Gas Endeavour® III

Precise measurement of gas volume and flow for diverse applications

BPC INSTRUMENTS

Low gas volume and flow
High accuracy and precision

Gas Endeavour III

Gas Endeavour III is an advanced laboratory instrument platform designed for precise evaluation of gas production or consumption in both batch and continuous processes. With its fully automatic operation, user-friendly interface, and high reliability, Gas Endeavour III offers exceptional ease of use. The instrument features 18 or 9 parallel channels, allowing for simultaneous evaluation of a large number of samples.

Precise measurement of gas volume and flow for diverse applications

A cutting-edge laboratory instrument designed to accurately measure gas volume and flow across a wide range of applications. This intelligent analytical tool is adept at measuring low gas volume and flow, ensuring precise and reliable results whenever accuracy is paramount. Its versatility makes it suitable for both research and industrial applications, including animal nutrition studies, wastewater analyses, ethanol fermentation, hydrogen production, evaluation of microbial communities, and assessing microbial communities and their activity.

Operating seamlessly and automatically, Gas Endeavour III integrates sampling, analysis, recording, and report generation, streamlining your testing experience. Key features of this exceptional instrument include:

- A pre-calibrated for outstanding precision and accuracy, eliminating the need for frequent calibrations.
- User friendly interface and automated operation minimize the time and labour requirements, enhancing efficiency.
- Standardized measurements, data processing, and reports ensure consistency and facilitate data analysis.
- Easy-to-use software with large storage capacity simplifies data management and retrieval.

Gas Endeavour III empowers researchers and industry professionals with reliable gas volume and flow measurements, enabling precise control and optimization of various processes.

Streamlining labour and enhancing precision

Gas Endeavour revolutionizes the industry by significantly reducing labour requirements and mitigating the risk of human errors, surpassing conventional methods and competing solutions. Once experiment preparation and setup are completed within a few hours, Gas Endeavour seamlessly automates the entire testing process until its conclusion. Real-time monitoring and readily accessible reports enable effortless examination of experimental data, simplifying testing procedures like never before.

Experience the advantages of BPC® Core

Incorporating BPC Instrument's cutting-edge gas detection unit, the Gas Endeavour introduces the remarkable capabilities of BPC Core. Distinguishing itself from other instruments, it accommodates both batch and continuous experiments, offering unparalleled versatility. Additionally, with measurement cells available in both 2 and 9 ml resolutions, switching between resolutions to meet specific requirements become effortlessly feasible.

Embedded solution without external dependencies

Gas Endeavour offers an advanced embedded solution that eliminates the need for an external computer. With its onboard microcontroller, it can locally store and process gas volume and flow measurements, ensuring data security. By removing reliance on external systems, it safeguards against the risk of data loss due to computer crash or system upgrades. Additionally, the device boasts a significant storage capacity of 15 million data points, enabling the collection of up to 130 000 litres of gas per experiment.

Gas Endeavour **Standard**

Gas Endeavour boasts robust operations and a modular design that incorporate the best elements of Scandinavian form and function, ensuring quality and reliability.

Gas Endeavour **Animal Nutrition**

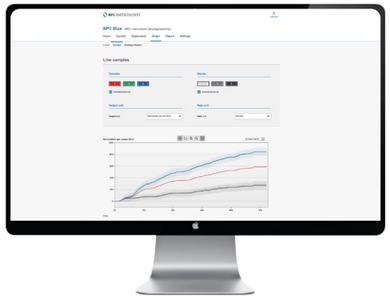
Experience the convenience and precision of Gas Endeavour in revolutionizing your animal nutrition research.

Gas Endeavour **MAX**

Designed for the most demanding users, Gas Endeavour MAX provides you with all the essential equipment and accessories necessary for both batch and continuous fermentation processes.

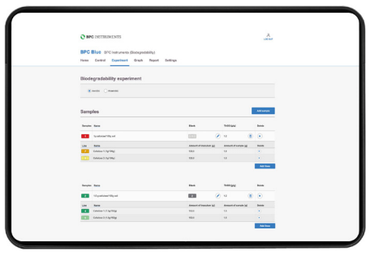
AURORA™ Software
– pre-installed on Gas Endeavour III

Experience the power of Aurora™ software
Aurora™ is BPC Instruments' cutting-edge software solution for its laboratory instruments, bringing your experiments to life. With its streamlined design, setting up experiment, monitoring progress, and downloading results becomes effortless. Aurora™ comes pre-installed on Gas Endeavour, eliminating the need for software licenses or installation on external computer.



