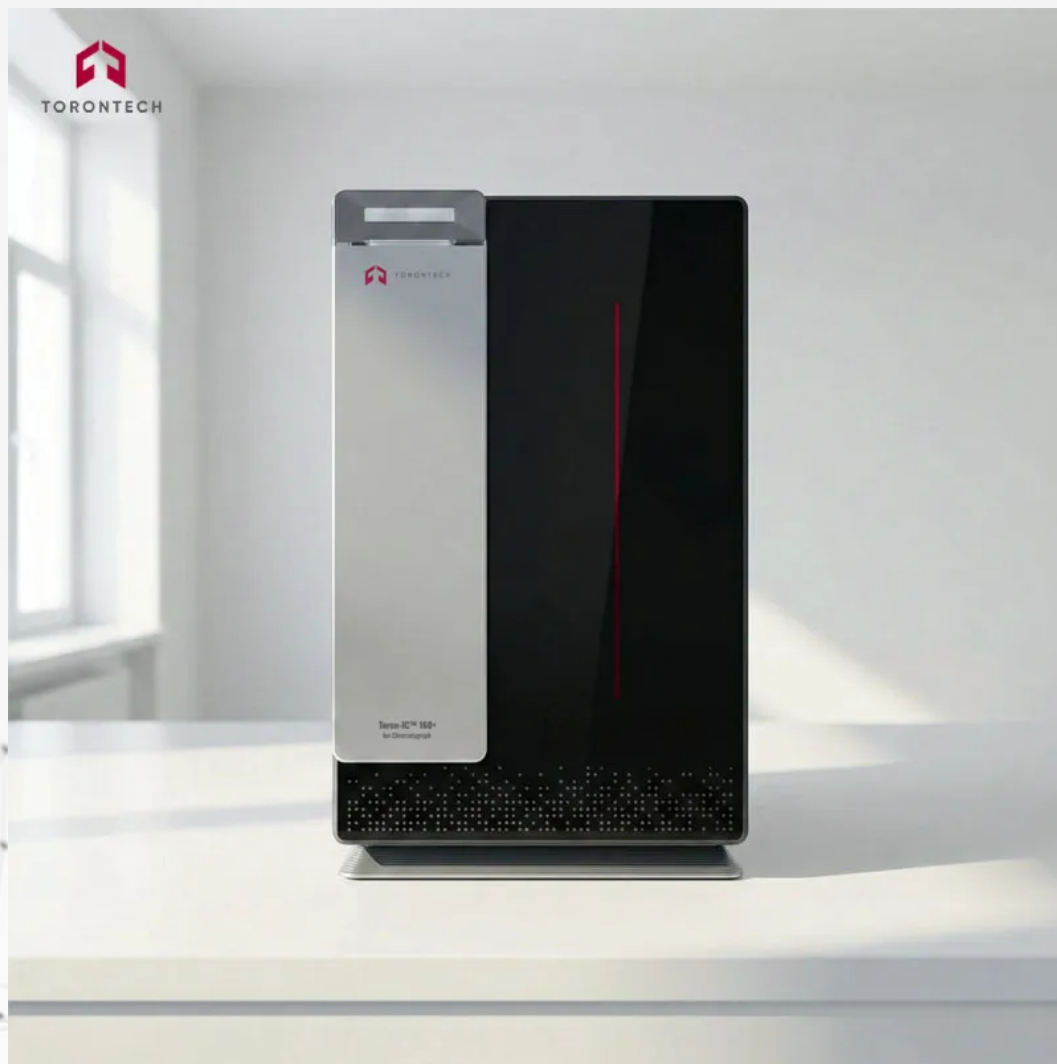


ION CHROMATOGRAPH - TORON-IC™ 160+



Ion Chromatograph - Toron-IC™ 160+

Toron-IC™ 160+ Ion Chromatograph is a high-performance system designed for precise, stable, and fully automated ion analysis. Ideal for both routine laboratory testing and advanced industrial research, this instrument delivers accurate qualitative and quantitative measurements from ppb to ppm concentrations.

Key features include intelligent eluent generation, high-pressure pumping, and an auto-range conductivity detector, all integrated to ensure exceptional analytical performance. The system is equipped with a built-in electrolytic suppressor and advanced conductivity detection, which simplifies operation while maintaining high sensitivity and reproducibility.

Furthermore, its robust design incorporates safety monitoring, baseline correction algorithms, and a metal-free flow path, guaranteeing long-term reliability and confidence in all analytical results.

