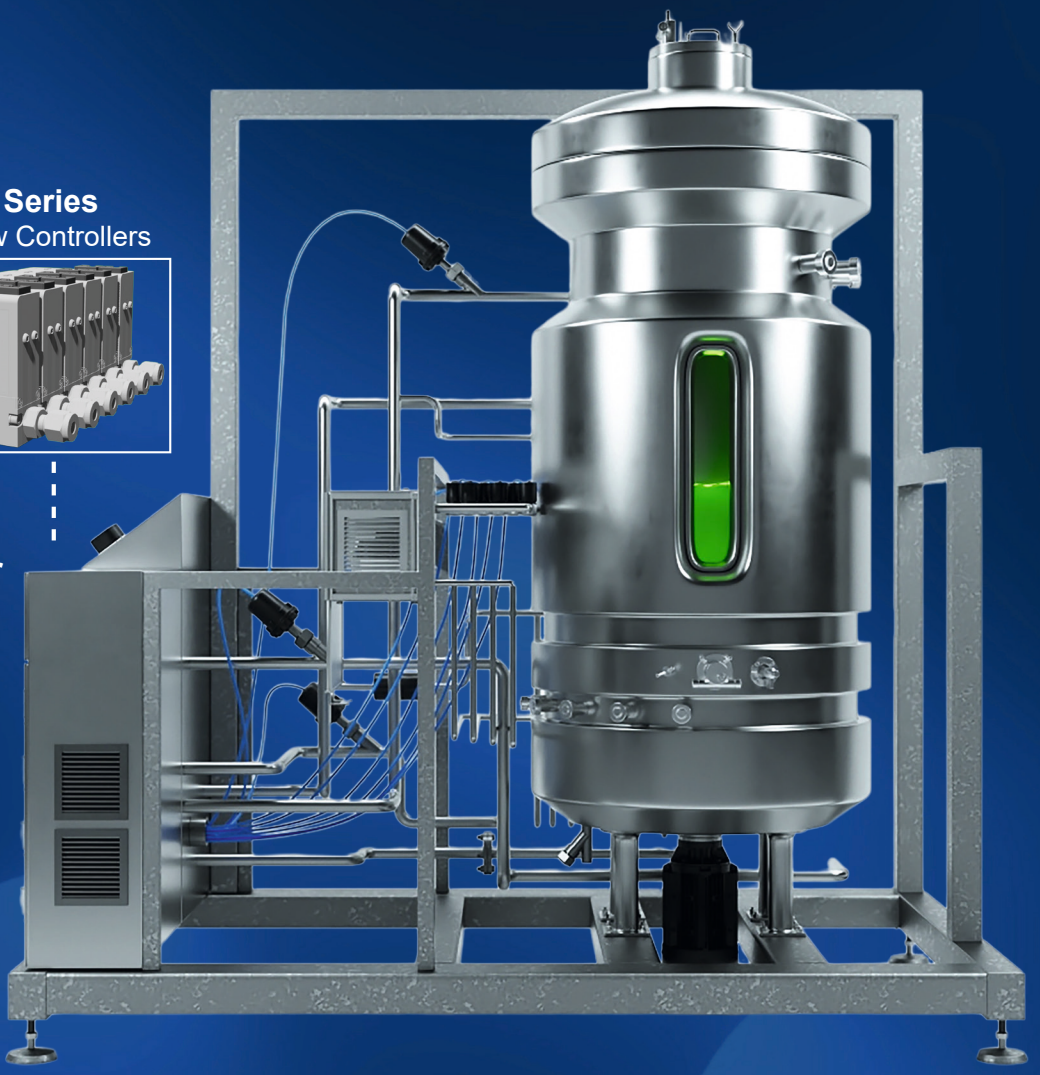
BROOKS® INSTRUMENT

Flow Instrumentation

Biopharmaceuticals & Life Sciences

AMF Series
Mass Flow Controllers

Gas Subcontroller



Reliable and accurate instruments. To sustain yields and process control.