Robust operations with modular design
Gas Endeavour boasts robust operations and a modular design that incorporate the best elements of Scandinavian form and function, ensuring quality and reliability. With a failsafe mechanism in place, no data is lost even if the entire system goes down. Additionally, the modular design makes the maintenance a breeze as many parts can be exchanged without sending the instrument to a workshop.

Access results anywhere, anytime, on any device
Gas Endeavour is designed for convenient access from any remote location using a web browser on your preferred device. Monitor your experiment from the comfort of your office or home using your computer, tablet or smartphone. Expand the analytical capacity of Gas Endeavour effortlessly by connecting multiple instruments together with an Ethernet switch. With this feature, each Gas Endeavour can be operated as a standalone device or be connected in parallel, catering to your specific needs.



Powerful and reliable agitation
The agitation system integrated into Gas Endeavour is powered by high-quality multifunction brushless step motors. This robust system ensures the delivery of gentle, precise, and reliable agitation within a gas tight environment. Designed to excel even in challenging conditions like anaerobic fermentation processes, this agitation system has earned the trust of numerous satisfied customers worldwide.

Unlock the full potential of Gas Endeavour with MAX

Designed for the most demanding users, Gas Endeavour MAX provides you with all the essential equipment and accessories necessary for both batch and continuous fermentation processes.

This comprehensive package includes 2 L CSTR reactors with feeding and discharge sets, both in-situ and ex-situ gas absorption attachments, and gas bags for precise gas production and consumption testing. Additionally, MAX includes two BPC Core units for accurate gas monitoring before and after removing specific gas components. With MAX package, Gas Endeavour empowers you to achieve exceptional results and meet your advanced research and analysis requirement with ease.

Application areas

Gas Endeavour is a versatile solution with a wide range of applications. These include:

- in-vitro digestibility studies
- Assessing aerobic and anaerobic biodegradability
- Analysing biogas production
- Monitoring hydrogen production
- Facilitating ethanol fermentation processes
- Conducting wastewater analysis
- Evaluating microbial activity

Gas Endeavour **features comparison**

	Gas Endeavour III	Gas Endeavour
Number of channels	18 and 9 (Light)	15 and 6 (Light)
Measurement resolution	9 ml and 2 ml	9 ml or 2 ml
Electronic hardware	New electronic hardware with significantly better performance and more functionalities	Hardware with more limited storage and processing capacity
Volume detection capacity	130 000 litres	900 litres
Display	OLED display	No display
Software	Aurora™: embedded software accessible via web browser on any device. Experience the redesigned interface and advanced features, including the ability to start and stop all channels, zoom in on graphs, flexible gas normalisation, phase-specific agitation control, and easy raw data downloads.	Embedded software that is accessed via web browser on any device.
Operation modes	Continuous and batch	Batch only
Reactor sizes	Versatile options: 1 litre in standard version with the option to choose 0.5 litre, and 2 litres in the Light version.	0.5 litre in standard version and 2 litres for Light version
Tubing	Polyurethane tubing that is strong, durable and has low gas permeability	Tygon E3603 tubing
Accessories	Various accessories are included for better tube management and easier operation	Limited number of accessories
Electronic level control	Accelerometer indicate horizontal position of the detection unit	No electronic level control

Gas Endeavour® III

Features

- **Web-based convenience:** The user-friendly web-based software running on an embedded server, eliminating the need for software installation on PC, tablet or smartphones.
- **Remote access:** Gas Endeavour III can be accessed remotely and locally from any device with a web browser, providing flexibility and convenience.
- **Automated measurement:** Enjoy automatic measurement with real-time pressure, temperature and moisture compensation, ensuring accurate and reliable data acquisition.
- **Calibration free operation:** Gas Endeavour III operates without the need for calibration, simplifying maintenance and ensuring consistent performance.
- **Multiplexing potential:** Take advantage of the multiplexing capability, allowing simultaneous batch analysis at different start-up times. Benefit from the flexibility to operate both batch and continuous fermentation tests effortlessly. Seamlessly switch between batch and continuous presentation, empowering you with versatile experimentation options.
- **Easy maintenance:** The modular design of Gas Endeavour III facilitates easy exchange, making maintenance hassle-free.
- **Local data storage:** All data is stored locally on the instrument, eliminating the dependence on external computer and ensuring data security.
- **Streamlined data processing:** Export data as a spreadsheet for further analysis, featuring a uniform time axis for easy processing and interpretation.
- **High data storage capacity:** With remarkable capacity of 7200 l of gas per channel, Gas Endeavour enables extensive data collection and analysis.
- **Real-time measurements:** Simultaneous monitoring of multiple gas types.
- **Gas composition estimation:** Connect in series to get real time estimation of gas composition.
- **Unleash powerful and reliable agitation:** Experience proven multifunctional excellence
- **Outputs in various time intervals:** Gas Endeavour generates outputs at customizable time intervals, ranging from a data point every minute to one every day, providing flexibility for your specific needs.
- **Flexible measurement resolutions:** Switch effortlessly between 2 and 9 ml for precision and accuracy.
- **Versatile operation modes:** Run in both batch and continuous mode.

