

Ion Chromatograph

Nexera IC



Make Every Analysis Count

Every day, laboratories around the world carry out regulatory-compliant analyses to safeguard the environment and protect human health. Ion chromatography plays a critical role in water quality testing, driving the need for intelligent analytical instruments that enable users of all experience levels to deliver accurate, reliable results with complete confidence.

The Nexera™ IC ion chromatograph combines a compact footprint with uncompromising performance, enabling anyone to perform analysis effortlessly and efficiently.



Compact & Cost-Effective

Essential analytical functions are seamlessly integrated into a compact, space-efficient design, while thoughtful engineering and proprietary software minimize maintenance and reduce downtime. The result is faster, more efficient day-to-day operation and consistently reliable analytical results.

Effortless Efficiency

An innovative user interface makes operation effortless, allowing anyone to perform analysis with confidence. Complementary software streamlines daily workflows and ensures the instrument delivers stable, reliable performance every day.

Streamlined Automation

Advanced automation intelligently monitors system status and results to prevent errors, ensuring reliable data no matter the user's experience level. By streamlining tasks, it also reduces workload and boosts overall efficiency of the analytical workflow.



Compact & Cost-Effective

Proven Technology, Enhanced Performance and Ease of Use

Automation streamlines the entire workflow, from preparing eluents and samples to data acquisition and analysis. The instrument's front-accessible design makes maintenance quick and easy, helping to minimize downtime and keep operations running smoothly.



Solvent Delivery Unit

Built-in Delivery Pump

A metal-free pump with a low-pulsation series double plunger system is built in, for stable liquid delivery.

Automatic Eluent Generation Unit

An optional valve-switching mixing eluent generation unit is available to simplify eluent preparation and reduce errors. The eluent can be diluted at ratios selected from three pre-defined patterns of dilution ratios (2x, 5x, 10x). For example, if a high-concentration eluent and pure water are set, and a dilution ratio of 10 is selected, the eluent will be automatically generated by a factor of 10.

Dialytic Membrane Suppressor

An optional high-sensitivity dialytic membrane suppressor delivers low internal capacity and outstanding baseline reduction. It is compatible with both positive and negative ion suppression for reliable, precise results.

SI-150 Autosampler

Versatile Injection Options

The instrument features a total-volume injection system with software-controlled volume adjustment, ensuring the entire aspirated sample is delivered for maximum accuracy with no sample waste. Standard injections range from 0.1 to 200 μ L. For additional flexibility, the classic loop injection mode, which overfills the sample loop, can be used with an optional accessory.

Multi-Sample Analysis for Maximum Throughput

With a capacity of up to 162 \times 1.5 mL vials, the system easily handles large-volume, high-throughput sample analysis.

Improved Chromatography with Automated Sample Handling

Ensure accurate, dependable chromatography with preprogrammed, automated sample preparation — dilution and eluent mixing are performed before injection for consistently trouble-free analysis.

Column Oven

Precise column temperature control, essential for ion chromatography, is built in. A standard pre-column heater stabilizes eluent temperature, while an advanced air circulation system ensures exceptional temperature accuracy. The system accommodates a wide range of columns, from short to long columns up to 300 mm.

On-Line Degassing Unit

A built-in degassing unit eliminates dissolved air, reducing baseline noise and retention time fluctuations for stable, reliable results. Its low-volume online design removes the need for off-line methods like ultrasonic degassing.

Conductivity Detector

To deliver low-noise, stable-baseline analysis, the temperature-sensitive electrical conductivity detector features precise temperature control, including a dual-control system that can be integrated within the column oven.



UV Detector

Add an optional UV detector to the IC-150 to monitor UV-absorbing ions like nitrite, enhancing your analytical versatility.



