



Precision Benchtop Chromatography Unit

SEPARATION

PRODUCT SUMMARY

The Precision Benchtop Chromatography Unit efficiently separates product based on AEC or HIC by employing manual, semi-automated, or fully automated modes to optimize your chromatography applications. Its space-saving design suits laboratories with limited space, and customizable hardware options cater to specific process needs. The unit integrates smoothly with existing setups through Rockwell infrastructure, facilitating seamless data exchange. Real-time monitoring, data logging, and advanced control ensure precision. This integration elevates process control, efficiency, and reliability for your chromatography workflows, making the chromatography unit a compact, configurable, and capable solution for dependable chromatography separation.

APPLICATIONS:

Our Chromatography Unit is meticulously designed to excel in various bioprocessing applications, offering efficient and reliable filtration solutions. Its adaptability and advanced features facilitate seamless integration into diverse processes, ensuring optimal performance and consistently high-quality outcomes. The chromatography unit's versatility plays a pivotal role in various downstream stages. Applications where our chromatography unit demonstrates exceptional performance encompass:

- Protein Purification & Isolation
- Biomolecule Separation
- Analytical & Preparative Chromatography
- Downstream Processing in Biopharmaceuticals
- Chromatographic Process Development
- Small Molecule Separation
- Sample Analysis and Fractionation
- Aiding in Process Development

AUTOMATED PROCESS MONITORING & REMOTE CONTROL:

Users can configure alerts and set points, tailoring them to their application requirements. They can monitor trend reports for these crucial process values, gaining valuable insights into their system performance. Additionally, users are equipped to create, edit, and save methods, enabling them to optimize purification protocols according to their unique needs. This comprehensive suite of features empowers operators to effectively manage their operations, providing them with the tools needed to swiftly identify deviations from the defined purification parameters.

DESIGNED FOR A REGULATED ENVIRONMENT:

This chromatography unit can be designed to meet a regulated environment's rigorous demands and standards if required. In addition, the chromatography unit is GMP compliant and can be incorporated to meet 21 CFR Part 11 compliance regulations.

PURIFICATION WORKFLOW:

Our chromatography unit seamlessly integrates into purification protocols, working with our TFF unit to deliver comprehensive and efficient bioprocessing workflows. The Chromatography Unit is designed to be compatible with various unit operations, including downstream filtration processes such as separation. Our team of application specialists is available to provide valuable expertise and guidance on process design, ensuring optimal integration and efficiency throughout your bioprocessing workflow. Our chromatography and TFF units offer a powerful solution for your separation needs, enabling streamlined and robust processes to achieve high-quality results.

SYSTEM OVERVIEW

This Benchtop Chromatography Unit is designed to house all essential hardware and instrumentation within an enclosure, providing a compact and efficient solution for chromatography applications. The system incorporates two benchtop scales, liquid control, pressure sensors, UV control, conductivity, temperature, and bubble detection, ensuring accurate and reliable process control throughout the chromatography steps. Additionally, this unit offers seamless integration options with existing Rockwell infrastructure, allowing users to benefit from its features while leveraging their current bioprocessing setup.

LIQUID MANAGEMENT:

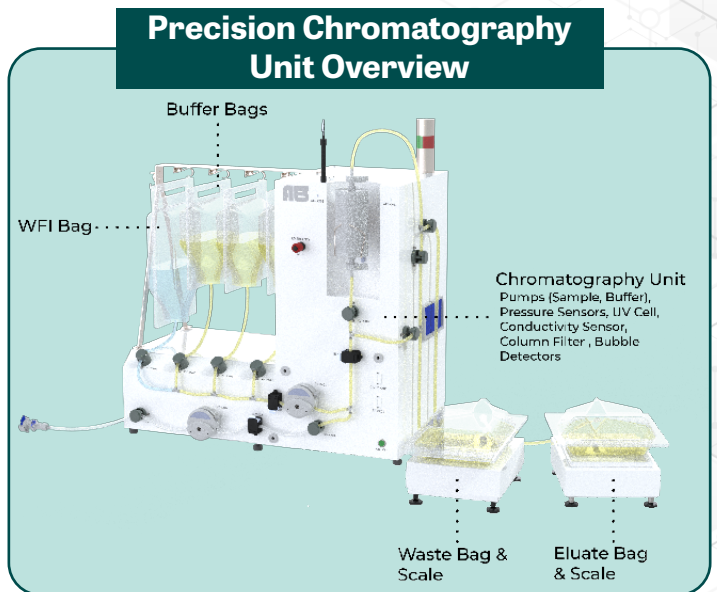
This chromatography unit features essential pumps for precise fluid handling during separation, ensuring optimal flow control and efficiency. Engineered with robust construction and precise mechanisms, these pumps work harmoniously to ensure reliable fluid handling and accurate flow control. They enable accurate flow control with adjustable speeds for fine-tuning flow rates according to process needs. Bi-directional stepper motors integrated into the pumps allow seamless control for various separation operations. The unit maintains contamination-free fluid handling, streamlining tube loading and maintenance for efficiency. Through adjustable pump speeds, bi-directional control, and peristaltic pumping principles, our TFF unit offers precise liquid control for chromatographic performance.

