

# Thermo Scientific Dionex Aquion Ion Chromatography System

The Thermo Scientific™ Dionex™ Aquion™ Ion Chromatography (IC) system provides a reliable foundation for IC analysis in a compact platform with the straightforward operation needed for budget-limited labs. Built with the aim of maintaining low operating costs, the Dionex Aquion IC system uses proven and reliable technologies to deliver results you can count on. The system is designed for ease of use, providing fast start up times and reliable, stable performance for demanding applications in environmental, food safety, and academic laboratories.



## Versatility

- Performs isocratic IC separations.
- Sensitive Suppressed Conductivity Detection.
- Integrated, preconfigured, factory plumbed, and tested for immediate productivity.
- Streamlined design with small footprint occupies minimal bench space.
- Dual-piston pump design reduces pulsations, allowing high-sensitivity detection and excellent flow-rate accuracy and precision.
- Flexible flow rate supports 2, 3, 4, and 5 mm column formats.
- Automated sample preparation capabilities enable techniques such as on-line filtration, concentration, and matrix elimination.

### Simple and Precise Control

- Built-in control for the Thermo Scientific™ Dionex™ SRS™ Self-Regenerating Suppressor. Electrolytic suppression with an AutoSuppression™ device eliminates the need to hand-prepare acid or base regenerants. Suppression reduces background conductivity and provides high signal-to-noise ratios.
- Full control and digital data collection available with Windows®-based Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System (CDS) Software, version SE using USB high-speed communication protocol.
- Chromeleon CDS software eWorkflows preload all instrument parameters for fast and easy operation and data analysis.
- Chromeleon CDS software control includes an electronic logbook for monitoring of nearly unlimited user-selectable operational parameters.

### Reliable Performance

- For improved reproducibility, the thermostated high-performance conductivity detector permits measurements that are unaffected by temperature variation.
- Advanced single-range digital output with operating range to 15,000  $\mu\text{S}$  full scale, with autoranging to provide accurate detection of major and minor constituents in a single run. Single-range analog signal output is also standard.
- Optional column heater provides day-to-day consistency, ensuring reproducibility and stability. Preheating of the eluent prior to the column maintains the column temperature set by the user. A transparent cover allows viewing of the column without temperature disruption.
- Optional built-in vacuum degas provides in-line degassing of eluents, ensuring reproducibility and protection of eluents from contamination and decomposition. Control of the degas operation can be automated to sense when degassing is required.
- Inert, nonmetallic PEEK™ components throughout the system ensure compatibility with corrosive eluents and provide metal-contamination-free chromatography.

### Convenience

- Versatile eluent organizer tray accommodates 1, 2, or 4 liter eluent bottles.
- Electrically actuated six-port Rheodyne PEEK injection valve for precise sampling.
- Ergonomically placed injection port for easy manual sampling.
- Eluent valve provides positive shut-off of eluent flow prior to the pump for easy servicing.
- Easy-access door to chromatography components.
- Leak detection and management allow fast response to system leaks.
- TTL controls for external pump, injection valve, range selection, and signal offset for stand-alone operation.

### Key Features

- Dual-piston pump
- Electrolytic suppression
- Digital conductivity detection
- USB connectivity, plug-n-play
- Optical leak detector
- Electronic logbook and trending

