

2025

OpenBIO®

Open Architecture
Bioreactor Controller



The Advanced Bioreactor
Controls Suite to Accelerate
Bioprocess Development,
Optimization, and
Characterization



 **catalyx**

OpenBIO

Open Architecture Bioreactor Controller

The Catalyx OpenBIO Open Architecture Bioreactor Controller is designed to serve as the central platform for laboratory, process development, and manufacturing in the biotech and biopharmaceutical industries. Emphasizing recipe-based operations and seamless connectivity, it provides the most flexible platform to facilitate scale-up, scale-down, and technology transfer.

Open Architecture – Sensors & Equipment: OpenBIO controls can integrate with any sensor, scale, probe, or pump. Utilize your existing equipment for a retrofit or develop a complete solution with our control experts and industry partners.

Open Architecture – Control Strategies: An abundant range of both standard and configurable options for parameter control. For example: control DO through any combination of Agitation, Air/O₂ flow through overlay/sparge.

Open Architecture – PAT Ready: OpenBIO is PAT Ready with any PAT Platform. Our partnerships with industry leaders in PAT and Spectroscopy keep you on the forefront of new technologies and readily integrate them into your processes.

Fully Automated Solution: Designed with ISA-88 Standards, OpenBIO is the only system with true S-88 Recipe and Formula based control.

Schedule and automate DO, pH, temperature, glucose and custom feeds and setpoint shifts.

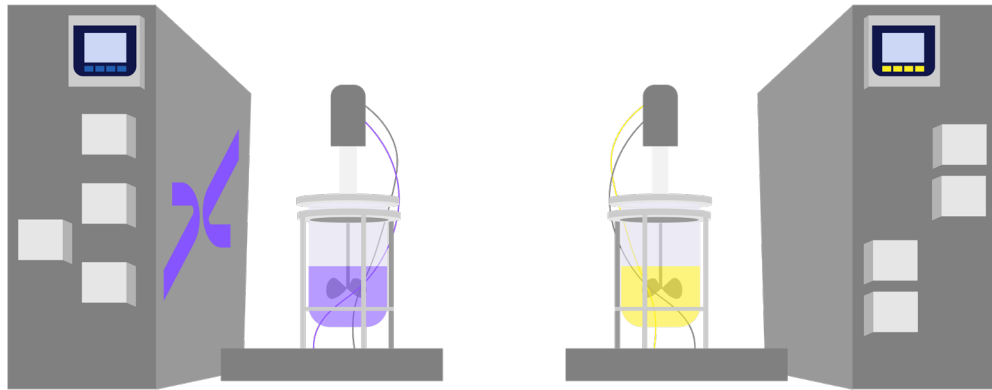
Industry Leading System Integration: OpenBIO is supported by Catalyx's Hall of Fame System Integration Division to support validation, IOQ and integration into site and enterprise control and data systems.

Open Architecture – Vessels: Use OpenBIO with any type of vessel – glass, single-use, stainless steel – by any OEM. Integrate with existing vessels, bag holder, and wave rockers to re-use validated systems.

Save valuable bench space by centralizing control of any number of benches, stations, or process areas to run each vessel independently and share recipes and formulas across the entire suite.



The Next Generation of Automation & Controls



	OpenBIO	Industry Standard Controllers
Open – Multiple DCS	✓	✗
Open – Vessel Agnostic	✓	✗
Open – Any counts of devices	✓	✗
Open – Any vendor of devices	✓	✗
ISA-88 Batch Control	✓	✗
QR Codes	✓	✗
Tablet & Browser HMIs	✓	✗
PAT Ready	✓	✗
Gas Premixing	✓	✗
Centralized Control	✓	✗
Custom Algorithm Platform	✓	✗
Full Validation & Qualification Package	✓	✗
Average Lead Time	12-16 Weeks	16-32 Weeks

Open Architecture Bioreactor Controller

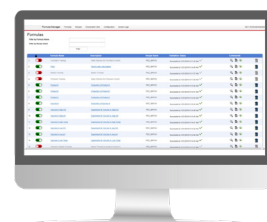
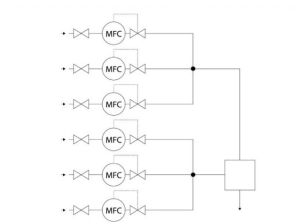
The Completely Configurable Solution

Work with our team of control and automation experts to determine the best strategy for your application. The OpenBIO® Open Architecture Bioreactor Controller can easily integrate technology from scaled-up, scaled-down, legacy, and next generation applications..



Advanced Control Strategies

Our S-88 Control Strategy gives you the building blocks for the most comprehensive control.