Streamlined Size, Expanded Analytical Capability

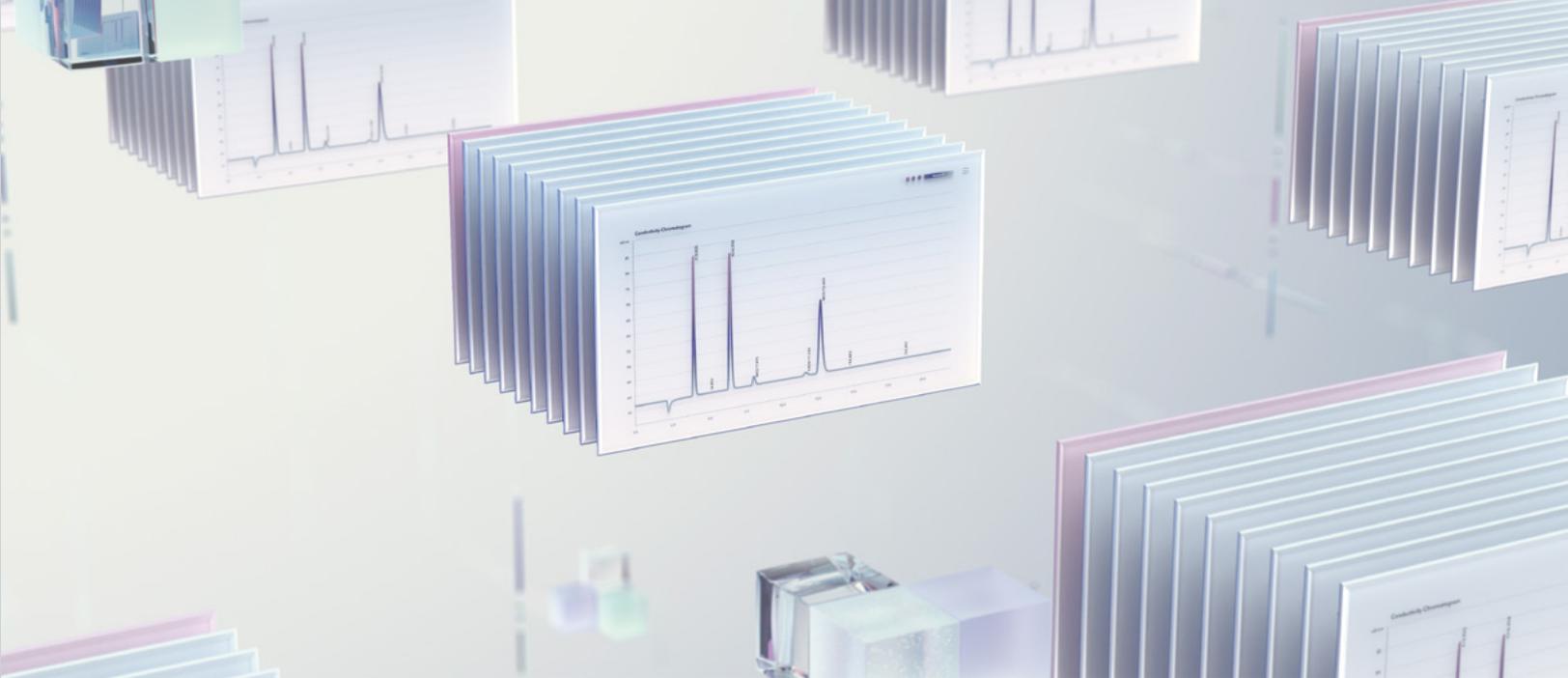
Standing under 50 cm, the Nexera IC allows easy eluent access, while its 52 cm-wide single-analysis system optimizes lab space. An optional IC-150D dual injection system enables simultaneous anion and cation analysis for enhanced versatility.



Single Analysis System



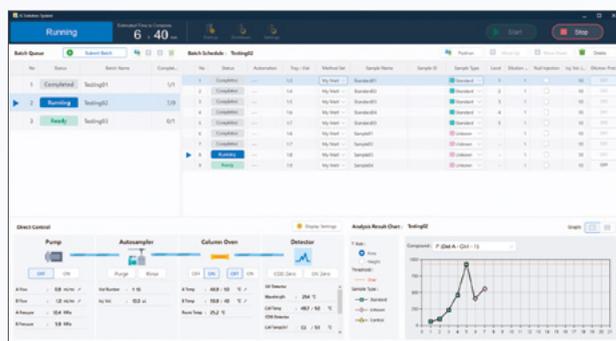
Dual Analysis System



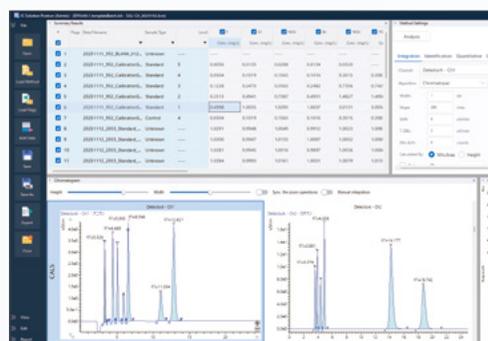
All-in-One Software for Complete Data Management

IC Solution

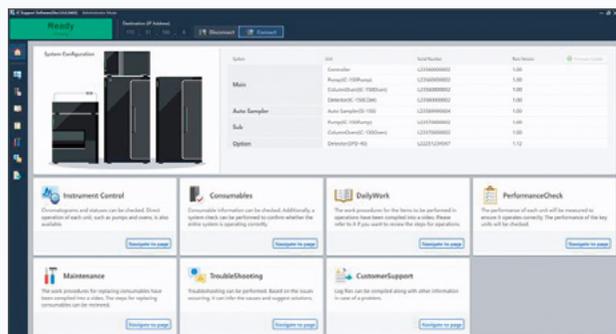
IC Solution, the dedicated software for the ion chromatograph, combines routine and advanced analysis functions in a single, intuitive interface. Multiple quantitative results—including detection of outliers—can be reviewed at a glance, and comprehensive reports are easily generated from the analysis results.