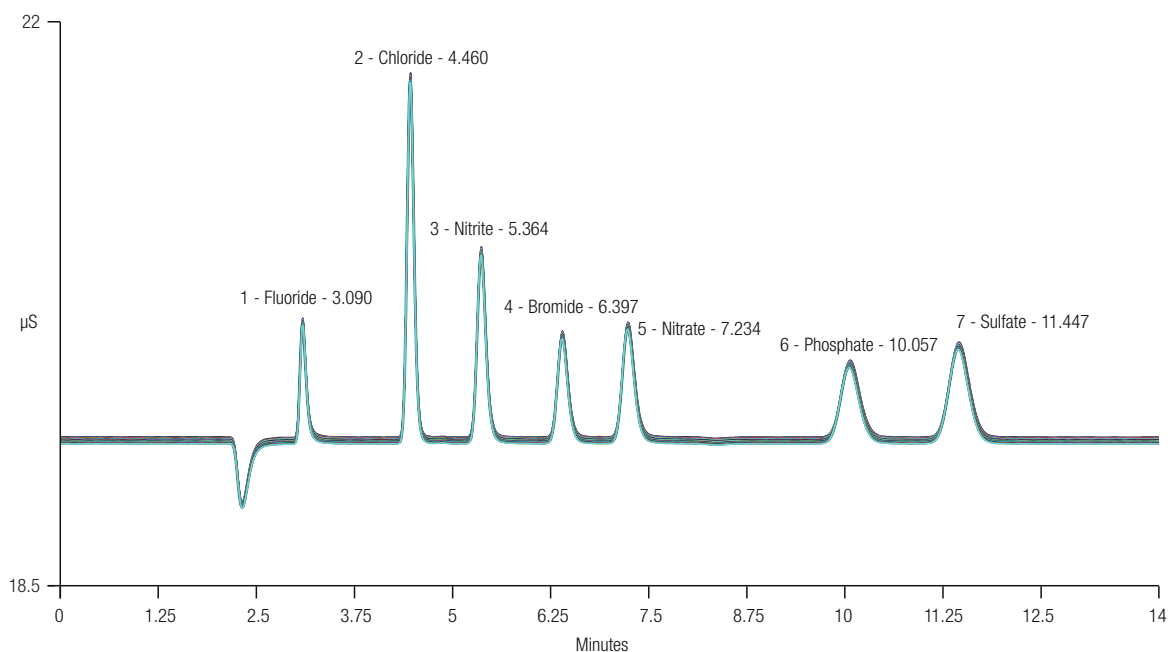


Figure 1. Overlay of chromatograms from a representative week of the seven anion calibration check standard runs on Dionex Aquion system using a single 4 L preparation of eluent. The peak retention times demonstrate high reproducibility.

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**DIONEX AQUION IC SYSTEM SPECIFICATIONS**


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**Analytical Pump and Fluidics**


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Type:	Serial dual-reciprocating pistons, microprocessor-controlled constant stroke, variable speed
Construction:	Chemically inert, metal-free PEEK pump heads and flow paths compatible with aqueous eluents of pH 0–14 and reversed-phase solvents
Pump Operating Pressure:	0–35 MPa (0–5000 psi)
Flow Rate Range:	0.00–5.00 mL/min without changing pump heads
Flow Precision:	<0.1%, typically
Flow Accuracy:	<0.1%, typically
Pressure Ripple:	<1% at 13.8 MPa (2000 psi) and 1.0 mL/min
Eluent On-Off Valve:	Standard
Piston Seal Wash:	Dual-pump head, wash can be continuous when connected to rinse solution supply
Pressure Alarm Limits:	Upper limit 0–35 MPa or 0–5000 psi in one unit (MPa or psi) increments; lower limit can be set up to one unit lower than upper limit
Vacuum Degas:	Yes, optional, automatic control
Eluent Bottles:	Polypropylene, up to 4 L volume
Eluent Bottle Pressure:	Not required
Injection Valve:	6-port, 2-position Rheodyne valve, electrically activated
Columns Supported:	2, 3, 4, and 5 mm i.d.; maximum length 250 mm analytical column with 50 mm guard column

**Column Heater (Optional)**


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Operating Temperature Range:	30 to 60 °C (86 to 140 °F); minimum 5 °C above ambient; settable range is equal to working range
Temperature Accuracy:	±0.5 °C at sensor, at 40 °C

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## DIONEX AQUION IC SYSTEM SPECIFICATIONS (CONT'D)