Producing biopharmaceuticals is one of the world's most demanding manufacturing processes. Brooks Instrument's flow measurement and control technologies help maximize cell culture yields, improve process visibility, and control bioprocess costs. From precision gas and liquid flow control to non-invasive clamp-on ultrasonic flow measurement, Brooks solutions provide the accuracy, repeatability, and long-term stability needed to support bioprocessing from development through commercial production.

Brooks Instrument solutions satisfy key biotechnology research and production requirements:

Biopharmaceutical Requirements	Brooks Instrument Provides
Repeatable and accurate integrity testing	Wide range of Brooks MFMs with extreme accuracy across every key integrity test point
Full process control from inoculation to production	High turndown for low-end precision, wide recipe control, and oxygen uptake rate monitoring ensure flexibility across the entire process
Maximize system value and CAPEX investment	Service upgrades and drop-in validated retrofit support from Brooks technical experts extend the life and performance of your existing equipment
Tight control of DO and pH during experiments and production	Stable and accurate control of gas supply (low drift)
Process repeatability from batch to batch with varying utilization rates and NO unplanned downtime	Devices with high repeatability and industry leading reliability
Maximize uptime and system flexibility while managing costs	Ability to configure a single MFC for multiple requirements to reduce inventory carrying costs and enable process flexibility
Ability to rapidly diagnose and resolve issues with bioreactors, chromatography, filtration, mixing, and other bioprocess equipment	Enables predictive maintenance, easy automation, and health and reliability monitoring through seamless integration with bio equipment, DCS, or PLC systems
Cost-effective method for adhering to regulatory requirements	Externally accessible service port and calibration software supports in-situ verification or recalibration