IC Solution Data Acquisition Window



IC Solution Data Analysis Window



IC Support Software Home Screen

IC Support Software

The software supports daily operations, delivers comprehensive system management tools. It handles core ion analysis tasks like eluent monitoring and column tracking, records consumables usage, offers interactive troubleshooting, provides links to maintenance videos, and collects analysis data for easy validation support.

Effortless Efficiency

Smarter, Simpler, More Reliable Analysis

With IC Solution, laboratory managers can preconfigure methods and workflows in advance, allowing users to run analyses using standardized templates. This ensures consistent, reliable execution of routine daily analyses, including regulatory compliance testing.

Reduction in the number of samples prepared

Sample preparation

Simplified sample queue registration

Analysis preparation

Automatic dilution of high-concentration samples

Data acquisition

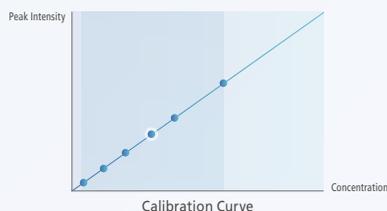
Display of outliers

Data analysis

Automatic generation of reports summarizing the results

Report creation

Calibration Curve Preparation Function



Standards can be automatically diluted within the autosampler. This enables a calibration curve to be created from a single high-concentration standard.

Select a Standard Template

Analysis can be performed after selecting a pre-registered method set and adding sample information.

Sample Dilution Function*

If the concentration of the substance to be measured in the sample exceeds the calibration curve range, the sample is automatically diluted and reanalysis is performed.

* The function supports only a single analysis system.

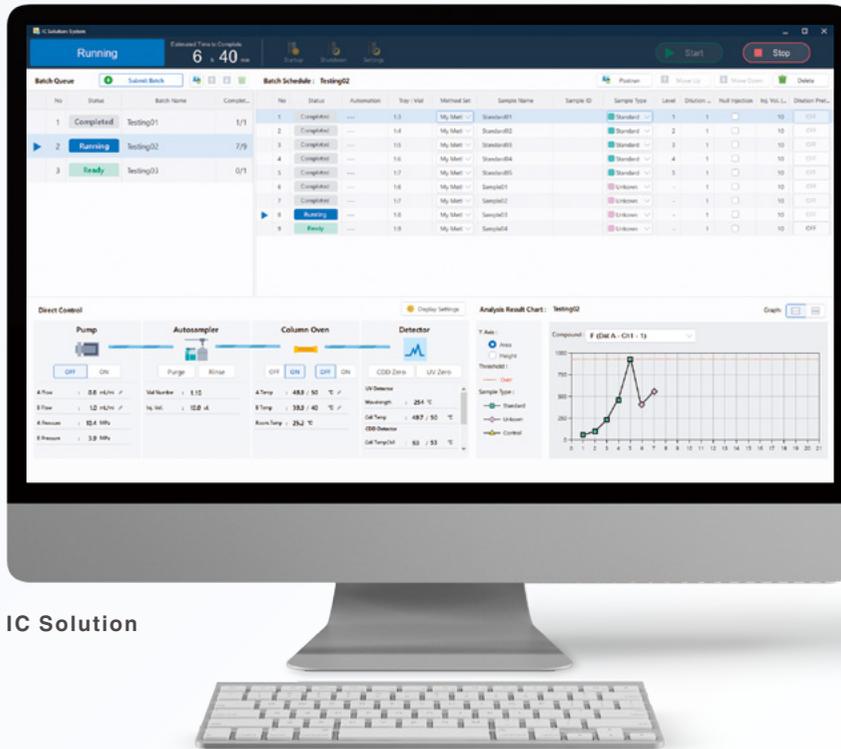
Automatic Determination of Results and Flagging of Outliers



The software automatically verifies calibration curve integrity by assessing individual value deviations. Any measurement exceeding the user-defined threshold is prominently flagged, supporting precise and dependable analysis.

Report Output Function

A report is automatically generated containing chromatograms, calibration curves, and analysis results.