### Suppressors and Control

Chemical Suppression:	2 mm and 4 mm anion and cation, membrane suppression bed types
Displacement Chemical Regeneration:	2 mm and 4 mm anion and cation, membrane suppression bed types
Electrolytic Suppression:	2 mm and 4 mm anion and cation; membrane suppression bed types available
Electrolytic Suppression with External Water Mode:	2 mm and 4 mm anion and cation; membrane suppression bed types available
Current Control Range:	Thermo Scientific™ Dionex™ ERS™ 500 Electrolytically Regenerated Suppressor: 4 mm, 0–500 mA in 1 mA increments 2 mm, 0–150 mA in 1 mA increments Thermo Scientific™ Dionex™ ERD™ 500 Electrolytically Regenerated Desalter: 0–500 mA (4 mm) and 0–150 mA (2 mm) in 1 mA increments Thermo Scientific™ Dionex™ SRN™ Self-Regenerating Neutralizer: 0–500 mA in 1 mA increments
Salt Converter:	Available in 2 and 4 mm versions
Carbonic Acid Removal for Anions:	Dionex AERS 500 suppressor with Thermo Scientific Dionex CRD 200 Carbonate Removal Device for hydroxide eluents Dionex AERS 500 suppressor with Dionex CRD 300 device for carbonate eluents
Non-Suppressed Chromatography:	Yes, supported
Suppressor Wear Parts:	None; peristaltic pump and inline filters not required
Suppression Capacity:	Anions: Dionex AERS 500 (4 mm): 200 µeq/min Dionex AERS 500 (2 mm): 50 µeq/min Dionex AERS 500e (4 mm): 200 µeq/min Dionex AERS 500e (2 mm): 50 µeq/min Dionex AERS 500 Carbonate (4 mm): 25 µeq/min Dionex AERS 500 Carbonate (2 mm): 6.25 µeq/min Thermo Scientific™ Dionex™ ACRS™ 500 Anion Chemically Regenerated Suppressor (4 mm): 150 µeq/min Dionex ACRS 500 suppressor (2 mm): 37.5 µeq/min  Cations: Thermo Scientific™ Dionex™ CERS™ 500 Electrolytically Regenerated Suppressor (4 mm): 110 µeq/min Dionex CERS 500 suppressor (2 mm): 37.5 µeq/min Thermo Scientific™ Dionex™ CCRS™ 500 Chemically Regenerated Suppressor (4 mm): 100 µeq/min Dionex CCRS 500 suppressor (2 mm): 25 µeq/min
Void Volumes:	Dionex ERS 500 suppressor (4 mm): <50 µL Dionex ERS 500 suppressor (2 mm): <15 µL Dionex ERS 500e suppressor (4 mm): <50 µL Dionex ERS 500e suppressor (2 mm): <15 µL Dionex ERS 500 Carbonate suppressor (4 mm): <50 µL Dionex ERS 500 Carbonate suppressor (2 mm): <15 µL Dionex CRS 500 suppressor (4 mm): <50 µL Dionex CRS 500 suppressor (2 mm): <15 µL

### Conductivity Detector Electronics and Flow Cell

Type:	Microprocessor-controlled digital signal processor
Cell Drive:	8 kHz square wave
Linearity:	1% up to 1 mS
Resolution:	0.00238 nS/cm
Full-Scale Output Ranges:	Digital signal range 0–15000 µS/cm Analog signal range 0–15000 µS/cm
Electronic Noise:	±0.1 nS when background conductivity is 0–150 µS/cm ±2 nS when background conductivity is 151–3200 µS/cm
Filter:	Rise times from 0 to 10 s, user selectable
Temperature Compensation:	Fixed at 1.7% per 1 °C at cell temperature
Temperature Range:	Ambient +7 °C, 30 to 55 °C
Cell Electrodes:	Passivated 316 stainless steel; compatible with MSA
Cell Body:	Chemically inert polymeric material
Cell Volume:	<1 µL
Heat Exchanger:	Inert, tortuous path for low axial dispersion
Maximum Cell Operating Pressure:	10 MPa (1500 psi)

