to provide continuous feeding for 4 or 8 channels per module. Different modes allow for batch, fed-batch and continuous operation as well as for various ways of cell retention.

■ Aeration and Gas Supply

Each gas mixing module utilizes mass flow controllers to deliver precise and individual mixture of air, nitrogen, oxygen and carbon dioxide. While the MX4/4 serves 4 vessels the MX4/1 has been designed for single vessel operation and for higher working volumes.

■ OD4

The OD4 monitoring system allows parallel optical absorbance measurement in 4 vessels. Integrated correlations to offline parameters such as OD600 or cell dry weight (CDW) provide online cell growth information.




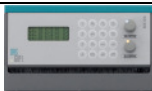




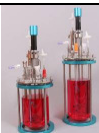
■ Vessels

DASGIP supplies culture vessels from 35 mL to 4 L working volume. Simple spinners are available as well as fully instrumented bioreactors. DASGIP vessels are suitable for suspension and for micro-carriers cultures. They are autoclavable and can be operated with headspace and submerged gassing.

Quality System certified by DQS ■ DIN EN ISO 9001 ■ Reg.-No. 63431

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Components	Specifications
DASGIP Control <ul style="list-style-type: none"> Parallel set-up and control of 4, 8 or 16 vessels Triggering Automation Package (optional) Metabolic Activity Package (optional) 	<ul style="list-style-type: none"> Microsoft Windows XP Pro USB Pen Drive (1 GB), network interface card and uninterruptible power supply included Electrical supply: 115 or 230VAC, 50 - 60Hz
Temperature and Agitation Module TC4SC4* <ul style="list-style-type: none"> Individual and independent temperature and agitation control of 4 vessels Drives magnetic stirring plates or overhead drive Temperature: Conventional heating blankets, pads as well as cooling valves 	<ul style="list-style-type: none"> Supports 4 heating (and cooling) outputs Heating power per output: 250 W (115 - 230 VAC, 50/60 Hz) Permissible load on cooling output: 10 W (115 - 230 VAC, 50/60 Hz) Supports 4 stirring points Ranges: 2 - 150 [C], 60 - 500 [F], 30 - 1250 rpm [D]
DASGIP Sensor Module PH4PO4 and PH8PO8* <ul style="list-style-type: none"> Monitoring of pH and pO2 incl. simultaneous calibration and level control on 4 (PH4PO4) or 8 channels (PH8PO8) Additional Level/Anti-Foam control Redox analysis (optional) 	<ul style="list-style-type: none"> Supports standard pH- and DO-sensors Temperature measurement and automated temp. compensation: Pt100 hand-held (max. 2 inputs) NTC integrated in DO sensors Optional: Level detection / foam sensor
Gas Mixing Station MX4/4 and MX4/1* <ul style="list-style-type: none"> Thermal mass flow controlled individual mixture of Air, N₂, O₂ and CO₂ MX4/4: 4 independently operated outputs, MX4/1: 1 output Individual composition of 4 Input gasses possible 	<ul style="list-style-type: none"> Gas flow rates (min. - max.): MX4/4 0; 0.5 to 8 sL/h [L] or 0; 15 to 250 sL/h [H] MX4/1 0; 1 to 30 sL/min or 0; 3 to 50 sL/h
Multipump Modules MP4 and MP8* <ul style="list-style-type: none"> 4 or 8 independently operated peristaltic pumps with variable speed drives Continuous delivery or dispense mode Operation in dispense mode at flow rates below minimum (MP4: 0.01 L/h, MP8: 0.3 mL/h) 	<ul style="list-style-type: none"> Tube ID ref. to Media flow rates (min.-max.) MP4: 0.5 mm (0.01 to 0.07 L/h) 0.8 mm (0.02 to 0.22 L/h) 1.6 mm (0.06 to 0.74 L/h) 2.4 mm (0.13 to 1.57 L/h) 3.2 mm (0.23 to 2.72 L/h) 4.8 mm (0.43 to 5.04 L/h) MP8: 0.25mm (0.3 to 9.5mL/h) 0.5 mm (1.3 to 42 mL/h) 2mm (13 to 420 mL/h)
OD4* <ul style="list-style-type: none"> Parallel optical absorbance measurement in 4 vessels Raw signal corresponds to various offline parameters such as OD600 or cell dry weight (CDW) 	<ul style="list-style-type: none"> Supports 4 OD sensors OD inputs: 4, 0 .. 5AU Optical Path Length: 5, 10, 20 mm
DASGIP Mini Spinner <ul style="list-style-type: none"> GL45 flange, 3 GL25 and 1 GL14 side ports Aeration: Headspace gassing Agitation: Magnetic driven pitched blade Impeller 	<ul style="list-style-type: none"> Typical working volume: 35-60mL mL Not suitable for the DASGIP Bioblock
DASGIP Bioblock Advanced Spinners Line DS <ul style="list-style-type: none"> 316 L stainless steel head plate (8 PG13. and 2 6mm ports) Aeration: Headspace or submerged gassing Agitation: Magnetic or Overhead driven pitched-blade Impeller 	<ul style="list-style-type: none"> Working volumes: 60-200mL, 250-650mL**, 300-800mL, 400-1200mL, 400-1600mL Suitable for the DASGIP Bioblock (** is not suitable for the DASGIP Bioblock)
DASGIP Benchtop Bioreactor Line DR <ul style="list-style-type: none"> 316 L stainless steel head plate (8 M18x1.5mm ports, 8 6mm ports) Aeration: Headspace and/or submerged gassing Agitation: Overhead driven pitched-blade Impeller 	<ul style="list-style-type: none"> Working volumes: 0.7-2.7L and 0.8-3.8L Not suitable for the DASGIP Bioblock

* Up to 3 modules stackable