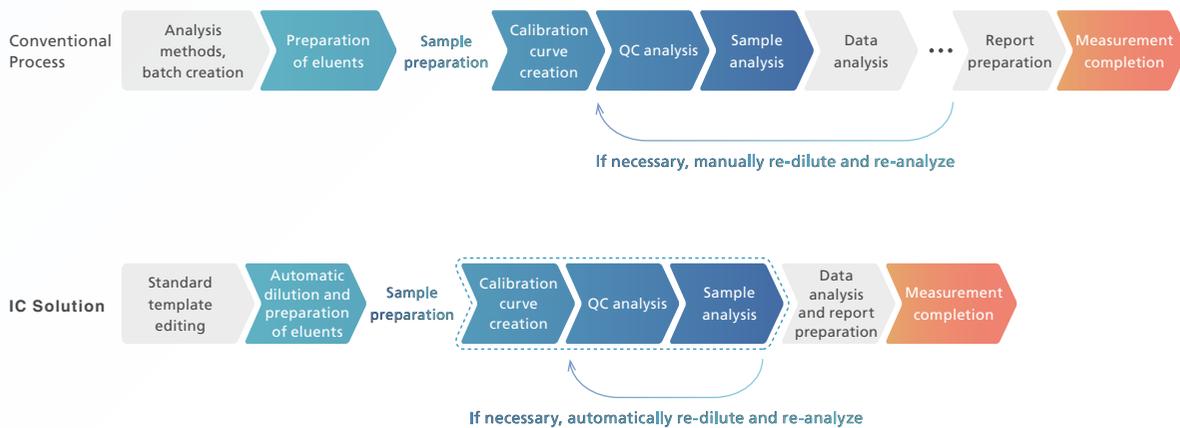


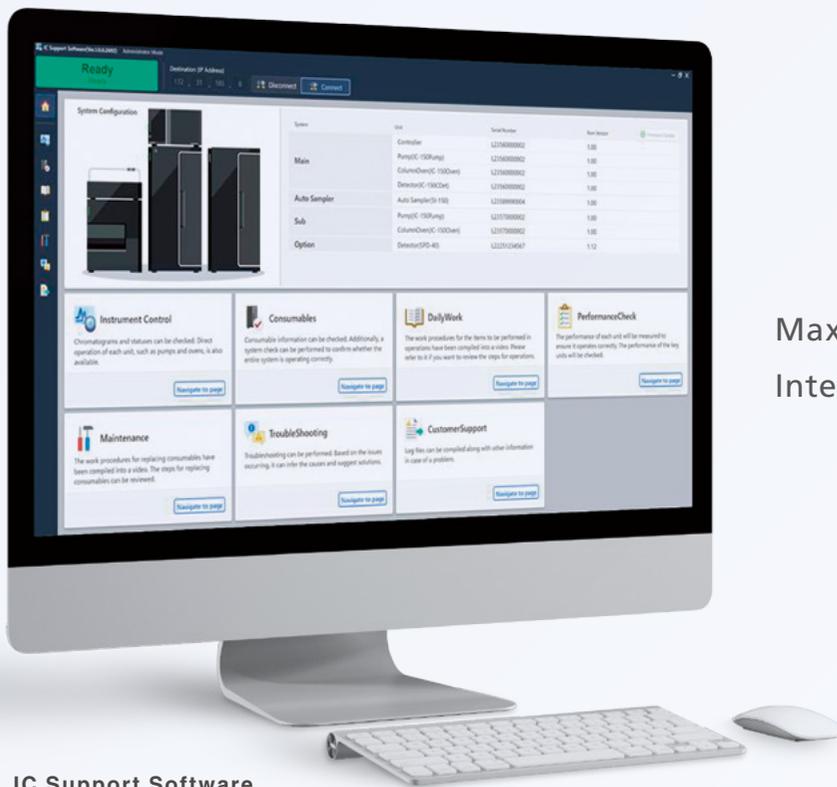
IC Solution

Expert Analysis, Made Simple

Eliminate variability and streamline your workflow.

- * **Template-Based Operation:** Managers define the parameters, conditions, and criteria once, allowing beginners to execute complex routine analyses with confidence.
- * **Regulatory Compliance:** Utilize pre-loaded methods compliant with various regulations or customize them to fit your specific laboratory needs.
- * **Instant Visualization:** Review data immediately with a clear Pass/Fail list for every sample, ensuring all standards are met before generating the final report.





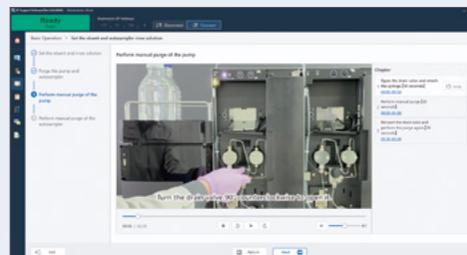
Maximize Uptime with Integrated Support

IC Support Software

Keep your analysis running smoothly with proactive instrument management. IC Support Software allows users to monitor instrument status in real time and access a library of daily maintenance guides and video tutorials. If an issue requires expert attention, the built-in Inquiry function automatically compiles and transmits the necessary diagnostic logs to Shimadzu. This streamlined connection speeds up troubleshooting, minimizes downtime, and ensures high instrument availability.