APPLICATIONS

Ion Chromatograph - Toron-IC™ 160+ Applications



The Ion Chromatograph – Toron-IC™ 160+ is a powerful and versatile analytical instrument indispensable across a diverse range of industries and research fields, primarily for the precise and rapid determination of ionic species. Its broad applicability stems from its high sensitivity, selectivity, and reliability in separating and quantifying both inorganic anions and cations.

The instrument's key application areas include:

1. **Environmental Monitoring and Analysis** The Toron-IC™ 160+ plays a critical role in global environmental stewardship by enabling the comprehensive determination of trace-level inorganic anions (such as fluoride, chloride, nitrite, nitrate, sulfate, and phosphate) and cations (including lithium, sodium, ammonium, potassium, magnesium, and calcium) in various environmental matrices.
 1. **Water Quality Assessment:** Essential for routine testing of drinking water to ensure compliance with health and safety standards.
 2. **Wastewater Analysis:** Used to monitor effluent composition, assess treatment efficiency, and prevent environmental contamination.
 3. **Surface Water and Groundwater:** Provides data for tracking pollution sources, understanding natural hydrological cycles, and managing water resources.
 4. **Soil and Air Samples:** After appropriate extraction or preparation, the system is used for analyzing ionic content in environmental solids and atmospheric aerosols.
2. **Food & Beverage Testing and Quality Control** In the food and beverage industry, the Toron-IC™ 160+ is a vital tool for ensuring product quality, safety, and authenticity.
 1. **Preservative Analysis:** Accurately measures levels of common food preservatives (e.g., benzoate, sorbate) to ensure they are within regulated limits.
 2. **Organic Acids:** Determines concentrations of organic acids (e.g., acetic, citric, lactic, malic, tartaric acids) which influence flavor, stability, and nutritional value.
 3. **Inorganic Ions:** Analyzes essential and non-essential inorganic ions to assess mineral content, detect contaminants, and verify nutritional labeling.
3. **Pharmaceutical & Chemical Analysis and Quality Control** The rigorous demands of the pharmaceutical and chemical industries rely on the Toron-IC™ 160+ for critical quality control (QC) applications throughout the manufacturing process.

1. Raw Material Testing: Ensures the purity and identity of starting materials used in drug and chemical synthesis.
2. Intermediate and Finished Product Analysis: Monitors ionic impurities (residual process reagents, counterions, degradation products) that could affect product efficacy, stability, or safety, often adhering to strict pharmacopeial guidelines (e.g., USP, EP).
3. Counterion Determination: Used to precisely quantify the ionic component of an active pharmaceutical ingredient (API) salt.
4. Power & Semiconductor Industries These industries require water and chemical purity levels that are among the highest in modern manufacturing, making trace ionic contamination analysis essential.
 1. Ultrapure Water (UPW) Monitoring: Detects parts-per-billion (ppb) or even parts-per-trillion (ppt) levels of ionic contamination in UPW, which is critical for preventing corrosion in power generation systems and ensuring high yields in semiconductor fabrication.
 2. Process Chemicals: Analyzes acids, bases, and solvents used in manufacturing to verify trace ionic purity, which is crucial for preventing defects in microelectronic devices.
5. Academic & Research Laboratories The flexibility and performance of the Toron-IC™ 160+ make it an indispensable asset in academic and corporate research settings.
 1. Method Development: Serves as a platform for developing novel ion chromatography separation techniques and detection methods.
 2. Advanced Ion Chromatography Studies: Supports diverse research efforts in areas such as new material characterization, metabolomics, and complex matrix analysis, pushing the boundaries of analytical chemistry.



FEATURES

Ion Chromatograph - Toron-IC™ 160+ Key Features

The Toron-IC™ 160+ is engineered with a suite of advanced features designed to maximize efficiency, precision, and stability in Ion Chromatography analysis.