Gas & Liquid Flow Solutions for Every Stage of the Bioprocess

UPSTREAM

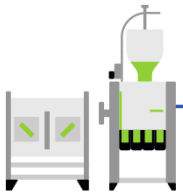
BCU Ultrasonic Flow Meter

AMF Mass Flow Controller

SLA5800 Mass Flow Controller

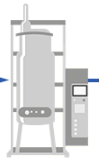
SLAMF Mass Flow Controller

Quantim Coriolis Mass Flow Controller

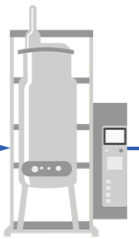


Media Preparation

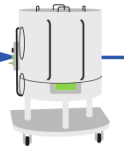
Lab Bioreactor



Pilot Scale Bioreactor



Production Bioreactor



Mixing

Harvest

DOWNSTREAM

BCU Ultrasonic Flow Meter

AMF Mass Flow Controller

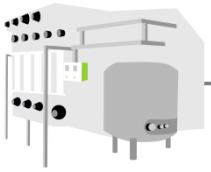
SLA5800 Mass Flow Controller

SLA5800 Pressure Controller

SLAMF Mass Flow Meter

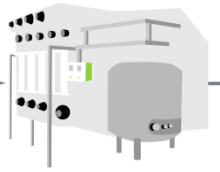
Quantim Coriolis Mass Flow Controller

XacTorr Capacitance Manometer

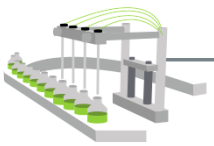


Filtration

Chromatography



Filtration



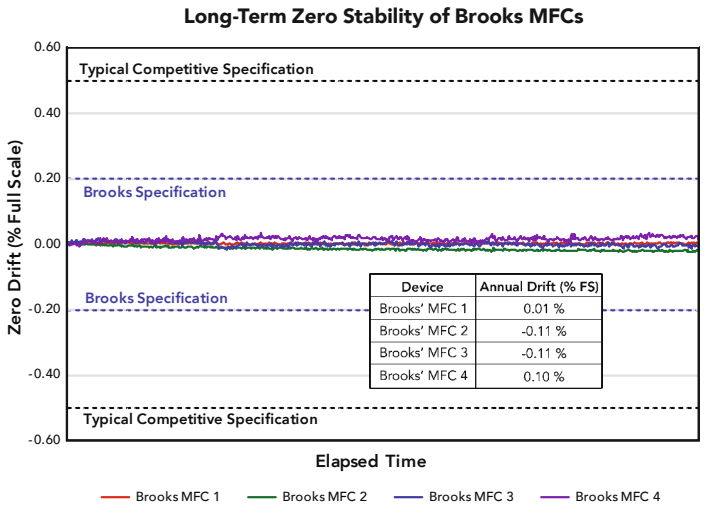
Filling

Lyophilization / Freeze-Drying

Final Product

Efficient and long-lasting process control

Bioreactors and other key bioprocessing equipment need accurate, stable gas control to maintain critical process parameters, combined with maximum uptime to reach target yields. Brooks Instrument mass flow controllers (MFCs) are engineered to deliver both, with superior long-term drift stability and the best mean-time-between-failures (MTBF) in the industry.



Device	Annual Drift (% FS)
Brooks' MFC 1	0.01 %
Brooks' MFC 2	-0.11 %
Brooks' MFC 3	-0.11 %
Brooks' MFC 4	0.10 %

If the zero shifts, the entire process shifts, requiring maintenance and metrology intervention before starting the next lot

When a MFC has poor long-term stability, you spend more time verifying and then recalibrating the device, costing money, time and lost opportunity to operate your bioreactors to their fullest potential. Our long-term zero stability means device recalibration or replacement is less frequent. This helps ensure highly accurate research results and consistent biopharmaceutical production, during each batch run and from batch to batch.

That stability is combined with excellent reliability: actual production and service data demonstrates that our SLA Series MFCs deliver decades of failure-free operation in a wide range of industrial process systems. The result: bioreactors using Brooks technology operate uninterrupted longer, to help maximize production uptime and reduce maintenance and machine downtime costs.

"I convinced one of the sites I support to purchase MFCs from Brooks to replace a competitor's devices by showing them how much less time I spent verifying Brooks' MFCs. In some cases, the competitor's devices were taking me four times longer to verify due to issues with drift."

Lead Metrology Technician, Multinational Pharmaceutical Research & Development

Range of digital or analog I/Os to integrate with any system

DeviceNet™ Fieldbus Foundation PROFIBUS PROCESS FIELD BUS RS-485 EtherNet/IP PROFINET®

Gas Flow Control for Bioprocess Stability & Scale-Up

Precise gas flow control is essential to maintaining critical bioprocess parameters such as dissolved oxygen (DO), pH, and cell metabolism. From early-stage research to full-scale production, Brooks Instrument mass flow controllers deliver the accuracy, repeatability, and long-term stability required to ensure consistent yields and reliable process performance.

AMF Series Ultra-compact Advanced MFC

Next-generation, ultra-compact mass flow control for precision gas systems, offering low leak rate, wide turndown, advanced diagnostics, and intelligent predictive maintenance for maximum uptime and process reliability.

SLA5800 Series IP40 General Purpose MFC

Proven, stable mass flow control with a biotech options package featuring programmable gas/range capability—ideal for bioreactors, fermentors, filtration skids, R&D, and production.

SLAMF Series IP66 Hosedown Washdown MFC

Rugged, IP66-rated mass flow control for demanding washdown and bioprocess environments, designed to enable safe operation in hazardous areas and exposed outdoor settings.

Model	Type	Flow Range	Accuracy	I/O
AMF Series	Mass Flow Controller	0.005–27 lpm	±0.6% SP	EtherNet/IP
SLA5800 Series	Mass Flow Controller & Meter	0.003–2500 lpm	±0.6% SP	Analog, EtherNet/IP, PROFINET, DeviceNet, EtherCAT, Profibus, RS485
SLAMF Series	Mass Flow Controller & Meter	0.003–2500 lpm	±0.6% SP	

GF40 Series MultiFlo™ MFC

Flexible multi-gas/multi-range mass flow control for OEM skids and lab-scale systems while reducing system footprint.