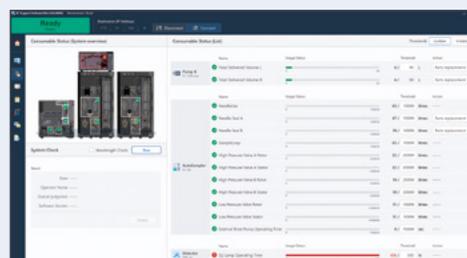
Interactive Operational Support

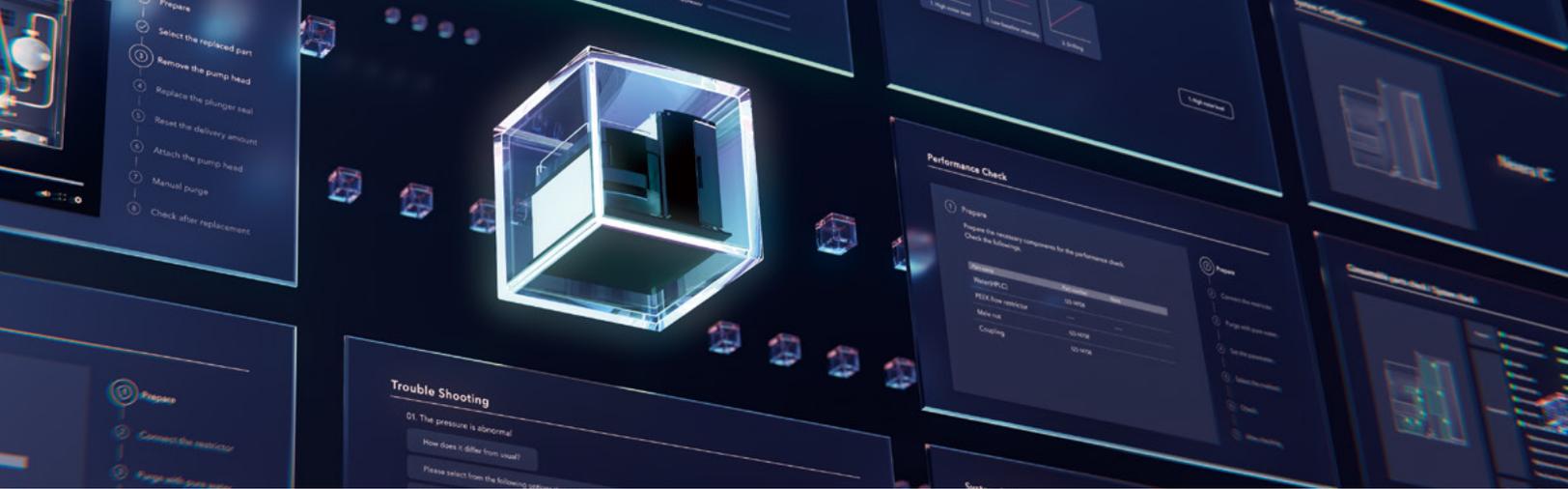
Navigate basic operations and daily inspections with ease. The system provides context-specific procedure flows and video tutorials, guiding users through the correct steps based on the specific task or issue at hand.



Stable Analysis and System Health

Ensure stable analysis by staying ahead of maintenance. Users can easily cross-reference consumable replacement guidelines with maintenance schedules to verify the correct procedures. The system also offers a "whole-system" health check to confirm that all components are operating normally.

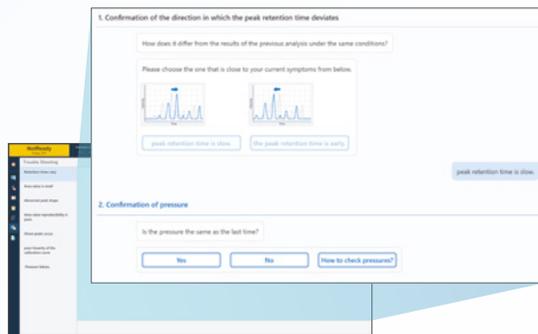




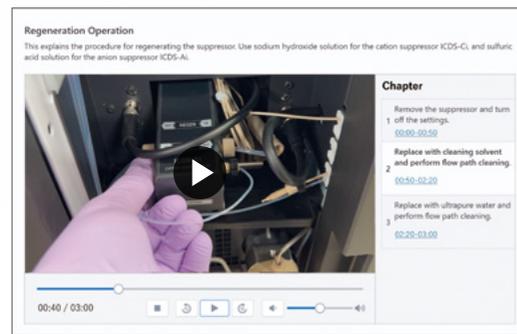
Intelligent Troubleshooting for Unexpected Issues



Smart Diagnosis: The software identifies the cause of errors and guides you toward a solution interactively.