## DIONEX AQUION IC SYSTEM SPECIFICATIONS (CONT'D)

### Autosampler

Automation Using Autosampler:	Thermo Scientific Dionex AS-DV, AS-AP, AS-HV, or third-party autosamplers
Sequential/Simultaneous Injection:	Yes, depending on autosampler capabilities
Automated Dilution:	Yes, available with Dionex AS-AP autosampler
Dilution Factor, Dionex AS-AP Autosampler:	1:1 to 1:1000
Dilution Time, Dionex AS-AP Autosampler:	15 seconds with sample overlap
Inline Sample Degassing:	Yes, optional with Dionex CRD 300/200 device
Inline Filtration:	Yes, Dionex AS-DV Autosampler or inline filter
High Automation Flexibility:	Conditionals using Chromeleon CDS software and post run features

### System Software

Chromeleon CDS Software, is supported on Windows 7:

- Automated Procedure Wizards
- System Wellness and Predictive Performance
- Data trending plots (numerical device parameters)
- Virtual Column Simulator (evaluation mode standard, isocratic and gradient optional)
- Multivendor automation support of 3<sup>rd</sup> party instruments (fully controls over 300 instruments from more than 30 manufacturers, including GC, HPLC, and MS)
- 3-D Software for photodiode array, mass spectrometer, and electrochemical detectors (optional)
- Customizable System Control Panels
- System Status Virtual Channels
- Power Failure Protection
- Sequential Injection
- System Trigger Commands and Conditionals
- Daily Audit Trail
- Sample Audit Trail
- Multiple Network Control and Network Failure Protection (optional)
- System Calibration Storage (factory, present, and previous; completely user selectable)
- Customized Reporting (unlimited report workbooks)
- Automated System Qualification (detailed, comprehensive qualification reports)

### Physical Specifications

Power Requirements:	100–240 V ac, 50-60 Hz autoranging
Operating Temperature:	4–40 °C (40–104 °F); cold-room-compatible (4 °C) as long as system power remains on
Operating Humidity Range:	5–95% relative, noncondensing
Control Modes:	Full control through Chromeleon CDS software; alternative control through TTL or relay closures; two relay outputs, two TTL outputs, four programmable inputs
USB Communication Protocol:	One USB input; one built-in two-output USB hub
Leak Detection:	Built-in, optical sensor
Dimensions (h × w × d):	56.1 cm × 22.4 cm × 53.3 cm (22.1 in × 8.8 in × 21 in)
Weight:	24.5 kg (54 lb)

## Ordering Information

To order in the U.S., call (800) 346-6390 or contact the Thermo Scientific office nearest you. Outside the U.S., order through your local Thermo Scientific office or distributor. Refer to the following part numbers.

Dionex Aquion Ion Chromatography System with Software and PC	Part Number
Dionex Aquion Ion Chromatography System with Chromeleon CDS software, version SE and Windows 7 Workstation, without Degas	22176-60101
Dionex Aquion Ion Chromatography System with Chromeleon CDS software, version SE, Windows 7 Workstation, and Degas	22176-60102
Dionex Aquion Ion Chromatography System with Chromeleon CDS software, version SE, without Windows 7 Workstation, or Degas	22176-60103
Dionex Aquion Ion Chromatography System with Chromeleon CDS software, version SE and Degas, without Windows 7 Workstation	22176-60104
Optional Column Heater	069564

A Dionex Aquion/Chromeleon CDS software, version SE/Windows Workstation bundled package includes: a Dionex Aquion system with isocratic dual-piston pump, injection valve, heated conductivity cell, USB cable, Chromeleon CDS software, version SE, computer (with Windows 7), and USB dongle. Chromeleon CDS software, version SE comes with one SE timebase controlling one Dionex Aquion IC system. The Dionex Aquion IC system is supplied without a front control panel, and must be controlled through the Chromeleon CDS software. Consumables and CDS must be ordered separately.

## [www.thermofisher.com/chromatography](http://www.thermofisher.com/chromatography)

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