



Accurate and Safe

DASGIP® MX and MF4 for mass flow-controlled gassing

Mass Flow-Controlled Gassing

With the DASGIP MX4/4, MX4/1 and MF4 modules, Eppendorf offers a broad range of gassing solutions for bench-scale bioprocesses in both cell culture and microbiology. Integrated thermal mass flow controllers (TMFCs) with individual setpoints at each outlet provide

accurate control of oxygen (O₂) and carbon dioxide (CO₂) concentrations. Each module comes with integrated or external pressure sensors ensuring safe operation of glass and single-use bioreactors.

DASGIP MX4/4 and MX4/1 for precise gas mixing

Eppendorf DASGIP MX4/4 and MX4/1 provide independent gas mixtures of up to four input gases (air, oxygen, carbon dioxide and nitrogen).

- > Mass flow-controlled gassing of one (MX4/1) or up to four (MX4/4) bioreactors
- > Individual gas mixtures out of air, O₂, CO₂ and N₂
- > Constant flow rates of up to 250 sL/h (MX4/4) or up to 1,200 sL/h (MX4/1)
- > Safe operation using online pressure control with integrated (MX4/4) or external (MX4/1) pressure sensors



Stand-alone solutions for monitoring

Seamless integration using the DASGIP EasyAccess software package

DASGIP MX4/4 and MX4/1 gassing modules can not only be used as part of DASGIP Parallel Bioreactor Systems, but also stand-alone or integrated with New Brunswick™ and third-party software. OPC communication allows seamless integration with existing process control systems.

You will find the ordering numbers of our stand-alone modules on the back cover.



Cascaded control of dissolved oxygen – Gassing strategies in cell culture and microbiology

Oxygen transfer can be increased by oxygen enrichment, higher gas flow, and/or agitation. An individual DO control strategy is often defined by a cascade. In shear-sensitive cell cultivations, agitation usually remains unchanged. Gas flow is kept to a minimum if the medium tends to foam. The user may choose to first enrich from air to oxygen followed by a slight flow adjustment. Working with robust microorganisms and high cell densities is different: A higher agitation often is required to prevent from oxygen limitations, followed by increased gas flow and then by oxygen enrichment.

Using DASware® control all three cascade parameters can be defined in the software, independently for all vessels. This allows automated DO control to meet individual demands. It also features a unique online visualization and allows DO cascade changes to be made online. This helps users adapt and optimize DO control at any time during the process run.



DASGIP MF4: TMFC gas supply in up to four vessels

Four input channels allow mass flow-controlled gassing of up to four vessels with individual flow rates. The DASGIP MF4 is suitable for various gas types, including air, oxygen, carbon dioxide and nitrogen.

- > Mass flow-controlled gassing of up to four bioreactors
- > Selectable from air, O₂, CO₂ and N₂ for each vessel (no gas mixing)
- > Individual setpoints for each inlet gas
- > Constant flow rates up to 1,200 sL/h (various models available)
- > Safe operation due to online pressure control with external pressure sensor and one-way valves prohibiting back flush of gases

»As easy as stacking blocks.«

The flexible Eppendorf DASGIP modules for monitoring and control meet the highest demands in research and process development labs or as a part of quality assurance. The parallel nature of the DASGIP modules and their compact, stackable design enable individual operation of up to 16 bioreactors while making optimal use of lab space.



For more information please also refer to our brochures on DASGIP solutions for monitoring, temperature/agitation control, and feeding.

Technical data*

	DASGIP® MX4/4	DASGIP® MX4/1	DASGIP® MF4
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	10.2 kg	10.2 kg
Digital interface	RS-232	RS-232	RS-232
Gas mixing	■	■	–
Gas inlet			
Quantity	4	4	4
Connectors	Push-in 6 mm (gas in) Push-in 4 mm (gas out)	Push-in 6 mm	Push-in 6 mm
Gas types	Air, O ₂ , CO ₂ , and N ₂	Air, O ₂ , CO ₂ , and N ₂	Air, O ₂ , CO ₂ or N ₂
Gas outlet			
Quantity	4	1	4
Flow rates (CO ₂) (depending on model)	0.1 – 50 sL/h (0.1 – 40 sL/h) 0.5 – 250 sL/h (0.5 – 150 sL/h)	1 – 30 sL/h (1 – 18 sL/h) 4 – 120 sL/h (4 – 72 sL/h) 10 – 300 sL/h (10 – 180 sL/h) 20 – 600 sL/h (20 – 360 sL/h) 40 – 1,200 sL/h (40 – 720 sL/h)	1 – 30 sL/h (1 – 18 sL/h) 4 – 120 sL/h (4 – 72 sL/h) 10 – 300 sL/h (10 – 180 sL/h) 20 – 600 sL/h (20 – 360 sL/h) 40 – 1,200 sL/h (40 – 720 sL/h)
System integration			
Analog interface (0 – 10 V)	o	■	■
Communication protocol**	DTP (OPC)	DTP (OPC)	DTP (OPC)

* Technical specifications are subject to change without notice.

■ = standard, o = optional, – = none

Ordering information

Model	Variant	Order no.	Order no. stand-alone**
DASGIP® MX4/4	0.1 – 50 sL/h, 0.1 – 40 sL/h CO ₂	76DGMX44	76DMMX44
	0.5 – 250 sL/h, 0.5 – 150 sL/h CO ₂	76DGMX44H	76DMMX44H
DASGIP® MX4/1	1 – 30 sL/h, 1 – 18 sL/h CO ₂	76DGMX41F030	76DMMX41F030
	4 – 120 sL/h, 4 – 72 sL/h CO ₂	76DGMX41F120	76DMMX41F120
	10 – 300 sL/h, 10 – 180 sL/h CO ₂	76DGMX41F300	76DMMX41F300
	20 – 600 sL/h, 20 – 360 sL/h CO ₂	76DGMX41F600	76DMMX41F600
	40 – 1,200 sL/h, 40 – 720 sL/h CO ₂	76DGMX41F1200	76DMMX41F1200
DASGIP® MF4	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 – 1,200 sL/h, 40 – 720 sL/h CO ₂	76DGMF4F1200	–

** Stand-alone modules incl. OPC server software (requires separate PC)

Eppendorf North America, Inc.
 Phone: 800-645-3050
 Email: info@eppendorf.com
 Eppendorf Canada Ltd.
 Phone: 800-263-8715
 Email: canada@eppendorf.com

www.eppendorf.com