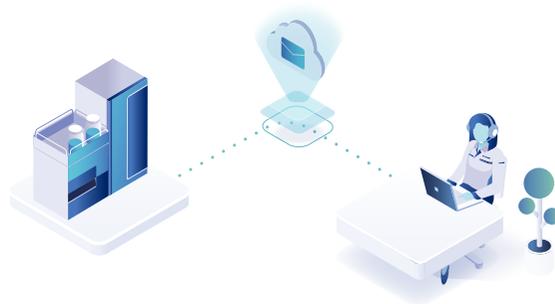


Visual Guidance: Access video procedures for replacing consumables, automatically filtered to match your specific troubleshooting results.



Seamless Connection to Shimadzu Support

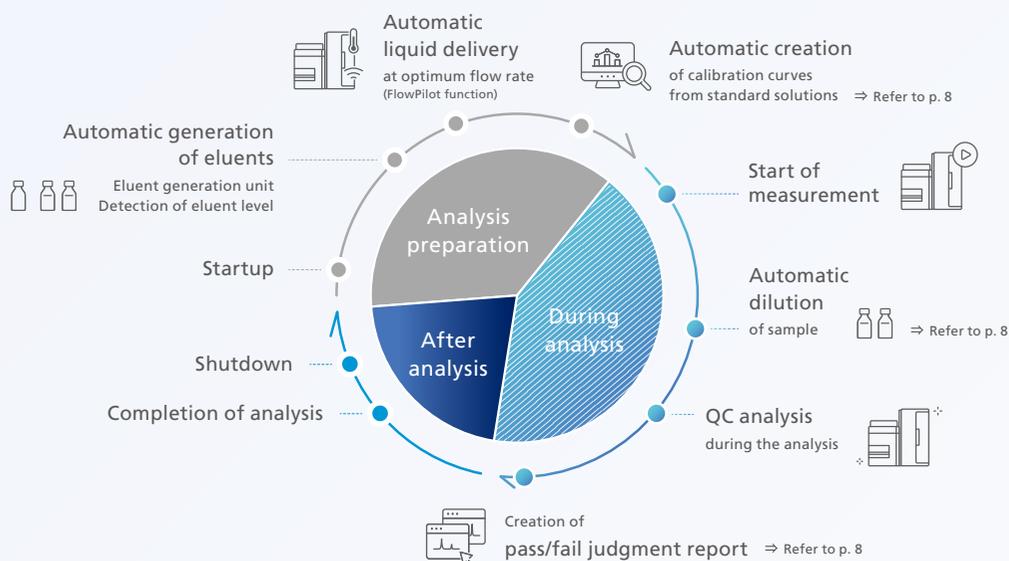
Accelerate your support cases. The software can compile all necessary instrument logs and error history into a standardized output. You can choose to share this with Shimadzu upfront to ensure a faster, more accurate resolution to technical inquiries.



Streamlined Automation

Automated Analysis Boosts Efficiency and Ensures Reliable Results

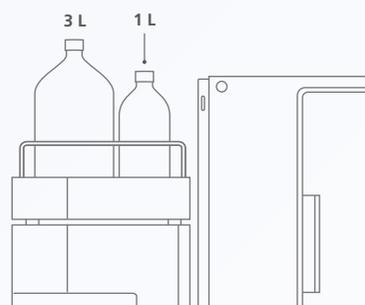
Unique automation capabilities streamline your entire workflow—from the preparation of samples and eluents to final data acquisition. When paired with IC Solution, the system significantly reduces manual intervention, lightening the daily workload for operators and minimizing the risk of human error.



Analysis Preparation

Automatic Eluent Generation

Eliminate manual mixing with our advanced valve switching system. The Automatic Eluent Generation Unit dilutes eluents based on three pre-defined ratios (2x, 5x, 10x). Simply set your high-concentration eluent and pure water, select the corresponding ratio, and the system automatically generates the precise concentration required for the analysis.



Smart Fluid Management



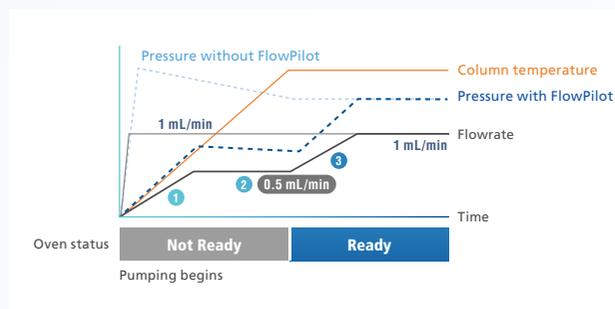
Prevent interruptions with real-time monitoring. Integrated weight sensors track the levels of eluent and autosampler rinsing solution. The system checks required volumes before a run starts and issues an alert if levels are insufficient. Continuous monitoring during analysis ensures you never run dry.



