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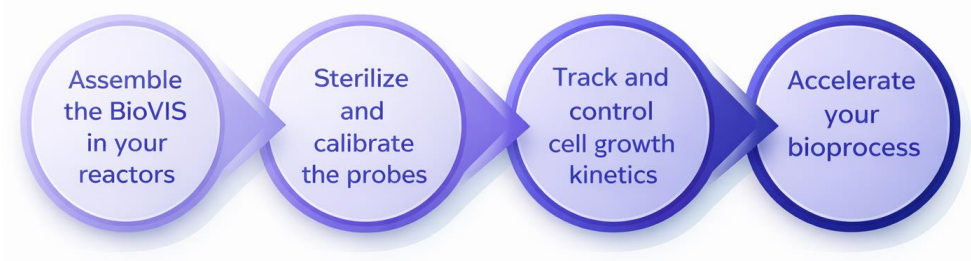
BioVIS

Real-Time Total Cell Density & Biomass Monitoring Probe



BioVIS is an in situ optical biomass probe using light reflectance to provide real-time monitoring of total cell density in bioreactors.

BioVIS enables continuous tracking, logging, and control of culture growth kinetics, supporting deeper process understanding and robust bioprocess development.

Highlights:

- ✓ Proprietary light reflectance technology
- ✓ Reduce manual sampling needs
- ✓ Simplify measurement workflows
- ✓ Direct in situ analysis
- ✓ No sampling or dilutions required
- ✓ Minimize contamination risks
- ✓ Preserve valuable culture media

See the BioXplorer 100 on your own laboratory benches.

BioVIS Features and Benefits

BioVIS is a compact, portable optical density probe for real-time, non-invasive monitoring of cell density and biomass, significantly reducing manual sampling.

BioVIS is widely used across bioprocessing workflows, such as batch, fed-batch, and continuous (chemostat or turbidostat) fermentations to streamline operations, improve data quality, and accelerate decision-making.

It integrates seamlessly with our BioXplorer parallel bioreactor platform and is compatible with a wide range of other major bioreactor brands.

- ✓ Continuous monitoring and logging of total cell density
- ✓ Compact, portable, single-unit platform
- ✓ Multiple probe lengths available for vessels of varying sizes
- ✓ Plug and Play design compatible with a wide range of bioreactors
- ✓ Supports additional temperature and pH monitoring functions

BioXplorer 100

Technical Specifications

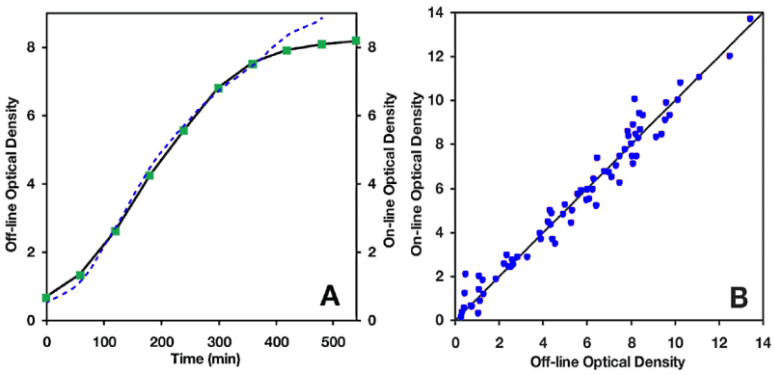
Specification point	Comment
Probe length	As required by size of bioreactor
Diameter (minimum)	1/8 inch (3.18 mm)
Optical path length	0 to 5 mm
Process connection	1/4” UNF
Operating temperature range	0 to 150 °C
Steam sterilisable	Yes, max temperature 200 °C
Autoclavable	Yes
CIP	No
Pressure range	0 to 10 bar
Measuring principle	NIR
Light Source	LED
Wavelength	880 nm (other WL available)
Communication	Analog Output 4-20 mA or 0-10 V
Multiplex Option	Yes, number depends on requirements
Support of major bioreactors brands	Yes