Technical specifications

Sample incubation unit standard

- **Maximum number of reactors per system:** 18 and 9
- **Reactor material:** glass
- **Standard reactor volume:** 1000 ml and 2000 ml
- **Type:** Thermostatic water bath
- **Dimension:** 68 x 56 x 33 cm (Thermostatic water bath)
- **Temperature control:** up to 60 °C (140 °F) with a precision of 0.2 °C
- **Mixing in the reactor:** multifunction mechanical agitation with brushless DC motors (adjustable interval, speed, and rotation directions), max. speed 220 rpm

Sample incubation unit Animal nutrition

- **Maximum number of reactors per system:** 18
- **Reactor material:** glass
- **Standard reactor volume:** 250 ml
- **Type:** Shaking Thermostatic water bath
- **Dimension:** 53x33x28 cm (Thermostatic water bath)
- **Temperature control:** up to 99 °C (210 °F)

Carbon dioxide absorption unit

- **Carbon dioxide trap bottles: 18 and 9**
- **Volume of carbon dioxide trap bottles: 250 ml**
- **Dimension of bottle holder: 55 x 28 x 17 (2 pc and 1 pc)**
- **Recommended absorption liquid: 3 M NaOH with pH indicator*, 200 ml per bottle**
- **Absorption efficiency: >98%**
  **Absorption liquid is not included with the instrument*

Flow cell array and DAQ unit

- **Working principle:** liquid displacement and buoyancy
- **Number of flow cell units:** 18 and 9
- **Unit dimension of unit:** 55 x 19 x 17 cm
- **Built-in sensors:** temperature, pressure, hall, accelerometer
- **Connections:** Ethernet, power supply, USB B, motor control
- **Display:** OLED 2.8” 256 x 64 white
- **Housing:** Aluminium and plastic
- **Power supply:** 12 V DC / 1.0 A with 100-240 VAC
- **Usage:** Indoor
- **Measurement medium:** Deionised or distilled water
- **Operation temperature:** 0 - 50o C
- **Operation pressure:** -50 – 50 mbar
- **Gas connector diameter:** ID: 2.4 - 2.6 mm; OD: 4.2-4.7 mm
- **Recommended tubing size: ID:** 4 mm; OD: 6 mm
- **Measuring resolution:** 9 ml and 2 ml
- **Detection capacity:** 7200 litres with 9 ml flow cell and 1600 litres with 2 ml flow cell
- **Measuring range:** 1 to 6000 ml/h for 9 ml flow cell and 0.2 to 1500 ml/h
- **Repeatability:** CV ≤ 1% for 9 ml flow cell and CV ≤ 3% for 2 ml flow cell
- **Gases:** Nonaggressive gases (e.g., CH4, CO2, H2, N2, ...)

Your **user experience** is a top priority for us

We take pride in providing support throughout the lifetime of our products. This applies to products covered under warranty, and even products where the warranty period has expired. Our goal is to ensure your instrument always works and continually delivers value.

From academic **know-how** to commercial products

Founded in 2005, BPC Instruments AB has become a successful company under the leadership of its co-founder and lead inventor, Dr. Jing Liu, who currently serves as the CEO. Leveraging nearly 20 years of industry-leading research in the development of smart analytical instruments, BPC Instruments has made a significant impact in the market.

BPC's impressive portfolio encompasses a range of exceptional products, including two flagship products. The first is the Automatic Methane Potential Test System (AMPTS®), which has become the preferred analytical instrument for conducting various anaerobic batch fermentation tests. The second is the Gas Endeavour®, a novel analytical platform that enables the determination of materials' biodegradability, analysis of bacteria respiration, and performance of biological batch fermentation assays under both anaerobic and aerobic conditions. BPC Blue is a novel respirometer based on the Gas Endeavour® platform, specifically designed for assessing the biodegradability of plastics in both aerobic and anaerobic environments.