Protect the Column with FlowPilot®



Analytical columns are valuable assets that require careful handling. To prevent deterioration caused by sudden pressure loads, FlowPilot automates the delicate startup process. By intelligently synchronizing the eluent flow rate with the column oven temperature, FlowPilot gradually ramps up the system, ensuring optimal column equilibration and extended lifespan without manual intervention.



FlowPilot

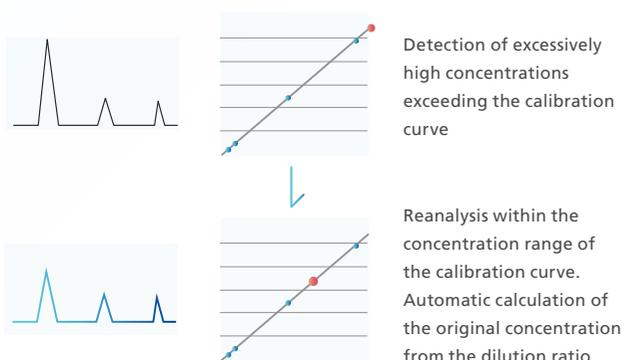
The pump controls the flowrate in accordance with the oven temperature. Before the oven temperature reaches the set value, the flowrate is gradually increased (① in the diagram) and maintained at half the set value in the method ②. Then, when the oven temperature reaches the set value, the flowrate is gradually increased to the set value in the method ③.

During Analysis

Efficiency Via IC Solution's Auto-Dilution Feature*



High-concentration samples often fall outside the calibration range, traditionally requiring time-consuming manual dilution and reanalysis. The **Auto-dilution Feature** eliminates this bottleneck. If a sample exceeds the calibration curve, the instrument automatically dilutes it to the correct target range and immediately performs a reanalysis. This seamless process significantly improves the efficiency of quantitative testing.



* The function supports only a single analysis system.

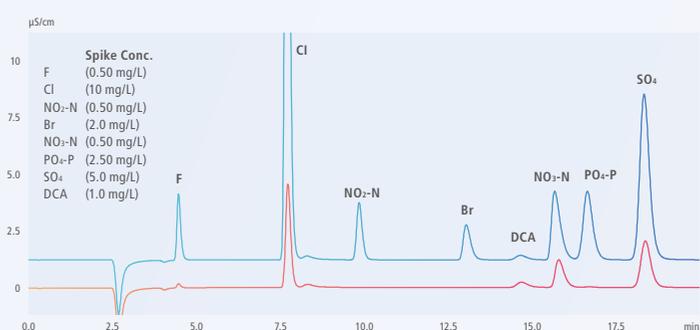


- Automated support functions utilizing digital technologies, such as M2M, IoT, and Artificial Intelligence (AI), that enable higher productivity and maximum reliability.
- Allows a system to monitor and diagnose itself, handle any issues during data acquisition without user input, and automatically behave as if it were operated by an expert.
- Supports the acquisition of high quality, reproducible data regardless of an operator's skill level for both routine and demanding applications.

Applications

Drinking Water Analysis by EPA Method 300.1

Ion chromatography plays a vital role in measuring key parameters that ensure drinking water meets established safety and quality standards, including U.S. Environmental Protection Agency (EPA) Method 300.1. As shown in the data below, the Nexera IC enables simultaneous analysis of seven inorganic anions and dichloroacetic acid in accordance with EPA Method 300.1 Part A, providing laboratories with an efficient, reliable, and high-confidence platform for water quality assessment.



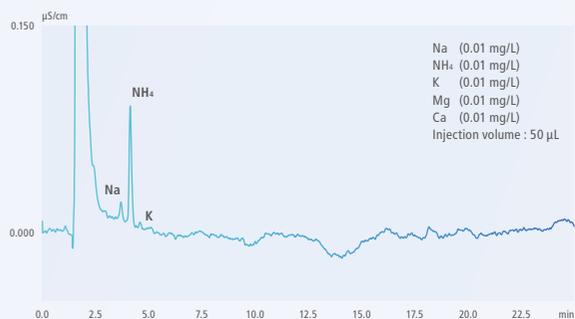
Chromatograms of spiked sample (upper line) and drinking water (lower line)
(Using the anion suppressor ICDS-Ai)

For a more detailed information to this function, refer to the Application News.

