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NOVA BIOMEDICAL
BioProfile® FLEX2 Integration



Connect up to 16 Seg-Flow® PS units

Autosampling Solution for the FLEX2 Cell Culture Analyzer

The Seg-Flow® PS and Director™ integration provides automated sampling from up to 16 bioreactors, delivering samples directly to the BioProfile FLEX2 or other connected analytical instruments.

Unlike many automated sampling systems, the Seg-Flow integrates directly with the FLEX2 application programming interface (API), creating a more stable and reliable connection between the sampling system and the analyzer. The system can also be configured to route samples to up to four analyzers, enabling multiple critical process parameters to be measured through a single automated sampling solution.

For smaller-scale applications, the Seg-Flow PS can connect up to two bioreactors directly to the BioProfile FLEX2 without requiring a Director. For systems with more than two bioreactors, the Director manages sample routing and coordinates communication between the bioreactors and the analyzer, ensuring efficient automated operation.

Automated Sampling and Sample Management

The Director coordinates sample routing, analyzer communication, and data acquisition while incorporating a built-in fraction collector for automated sample management. Samples are delivered directly to the BioProfile FLEX2 for automated measurement of cell density, viability, nutrients, metabolites, gases, and other critical bioprocess parameters.

In addition to online analysis, the system automatically collects, cools, and stores samples for offline testing, verification, or further analytical characterization, providing complete sample traceability and reducing manual handling.

The Seg-Flow PS and Director integration supports both cell-containing and cell-free sampling, providing the flexibility needed for batch, fed-batch, and perfusion processes. Automated sampling schedules can be customized for each bioreactor, enabling users to define independent sampling frequencies based on the specific requirements of each process.

Data Integration and Process Control

Analytical results from the BioProfile FLEX2 are automatically acquired and linked to the corresponding bioreactor and sampling event, ensuring complete data traceability. The data can be used for real-time process monitoring, trend analysis, and optional automated feed-control strategies based on measured nutrient or metabolite concentrations.

With built-in OPC UA connectivity, BioProfile FLEX2 analytical results and Seg-Flow process data can be seamlessly integrated with compatible SCADA systems, distributed control systems (DCS), data historians, and bioprocess management platforms. This centralized data exchange supports advanced process monitoring, automated control strategies, and streamlined manufacturing operations.

By automating sample collection, delivery analysis, cooled sample retention, and data integration, the Seg-Flow PS and Director system reduces manual sampling, improves sampling consistency, and minimizes operator interaction. More frequent, high-quality analytical data enables enhanced process monitoring, deeper bioprocess understanding, and more informed process control decisions.

Integration Specifications

Software Integration
Native integration with the Nova Biomedical BioProfile FLEX2 using the FLEX2 Application Programming Interface (API)

Communication
Bidirectional communication between the Seg-Flow® software and the BioProfile FLEX2 for automated sample transfer, analyzer control, and data acquisition

Fluid Connection
Direct connection to the sample port located on the right side of the BioProfile FLEX2

Required FLEX2 Hardware
The Nova Biomedical FLEX2 EOLS Automation Kit must be installed to enable the Seg-Flow integration

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Features & Benefits

Fully Automated Bioprocess Sampling and Analysis
Integrates the Seg-Flow® PS Fully Automated Sampling System and Director™ Liquid Handler with the Nova Biomedical BioProfile® FLEX2 Analyzer to automate sample collection, delivery, analysis, and data acquisition.

Bioreactor Capacity
Supports automated sampling from 1 to 16 bioreactors. The Seg-Flow® PS connects directly to the BioProfile FLEX2 for applications with up to two bioreactors, while the Director™ Liquid Handler is required for systems with more than two bioreactors.

Compatible Bioreactor Sizes
Supports bioreactors ranging from 100 mL lab-scale vessels to 2,000 L production-scale bioreactors.

Software Integration
Native integration with the Nova Biomedical BioProfile FLEX2 using the FLEX2 API provides reliable, bidirectional communication for automated analyzer control and data acquisition.

Supports Multiple Analytical Devices
Delivers samples to the BioProfile FLEX2 and up to three additional analytical instruments through a single automated sampling platform, enabling comprehensive process monitoring from one integrated system.

Built-In Fraction Collection
The Director automatically collects, cools, and retains samples for offline testing, confirmatory analysis, or future evaluation, reducing manual handling while maintaining sample integrity and traceability.

Cell-Containing and Cell-Free Sampling
Supports both cell-containing and cell-free sampling for batch, fed-batch, continuous, and perfusion processes, providing the flexibility to accommodate a wide range of bioprocess applications.

Customizable Sampling Schedules
Configure independent sampling frequencies for each bioreactor based on specific process objectives and analytical requirements.

Automated Data Acquisition
BioProfile FLEX2 results are automatically collected and linked to the correct bioreactor and sampling event, ensuring complete data traceability.

Real-Time Process Monitoring
Delivers frequent measurements of cell density, viability, nutrients, metabolites, gases, and other critical bioprocess parameters to support continuous process monitoring.

Automated Feed-Control Capabilities
Uses real-time nutrient and metabolite measurements to enable automated feed-control strategies that help optimize process performance.

OPC UA Connectivity
Seamlessly transfers BioProfile FLEX2 analytical results and Seg-Flow process data to compatible SCADA systems, distributed control systems (DCS), data historians, and bioprocess management platforms for centralized monitoring and control.

Reduced Manual Sampling
Minimizes operator intervention, improves sampling consistency, and reduces the time and labor required for routine sample collection and analysis.

Enhanced Process Understanding and Control
More frequent, high-quality analytical data supports improved process visibility, faster decision-making, and tighter bioprocess control throughout development and manufacturing.

Automate your BioProfile® FLEX2 workflow with Seg-Flow® PS and Director™

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