Buffer Pump:

The Buffer Pump within our chromatography unit is an integral component for precise fluid handling during chromatographic processes. This peristaltic pump guarantees robust and reliable performance. It maintains consistent flow rates, ensuring optimal column interactions. With adjustable speed settings, it provides flexibility to adjust flow rates and dosing according to specific chromatography steps and resin characteristics.

Sample Pump:

The Sample Pump within our chromatography unit is a crucial element for accurate and controlled sample delivery. This peristaltic pump offers precision and reliability. It enables you to control the introduction of samples with ease and accuracy. With adjustable speed settings, it allows fine-tuning of flow rates, ensuring your samples are processed consistently and efficiently.



PRESSURE SENSOR:

A state-of-the-art single-use pressure sensor is seamlessly integrated into this chromatography unit, enabling real-time monitoring of the chromatography process pressure. This advanced feature empowers users to detect irregularities and deviations in the pressure profile, ensuring the highest quality and reliability throughout the chromatography process.

UV CONTROL:

The chromatography unit incorporates a single-use UV flow cell with a cutting-edge UV photometer. UV analysis is critical to the system, enabling real-time protein elution, peak identification, and purity assessment monitoring. The availability of real-time UV data empowers users to optimize gradient conditions, precisely identify target fractions, and achieve exceptional separation results with unmatched purity and quality.

CONDUCTIVITY & TEMPERATURE CONTROL:

The chromatography unit has a state-of-the-art single-use conductivity sensor and temperature transmitter. This advanced real-time analysis capability empowers users to closely monitor the elution process, detect impurities, and

optimize conditions to achieve maximum yield and purity. With precise control over conductivity and temperature, our system ensures unparalleled performance and reliability for your chromatography process.

BUBBLE DETECTION

Our chromatography unit incorporates an advanced, non-invasive clamp-on bubble detection system, enhancing your chromatography processes. This innovative feature offers many benefits, guaranteeing unmatched safety and efficiency throughout your chromatography endeavors. The continuous monitoring for air bubbles within the chromatography process assures seamless separations, preserving the integrity of columns and valuable samples. This level of process security is of utmost importance for delicate biomolecules, shielding them from disruptions that could compromise purity and yield. The real-time optimization of flow rates and conditions empowers you to elevate efficiency, minimize waste, and achieve elevated throughput.

FLOWPATH & CONSUMABLES:

This Benchtop Chromatography Unit ensures a seamless and efficient process, offering exceptional performance and ease of use. We provide a complete solution that includes essential consumables to support every step of your chromatography workflow. The thoughtfully designed flow path accommodates the entire process, from utilizing specialized tubing that optimizes fluid flow and compatibility to dedicated bags for convenient

fraction collection and downstream processing. We supply all necessary consumables, including tubing, WFI Bags, Buffer Bags, and collection vessels for waste and eluate. This comprehensive solution simplifies your chromatography workflow, enabling reliable and precise operation.

AUTOMATION & CONTROL SYSTEMS:

The Precision Chromatography Benchtop Unit's automation and control software offers flexible integration into your setup, supporting PC laptop control and Ethernet communication standards. The standard offering for the controller is Rockwell™, providing real-time data acquisition and enabling accurate process control. Convenient trend analysis further enhances the capabilities of this chromatography unit. With streamlined tech transfer, scale-up, and recipe sharing, this chromatography unit simplifies research and facilitates seamless automation across different stages of the product development process.

DATA & COMMUNICATION:

The Precision TFF Benchtop Unit is an innovative piece of lab equipment that provides precise data and control functions. The user-friendly interface displays real-time and historical data and can meet the specific needs of each experiment. Additionally, the platform includes advanced features such as remote monitoring and control, data logging, and alarm notifications, allowing for efficient and reliable operation.

TECHNICAL SPECIFICATIONS

Enclosure Specifications	
Enclosure Footprint (H x W x D)	41.7 in x 41.3 in x 20.3 in
Power Requirements	120 - 230 VAC, 50/60 Hz, 1200 Watts
Equipment & Instrumentation Specifications	
Liquid Control	
Onboard Pumps	(2) pumps with Bi-Directional Stepper Motors
Pump Head Type	Peristaltic, Flip-Top Pump Heads
Pump Speed Range	0.2 - 200 RPM
Pump Capacity / Flow Capacity	340 mL/min
Max Tubing Size	L/S #25
Max Tubing Inside Diameter	4.8 mm (~3/16 in)
Process Analytics	
Onboard Pressure Sensor	(1) Single Use Pressure Sensor
Pressure Range	0 – 60 psi ± 0.15 psi
Over Pressure Protection	Yes
Onboard UV Cell	(1) Single-Use Flow Cell with UV Photometer
UV Wavelength	260 nm
Conductivity Sensor	(1) Single-Use Conductivity Sensor with Conductivity & Temperature Transmitter
Conductivity Range	0 – 100 mS
Temperature Range	2 – 50 °C
Onboard Bubble Detectors	(3) Clamp-on Bubble Detectors

Weight Measurement

Eluate Scale

4 kg ± 0.01 Readability, Ethernet/IP

Waste Scale

15 kg ± 0.01 Readability, Ethernet/IP

Automation & Control Software

Standard Offering

AES Library Rockwell™