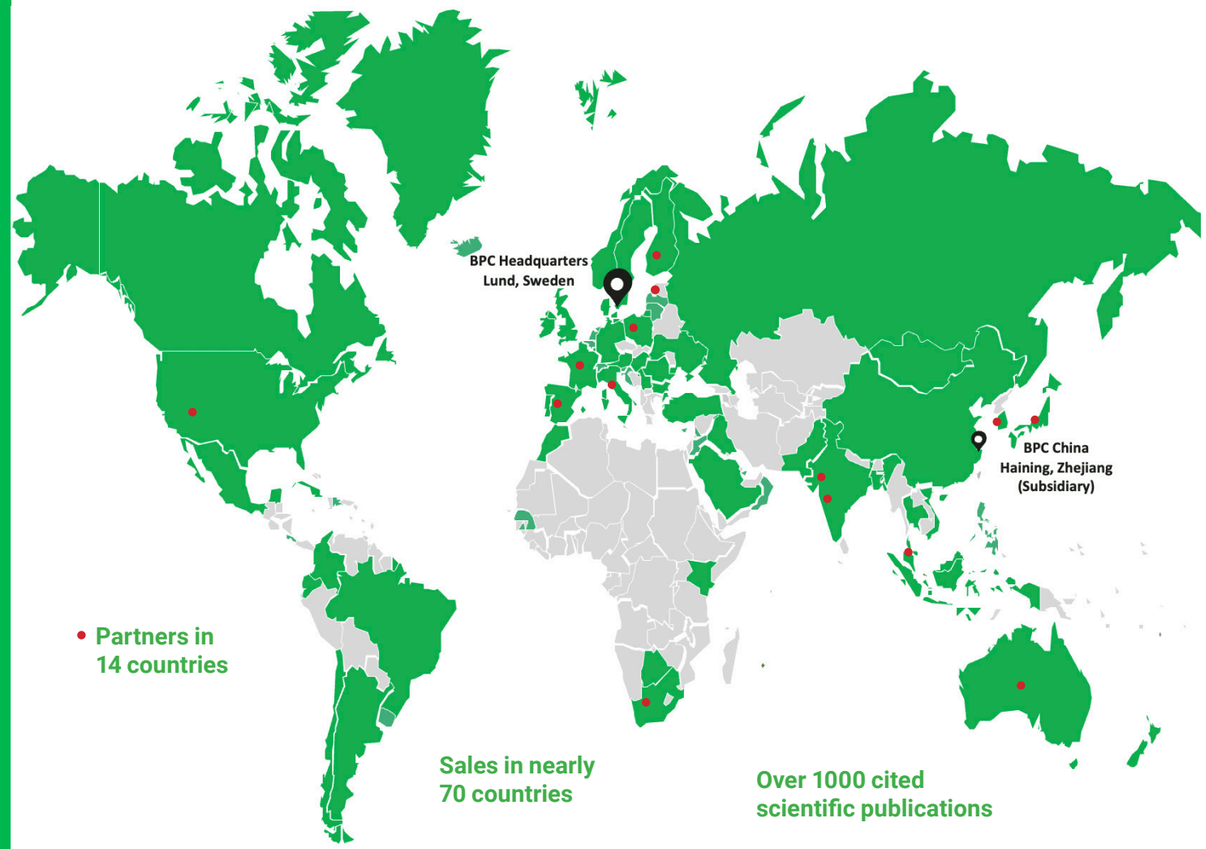
These automated analytical devices offer an abundance of benefits, significantly enhancing operational efficiency while reducing both time and labor requirements. They boast a remarkably user-friendly interface and can be accessed remotely, allowing for convenient retrieval of meticulously collected data whenever necessary. Moreover, these automated analytical devices provide standardized measurements, data, and reports, supplying clear and comparable information upon which evidence-based decisions can be confidently made.

"Our focus is on investing in innovation and developing intelligent instruments, maintaining top-notch product quality across our portfolio, and prioritizing customer service by meeting their needs."

Dr. Jing Liu, CEO and co-founder of BPC Instruments AB

What **we do**

BPC Instruments brings to market analytical instruments enabling more efficient, reliable, and high-quality of research and analysis for industries in renewable bioenergy and environmental biotechnology. Our instruments are designed and manufactured in Sweden, incorporating the best elements of Scandinavian form and function for optimal quality and reliability.



Excellence is built on precision and accuracy

BPC Instruments is a global Swedish-based technology company developing and offering analytical instruments enabling more efficient, reliable, and high quality of research and analysis for industries in renewable bioenergy and environmental biotechnology. The result is not only higher accuracy and precision, but also significant reduction in time consumption and labour requirement for performing analyses. BPC Instruments' innovative products offer high-quality hardware and software based on deep knowledge and experience of target applications. The solutions are the first of their kind, making the company a pioneer in its field. Today, BPC Instruments exports to nearly 70 countries around the world.

BPC INSTRUMENTS

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Visit the Gas Endeavour III product page