GC Series Supercompact MFC

Precision gas control for lab and benchtop systems in a 60mm footprint, enabling in-situ calibration for tight spaces and demanding workflows.

SLA5800 Series IP40 General Purpose MFM

Delivering exceptional stability and repeatability, the SLA5800 mass flow meter is the trusted choice for integrity testing applications where accuracy is critical.

Model	Type	Flow Range	Accuracy	I/O
GF40 Series	Mass Flow Controller & Meter	0.003–50 lpm	1% SP	Analog, EtherCAT
GC Series	Mass Flow Controller	210–5000 sccm	1.5% SP	Analog, Modbus RTU (RS-485)

Liquid Flow Measurement & Monitoring for Critical Bioprocess Steps

From permeate and acid/buffer management to downstream purification and fill and finish, accurate liquid flow measurement is essential across bioprocessing supporting liquids. Brooks Instrument delivers Coriolis-based direct mass flow control with key outputs—flow, density, and temperature—alongside the BCU, a non-invasive flow measurement solution that ensures process integrity without compromising sterility.

BCU Series Clamp-on Ultrasonic Flow Meter

Non-invasive clamp-on flow measurement for single-use systems, enabling real-time monitoring without fluid contact, contamination risk, or pressure drop.

Quantim® Series Coriolis MFC

High-accuracy direct mass flow measurement for critical liquid dosing applications, supporting ultra-low flow rates through 1/16" connections—ideal for nutrient feeds, additives, and specialty fluids.

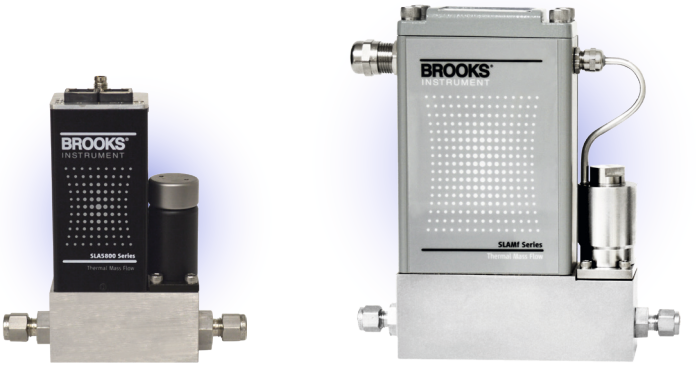
Model	Type	Flow Range	Accuracy	I/O
BCU Series	Clamp-on Ultrasonic Flow Meter	0–80,000 ml/min	±1% of Rate	EtherNet/IP
Quantim® Series	Mass Flow Controller & Meter	3–27,000 gm/hr	0.2 – 0.5% of Rate	Analog, RS485

Pressure Control & Vacuum Measurement

Precision pressure control and accurate vacuum measurement are essential for maintaining consistent process conditions across bioprocessing applications. Stable gas delivery supports reliable performance in bioreactors and downstream systems, while precise vacuum measurement helps ensure consistent drying conditions during lyophilization. Together, these capabilities help improve process repeatability, protect product quality, and support confidence from upstream production through final drying.

XacTorr® Series Capacitance Manometer

Highly stable, contamination-resistant vacuum measurement for precise lyophilization control, with drift-resistant digital architecture and intelligent zeroing.



SLA5800/SLAMF Series Pressure Controllers

Closed-loop pressure control for stable gas delivery, eliminating drift, droop, and hysteresis with flexible configurations and optional IP66 protection—designed for demanding applications including fill systems and back-end perfusion reactor control.