BioXplorer 400P

Contact our specialist

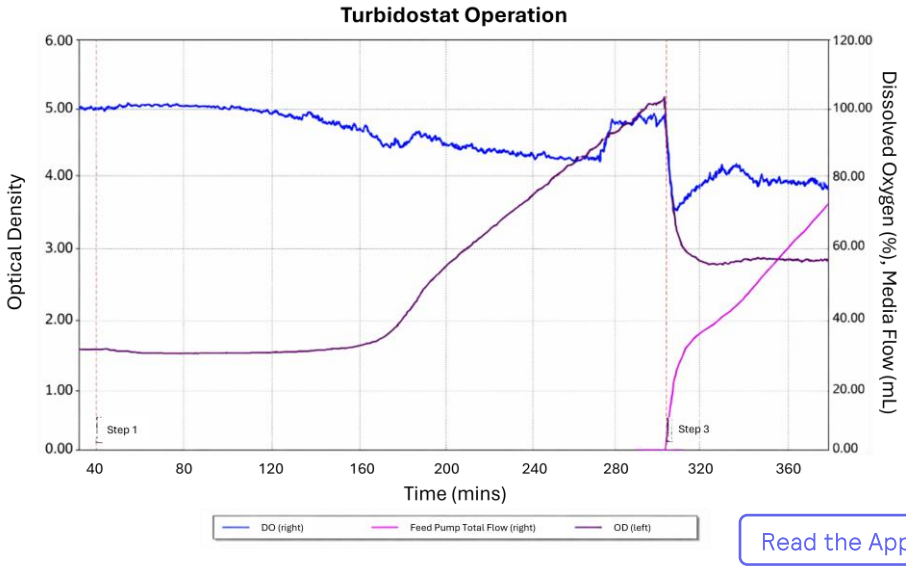
See the BioXplorer 400 on your own laboratory benches.

Accurate, Reproducible Biomass Measurements



Demonstrated batch-to-batch reproducibility across parallel reactors.
(A) Comparison of online and offline growth profiles.
(B) Eight independent *E. coli* fermentations conducted in a BioXplorer 100 (100 mL) showing highly reproducible behavior.

BioVIS in Action



Read the Application Note

A BioXplorer 100 was configured to operate as a turbidostat using the BioVIS. The graph shows how the *E. coli* culture behavior is controlled automatically through BioVIS-based biomass regulation. Upon reaching the OD setpoint, the system initiates dilution (~300 min), increasing feed pump flow and adding fresh medium until the OD stabilizes at the defined target. The BioVIS probe enables control of a steady-state metabolic response under continuous growth conditions, supporting reproducible operation with minimal manual intervention.

Upgrades, Support, and Training

We understand that your needs can change over time and you may require:

- A system upgrade
- Training for new team members
- Support on your processes
- To book some time with our service team

Our service team and highly knowledgeable technical staff will work with you to find the right solution.

About H.E.L Group

H.E.L Group partners with scientists, engineers, and biotechnology professionals to accelerate innovation and unlock the full potential of modern research and manufacturing. We design and build advanced scientific instruments and intelligent software that enhance the efficiency, accuracy, and safety of chemistry and bioprocess workflows.

With a portfolio spanning automated reactor systems, parallel screening platforms, bioreactors, and safety testing technologies, H.E.L solutions support high-value applications across chemistry, catalysis, flow chemistry, materials development, fermentation, and scale-up. Our team combines deep technical expertise with decades of engineering experience. All products are developed and manufactured in the UK, supported by global sales and applications teams who work closely with customers to implement the right tools for their scientific and production challenges.

For more than 37 years, H.E.L has helped organizations—from leading pharma and biotech companies to chemical, energy, and academic research centers—solve complex process problems and achieve safer, more productive R&D.

Why customers choose H.E.L Group:

- ✓ **Customer-centric engineering:** Our systems are designed for real scientific needs, with modularity and scalability to fit diverse workflows.
- ✓ **Application-driven support:** Dedicated technical and service teams ensure fast implementation, tailored training, and long-term reliability.
- ✓ **Configurable solutions:** A wide range of custom options allows each platform to be optimized for specific chemistry, bioprocess, or scale-up requirements.

H.E.L Group is committed to enabling the next generation of scientific breakthroughs by empowering researchers with tools that deliver reproducibility, safety, and deeper insight every day, in every experiment.

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