Core System Capabilities for Enhanced Performance:

- **Built-In Eluent Generator:** Revolutionizes eluent management by automatically generating high-purity hydroxide or methanesulfonic acid eluents. This sophisticated system completely eliminates the need for tedious manual preparation, dilution, and degassing of mobile phases, enabling seamless operation for both isocratic and complex gradient elution profiles. This not only saves time but also significantly improves inter-run and intra-run reproducibility by ensuring consistent eluent concentration.
- **Real-Time Consumables Monitoring:** Ensures continuous, stable performance through a proactive monitoring system. It provides real-time status and operational metrics for critical consumables, including the suppressor and chromatographic column. This capability allows for timely identification of performance degradation or potential failures, enabling preventative maintenance and replacement before data quality is compromised.
- **Advanced Baseline Correction Software:** Features intelligent algorithms for superior data processing, particularly critical during challenging gradient separations. The software employs sophisticated baseline subtraction and filtering techniques to effectively minimize system drift and reduce noise inherent to changes in eluent composition, resulting in cleaner chromatograms and more accurate integration.
- **Comprehensive Safety Protection:** Incorporates multiple integrated alarms for critical operational parameters, including pressure deviations, liquid leakage detection, and reagent level depletion. This system provides real-time operational feedback and is coupled with an automatic shutdown capability, ensuring the protection of system components and laboratory personnel.
- **Auto-Range Conductivity Detector:** Offers exceptional versatility by automatically adjusting its detection range. This eliminates the need for manual range switching and ensures accurate, high-resolution detection across a vast spectrum of analyte concentrations, spanning from trace level parts-per-billion (ppb) to high level parts-per-million (ppm).
- **Gas-Liquid Separation System:** A crucial component for optimizing detection stability. This system efficiently removes any dissolved air or micro-bubbles that may form in the flow path, especially after the suppressor or before the detector. By eliminating bubble interference, it ensures a stable detector signal and maximizes quantitative accuracy.

System Integrations for Reliability and Reproducibility:

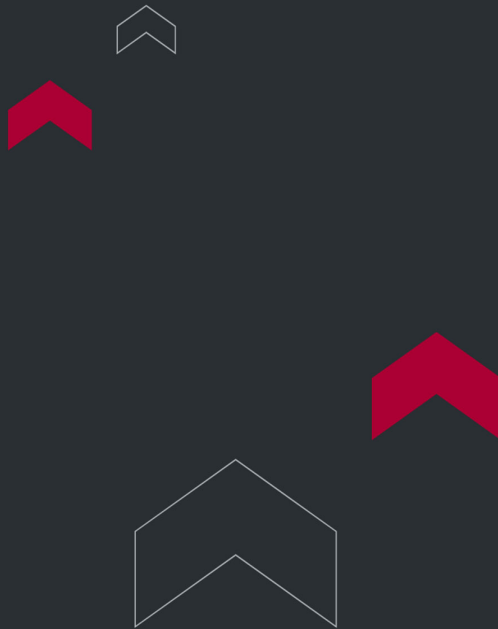
- Vacuum Degassing System: A built-in, high-efficiency degasser works synergistically with the eluent generator. By applying a continuous vacuum, it actively minimizes the concentration of dissolved gases in the eluent. This fundamental step prevents bubble formation and associated baseline disturbances, which is key to maintaining long-term chromatographic stability and reducing detector noise.
- High-Precision Autosampler Compatibility: The Toron-IC™ 160+ is designed for full compatibility with the SHINE high-performance autosampler. This integration guarantees highly accurate and repeatable sample injection volumes, which is fundamental for achieving reliable quantitative results and maximizing sample throughput in high-volume laboratory environments.

TECHNICAL SPECIFICATIONS

Ion Chromatograph - Toron-IC™ 160+ Technical Specifications

Parameter	Specification
Model	Toron-IC™ 160+
Analytical Technique	Ion Chromatography
Eluent Generator	Built-in
Eluent Types	KOH / NaOH / LiOH / MSA
Eluent Concentration Range	0.1-100 mM
Flow Rate Range	0.001-12 mL/min
Maximum Pump Pressure	Up to 42 MPa
Pump Type	High-pressure, low-pulse dual-piston pump

Parameter	Specification
Flow Accuracy / Precision	$\leq 0.1\%$
Vacuum Degassing Efficiency	$\geq 90\%$ at 1.0 mL/min
Suppressor Type	Self-regenerating electrolytic membrane
Detector Type	Auto-range conductivity detector
Detection Range	0-50,000 $\mu\text{S/cm}$
Baseline Noise	$\leq 0.0002 \mu\text{S/cm}$
Linearity	≥ 0.999
Minimum Detectable Concentration	$\text{Cl}^- \leq 0.0001 \mu\text{g/mL}$; $\text{Li}^+ \leq 0.0001 \mu\text{g/mL}$
Column Heater Range	Ambient +5 °C to 85 °C
Power Consumption	150 W
Dimensions (W × D × H)	360 × 500 × 560 mm
Net Weight	31 kg



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