Model	Type	Full Scale Range	Accuracy	I/O
SLA5800 & SLAMF Series	Pressure Controllers	50 slpm, 1500 psi	±0.25% of Transducer FS	DeviceNet, Profibus, RS485
XacTorr® Series	Capacitance Manometer	0.1–1000 Torr	±0.15 – 0.25% of Reading	Analog, EtherCAT

Advanced in-situ flow diagnostics & trending maximizes process yield

Available on EtherNet/IP and PROFINET Enabled devices

Warnings & Alarms

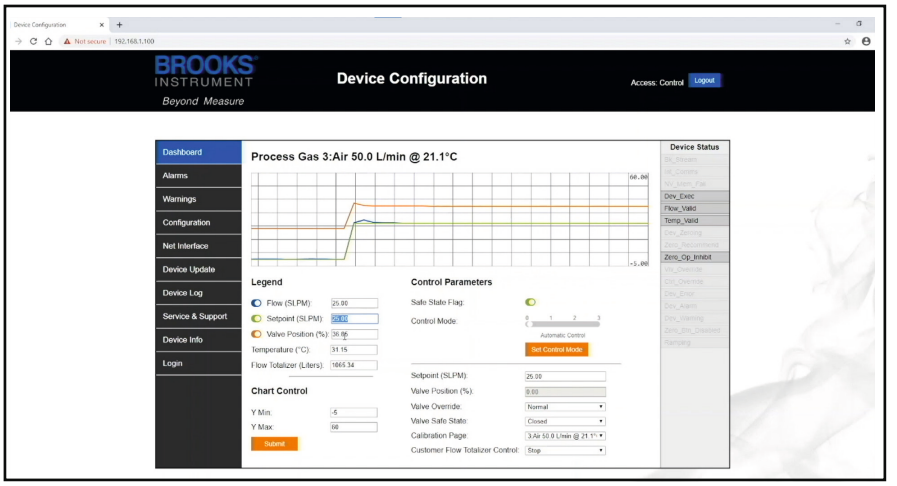
- Informational notifications to the user from the device
- Customize how alarms are triggered and implemented

Diagnostics

- Can be used as predictive indication system and to monitor reliability
- Can indicate when device maintenance is required
- Used to provide health, pedigree, and reliability information

- Restricted Flow Alarm (low inlet pressure)
- Excessive Zero Drift/ Failure
- High/Low Temp
- High/Low Flow
- Back Flow
- Input Power Supply
- No Flow Indication

Web-based Interface for easy commissioning, configuration & troubleshooting



- Easily configure I/P addresses
- Enables system troubleshooting & diagnoses
- Set up thresholds and alarms
- Monitor devices

BEST Software for Setup, Troubleshooting & Calibration

Our Brooks Expert Support Tool (BEST) downloadable software along with a cable kit is a Windows® based application that performs all of the functions of the web-based interface plus in-situ verification and recalibration of Brooks Instrument devices. It allows the user to take advantage of servicing tasks that include setup, attribute configuration, diagnostics, troubleshooting, valve tuning, verification and calibration.

BROOKS® INSTRUMENT

Beyond Measure

Service and Support

Global Service & Support

Brooks Instrument products are recognized as the most stable and reliable in the world. To keep your instruments operating at the highest level of accuracy and extend their life, trust the one that knows them best - Brooks Instrument Factory Certified Service.

We understand the strict regulatory requirements that govern the biopharmaceutical industry, including the need to document MFC calibrations on a recurring basis. When it's time for instrument calibration or repair, our service centers and field service technicians around the globe ensure that your instruments are serviced utilizing the same metrology standards, work instructions, equipment and software as our manufacturing processes. We can even help with your preventive maintenance program to maintain FDA/USDA compliance, including ISO/IEC 17025:2005 certified calibrations.

Beyond factory and in-house service, Brooks Instrument offers comprehensive technical support across your entire process—providing hardware and gas flow recommendations, calibration setup, system design guidance, and upgrade planning. Our experts are available for remote consultations, onsite visits, and field calibration support, ensuring you always have the right guidance to optimize performance, maintain compliance, and get the most from your Brooks Instrument investment.

Complete details are available at www.BrooksInstrument.com/service.

Global Headquarters
Brooks Instrument
407 West Vine Street
Hatfield, PA 19440-0903 USA

Toll-free (USA): 888-554-FLOW
T 215-362-3500
BrooksAM@BrooksInstrument.com