Automate Setpoint Shifts:

- Reduce errors, manual tasks, and variability and enable real-time control by automating setpoint adjustments. Equipment modules operate on a scheduled basis, initiating at inoculation

Combine different forms of control:

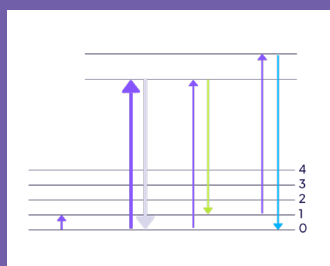
- Control dO2 with any combination of agitation with Air and O2 going to any combination of overlay and sparger outlets.
- Control pH with any combination of Base and CO2 going to any combination of overlay and sparger outlets.
- Control dCO2 with CO2 going to any combination of overlay and sparger outlets.

Automate Feeds:

- Schedule and automate basic feed strategies including initial media and daily media feeds
- Schedule and automate advanced feed strategies to using integrated advanced sensors and PAT maintain glucose and capacitance levels.

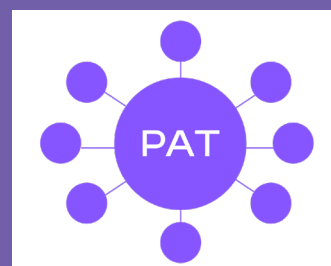
Advanced Integration Partnered with Leading Process Technologies

OpenBIO was developed so that the next generation of technology can be integrated into today's systems. The platform is designed with industry standard communications protocols, backed by Catalyx's award winning System Integration and partnered with leading process sensor and technology companies.



Advanced Sensors:

OpenBIO is designed to be adapted to your labs' next generation of process analytics. We are partnered with Endress+Hauser and support the next generations of spectroscopy, capacitance, and advanced sensors.

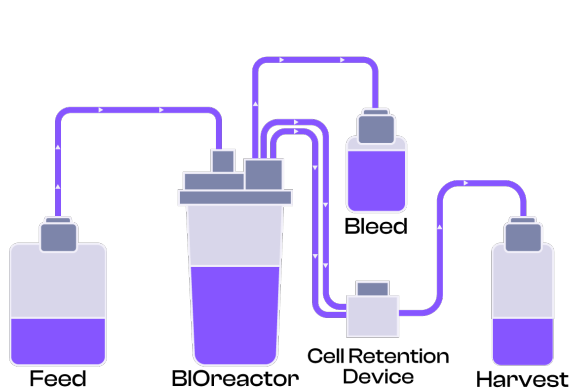


Process Analytical Technology:

OpenBIO comes with premier integration to PAT platforms like SynTQ and SIPAT. Additionally, it is deployed with open scripting software to allow your process scientists to develop and run custom software and algorithms.

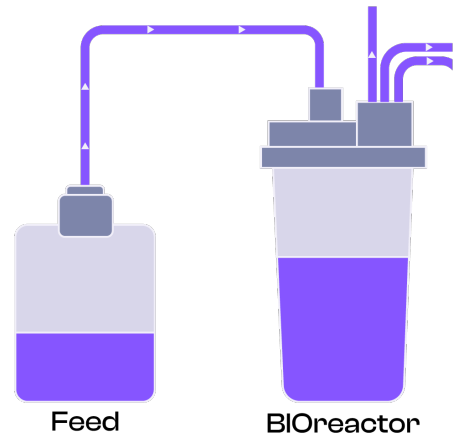
Full Automation & Continuous Cell Culture

As bioprocessing and cell culture technology continues to advance, the OpenBIO system is designed to continue integrating new and advanced vessels, membranes, and process technology. Designed with Open Architecture, the OpenBIO is Vessel and Process agnostic providing you with an adaptable controls solution across your process development.



Fed Batch:

Automate feeds and setpoints shifts using the recipe and formula manager. The standard configuration includes a recipe with 40 shifts and new recipes can be configured with 100+ automated shifts based on inoculation time.



