

DASGIP Parallel System for Disposable CellReady 3L Bioreactor

Technology

Users of DASGIP Control Software and DASGIP Control units benefit from superior equipment for parallel biotechnical research. Thanks to the unique modularity of the DASGIP Parallel Bioreactor System even disposable bioreactors such as the Mobius CellReady* 3L bioreactor can be integrated seamlessly into DASGIP process control.

In this manner, DASGIP combines powerful process control with the advantages of disposable technology. The CellReady bioreactor is a single-use stirred tank bioreactor for cell culture process development. The disposable bioreactor eliminates the need to clean, autoclave, and assemble the conventional glass bioreactors.

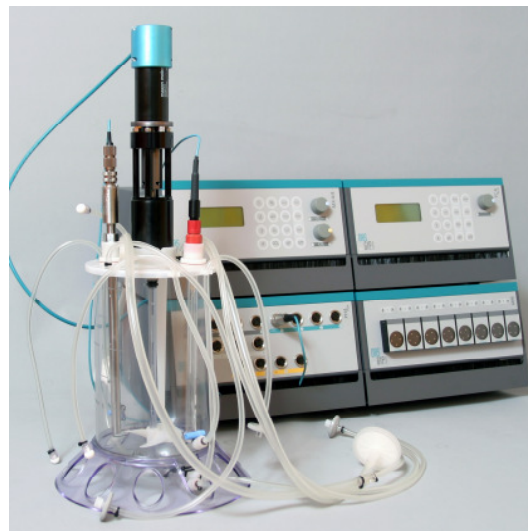
Integration

Applying the DASGIP Control Software and the DASGIP control units users of single-use reactors at benchtop scale benefit from advanced process control. Due to the parallel design of the software and the DASGIP Parallel Bioreactor Systems up to eight single-use vessels can be operated at the same time.



Users of the disposable bioreactor are free to add DASGIP monitoring and control units as their application requires: mass flow controlled gas mixing, variable speed controlled pumps and monitoring of pH and dissolved oxygen are available,

advanced inline measurements such as off-gas analysis or optical density monitoring alike. All set-points and process values, such as agitation rate, temperature, pH, and DO can be accessed through the DASGIP Control user interface.



■ Monitoring and Control

The DASGIP monitoring module PHPO allows the read out of pH and DO process values of up to eight disposable bioreactors in parallel. Two sided pH control using CO₂ and base as well as cascaded DO control loops are supported. Additional process signals like optical density for cell growth monitoring are available.

■ Gassing

The DASGIP gas mixing module MX4/4 supplies an independently blended gas mixture of up to four input gasses to up to four disposable CellReady bioreactors per module. Air, oxygen, carbon dioxide, and nitrogen can be individually mixed to provide continuous gas flow rates from 0.5 up to 50 sL/h. Mass flow controllers with individual set-points for each gas guarantee an accurate mix of gases. Supply via headspace and/or submerge is available, with or without sparger.

■ Media addition or removal

The multi pump module MP8 provides eight variable speed controlled peristaltic pumps for multiple fluid transfers in or out of the CellReady 3L Bioreactor. Each pump can be operated independently. In combination with different sized pump head tubing continuous flow rates between 0.3 and 420 mL/h are possible.

Disposable CellReady 3L Bioreactor

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

DASGIP Parallel System

for Disposable CellReady 3L Bioreactor

■ DASGIP Control

The integrated process control software DASGIP Control, allows easy operation of up to eight disposable bioreactor units. The user-defined process overview and detailed reactor views are not limited in the number of displayed parameters. Strong charting capabilities including trend graphs and online editable profiles and cascades allow for tight process monitoring and prompt reaction whenever necessary as well as for easy data analysis and comparison. Critical parameters are

monitored and controlled by set-points, profiles, or triggered automation providing users at the time with a broad range of automation options from the simple click of a predefined trigger to free scripting of multi variable functions. A comprehensive automatic documentation and export to Microsoft Excel® contains all data for further investigations. Optionally a 21CFR Part 11 package is available.

Technical Specifications

pH & DO Control	
pH Inputs	2, 4 or 8, pH0 ... pH14 (+/- 0.01 pH), -472 ... +472mV
DO Inputs	2, 4 or 8, 0 ... 250%DO (+/- 1% DO), 0 ... 400nA
Temp. compensation	RTD integrated
Calibration	One or two point calibration
pH Control	CO ₂ and base or CO ₂ and strip
DO Control	Cascade of O ₂ and gas flow rate
Optional	Optical Sensors (Hamilton, PreSens, Level, Antifoam and others)

Gassing (MX4/4)	
Type	4 mass flow controller
Inputs	4 (Air, Oxygen, Carbon Dioxide and Nitrogen)
Outputs	4 (headspace and submerge)
Flow Rates	0,5 ... 50 sL/h accuracy approx. 3%FS
Optional	With the use of the splitter an overlay gassing is also possible

Temperature Control & Agitation (TC4SC4)	
Temperature	Heating blankets, temperature control for up to four vessels
Agitation	Overhead driven coupling to Cell Ready Impeller, Agitation control for up to four vessels

Feeding (MP8)	
Type	8 pumps with 4 rollers, spring loaded tube bed
Drive	Speed controlled with planetary gear
Operating Modes	Continuous / Dispense
Features	Autom. switch to dispense mode when speed is lower than min. continuous flow rate (duty cycling)
Tube Material	Bioprene®, Pharmed®, Marprene®, Silicone
Wall Thickness	0,8 - 1.5 mm
Inner Diameter	min. 0.25 mm (continuous from 0.3 to 9,5 mL/h) max. 2 mm (continuous from 13 to 420 mL/h)

Control System	
Features	Triggering automation package, User defined scripting; 21 CFR Part 11 package, Offline values, Integrated data historians, Data export and documentation within MS-Excel®

Balance	
Optional	Mettler Toledo product line integrated via RS 232

Volume (CellReady)	
Total	3,0 L
Minimum WV	1,5 L
Maximum WV	2,4 L

* Mobius and CellReady are registered trademarks by Millipore Corporation

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