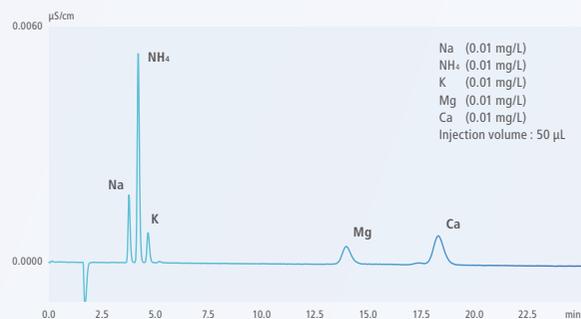
Application

High-Sensitivity Analysis Using a Cation Suppressor

Suppressors are used in ion chromatography to reduce background noise and enable high-sensitivity analysis. Equipped with a newly developed dialytic cation suppressor, the Nexera IC delivers significantly higher sensitivity than conventional non-suppressor systems.



Cation analysis without the ICDS-Ci suppressor



Cation analysis with the ICDS-Ci suppressor

Specifications

Ion Chromatograph Main Unit

Model Name		IC-150	IC-150D
P/N		228-65675-58	228-65677-58
Pump	Type	Series double plunger	
	Pulsation (noise) removal measure	Use of micro-plunger (one stroke 10 μ L) Automatic compression ratio correction function	
	Flow rate settings range	0.0001 to 5.0000 mL/min	
	Flow rate precision	0.06 % RSD or 0.02 min SD, whichever is greater (retention time method)	
	Others	Plunger automatic rinsing kit (option), Degassing unit (included as standard)	
Column oven	Method	Forced air circulation	
	Temperature range	Room temperature -10 to 85 $^{\circ}$ C	
	Temperature accuracy	\pm 0.4 $^{\circ}$ C (oven temperature: 30 $^{\circ}$ C, under ambient at "room temperature" condition)	
	Temperature precision	\pm 0.1 $^{\circ}$ C (oven temperature: 30 $^{\circ}$ C, under ambient at "room temperature" condition)	
	Storage space	Up to one 5 cm guard column and one 25 cm column	
	Others	Column preheater (included as standard; Pressure resistance: 20 MPa)	
Conductivity detector	Measurement range	Up to 20,000 μ S/cm Automatic gain switching	
	Noise level (Single detector)	0.04 nS/cm (under specified conditions)	
	Drift (Single detector)	5 nS/cm/h (under specified conditions)	
	Measurement channels	2 ch (The second channel is optional.)	
	Cell temperature control	Dual temperature control (temperature control cell built into column oven) (Temperature setting range [column oven temperature +3 $^{\circ}$ C]: 25 $^{\circ}$ C to 60 $^{\circ}$ C)	
	Sampling rate	1 to 100 Hz	
	Cell capacity	0.25 μ L	
Others	Cell pressure resistance	10 MPa	
	Dimensions and weight	W260 x D500 x H490 mm, 31 kg	
	Available pH range	pH 1 to 14	
	Maximum pressure	20 MPa (Standard), 35 MPa (Option)	
	Wetted parts materials	PTFE, PEEK, fluoro-resin, FEP, PPS, perfluoroelastomer, ruby, sapphire, PTFE, alumina	
	Cell electrodes	Stainless steel	
	Workstation	LabSolutions, IC Solution (options)	

Autosampler (For the IC: Option)

Model Name		SI-150
P/N		228-65676-58/46
Injection method		Total volume injection (Variable volume injection): Standard, Loop injection (Injection volume fixed/variable): Option
Injection volume		Total-volume injection method: 0.1 to 200 μ L, Loop injection method: 0.1 to 140 μ L
Injection reproducibility (area value)	Total-volume injection method	RSD \leq 0.25 % (10 to 200 μ L injection) *Under specified conditions
	Loop injection method (Variable)	RSD \leq 0.45 % (20 μ L injection) *Under specified conditions
	Loop injection method (Fixed)	RSD \leq 0.25 % (50 μ L injection) *Under specified conditions
Carryover	Total-volume injection method	\leq 0.0050 % (without rinse), \leq 0.0010 % (with rinse, typically) *Under specified conditions
	Loop injection method	\leq 0.010 % (without rinse), \leq 0.0050 % (with rinse, typically) *Under specified conditions
Injection volume accuracy		\leq \pm 1.0 % (5 μ L injection, n=20)
Linearity		\geq 0.9999 *Under specified conditions
Number of samples installed (excluding well plates)		1.5 mL vial plates: 54 vials x 3 plates, 4 mL vial plates: 28 vials x 3 plates, 10 mL vial plates: 12 vials x 3 plates, microtiter plates/deep-well plate, 96 well x 3 plates, microtiter plates/deep-well plate, 384 well x 3 plates
Automatic pretreatment function/ Automatic dilution function		Yes
Minimum analytical cycle time		10 sec max, 14 sec max (Injection volume 50 μ L) (not including software communication operation.) *Under specified conditions
Dimensions and weight		W260 x D500 x H280 mm, 13 kg
Available pH range		pH1-14
Wetted parts materials		Eluent flow path: Zirconia, PEEK

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