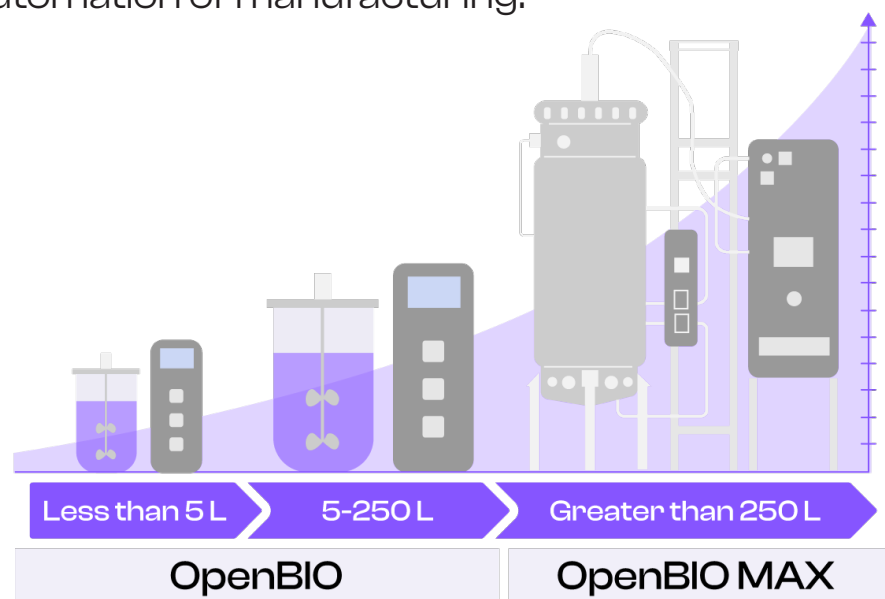
Perfusion:

Integrate with any perfusion module. Schedule and automate harvests and membrane regeneration. Simplify adding new and next generation sensors with premier integration.

Accelerate Scale Up, Down, and Out

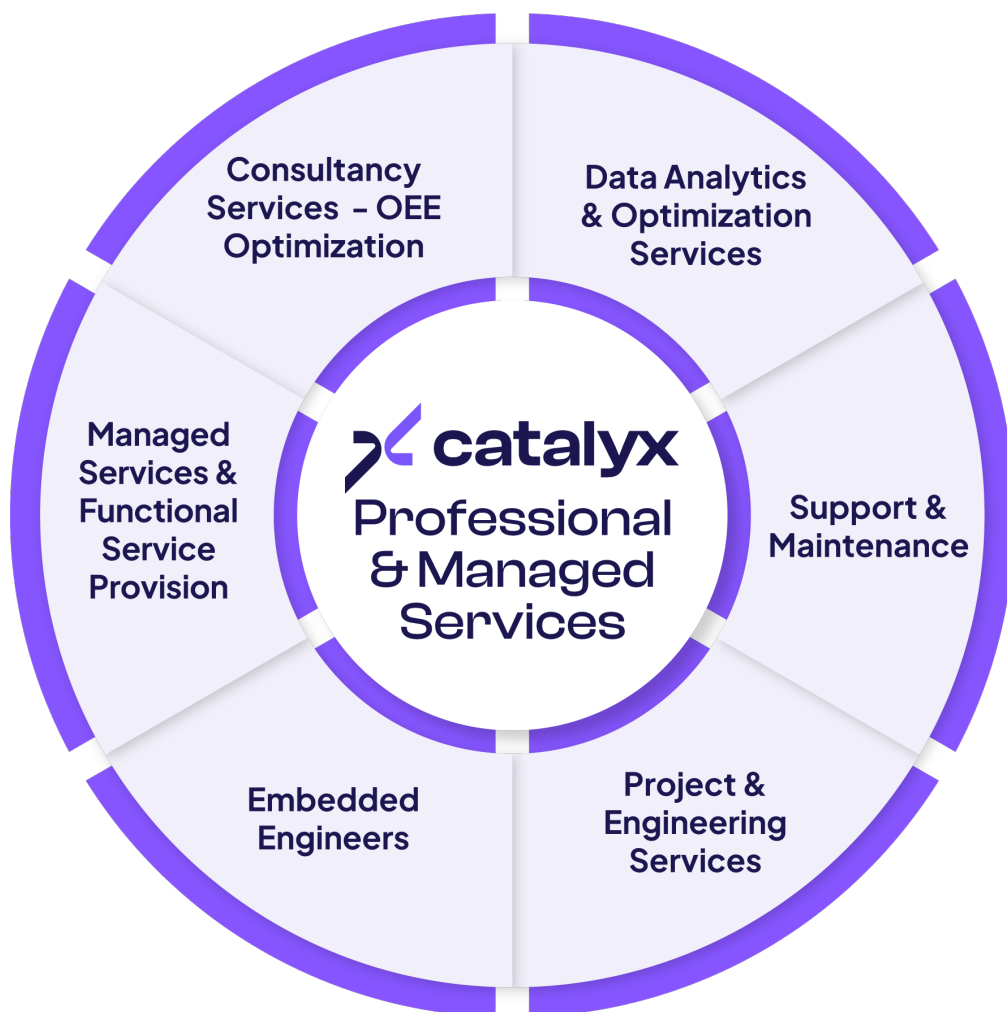
Designed for ideal functionality for scientists with the standards and automation of manufacturing.

Simplify scale by using the same controller design from benchtop to pilot to the production floor. Unifying the software and control hardware across the systems accelerates tech transfer and reduces IT/OT overhead of maintaining multiple systems. Seamless integration to SCADA, Historian and Enterprise systems enables easy comparisons between systems.



Validation & Service Support

Catalyx is an expert in validation and compliance. The OpenBIO® Open Architecture Bioreactor Controller is available with a complete and comprehensive validation package from design documentation all the way through installation, commissioning, testing and IQ. Additionally, the system is available with a complete 21CFR11 installation package. Multiple levels of long-term support are available with our professional and managed services team from on-call to 24/7 onsite.



Technical Specifications

OpenBIO & OpenBIO MAX

	OpenBIO	OpenBIO MAX
Weight	120lb	120lb
Bioreactor sizes supported	Starting from 2L Bioreactors up to 250L Bioreactors	250L and above
Dimensions (W x H x D)	12' (W) x 30" (H) x 24" (D)	12' (W) x 30" (H) x 24" (D)
Housing	Stainless Steel 304	Stainless Steel 304
Display	Handheld tablet such as iPad, or any Industrial Thin Client	Handheld tablet such as iPad, or any Industrial Thin Client
SCADA/DCS	Ignition DeltaV PCS7	Ignition DeltaV PCS7
PLC	Rockwell DeltaV	Rockwell DeltaV
Interfaces	• Ethernet • 20x interfaces for future spares	• Ethernet • 20x interfaces for future spares
Certifications	CE, built to NRTL standards, RoHS, recognized by US OSHA	CE, built to NRTL standards, RoHS, recognized by US OSHA
Supported MFCs	Brooks, Alicat, Bronkhorst, and any MFC that supports standard industrial communication protocols such as Ethernet/IP, Modbus TCP, Profibus, ProfiNet	Brooks, Alicat, Bronkhorst, and any MFC that supports standard industrial communication protocols such as Ethernet/IP, Modbus TCP, Profibus, ProfiNet
Supported Pumps	Watson Marlow, Masterflex, or any pump manufacturer that supports standard industrial communication protocols such as Ethernet/IP, Modbus TCP, Profibus or ProfiNet	Watson Marlow, Masterflex, or any pump manufacturer that supports standard industrial communication protocols such as Ethernet/IP, Modbus TCP, Profibus or ProfiNet Supports external cased pumps for large flowrates
Supported Scales	Hardy, Mettler Toledo, Minebea, Quaus, or any scale that supports standard industrial communication protocols such as Ethernet/IP, Modbus TCP, Profibus or ProfiNet	Hardy, Mettler Toledo, Minebea, Quaus, or any scale that supports standard industrial communication protocols such as Ethernet/IP, Modbus TCP, Profibus or ProfiNet
pH	Mettler Toledo (incl. ISM), Hamilton (incl. ARC)	Mettler Toledo (incl. ISM), Hamilton (incl. ARC)
Dissolved Oxygen	Mettler Toledo (incl. ISM), Hamilton (incl. ARC)	Mettler Toledo (incl. ISM), Hamilton (incl. ARC)
Temperature	Omega Ultra Precise series Temperature transmitters and sensors	Omega Ultra Precise series Temperature transmitters and sensors
Advanced Analytics	Supports dCO2, Capacitance, Biomass sensors from Hamilton, ABER Instruments	Supports dCO2, Capacitance, Biomass sensors from Hamilton, ABER Instruments
PAT Ready	Yes	Yes



Why Choose OpenBIO?

Built by Process Control Experts

Designed by senior engineers with deep process control expertise, OpenBIO delivers proven reliability, earning high satisfaction ratings and industry validation.

Regulatory Compliance with Innovative Software

The OpenBIO® system is 21 CFR Part 11 compliant, offering comprehensive reporting and regulatory adherence through its advanced software.

Flexible & Scalable Bioprocess Control

OpenBIO's configurable hardware and software adapt to any application. Bioreactor-agnostic, it integrates with Rockwell, Ignition, and DeltaV platforms. Its flexible design supports upgrades, expansions, and centralized monitoring, enabling users to view any bioreactor from any HMI.

Comprehensive After-Sales Service & Support

Backed by process control experts, OpenBIO offers market-leading after-sales service, including annual maintenance, calibrations, and system support. It provides integration, installation, qualification services, and support for data historians, PAT platforms, and automation systems. With automation, flexible scalability, and unmatched support, OpenBIO® is the future-ready solution for optimizing bioprocess control.

Fast Deployment with Short Lead Times

With a production lead time of just 12-16 weeks, OpenBIO enables rapid deployment and seamless integration, minimizing operational downtime.

Take the First Step
Toward Connected,
Compliant Manufacturing.

Speak to a Solutions Expert today

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