

DIONEX CORPORATION

ICS-3000

The Dionex ICS-3000 is a highly versatile, modular Ion Chromatography (IC) system engineered for high-performance analytical and capillary scale separations. Highly regarded for its reliability and configuration flexibility, the ICS-3000 offers options for dual or single pump setups, electrolytic eluent generation, advanced thermal control, and a suite of sensitive detection options including conductivity, electrochemical, and UV-Vis spectroscopy. It is fully integrated with Chromeleon software to deliver robust and compliant analytical workflows for research and industrial laboratories.

SPECIFICATIONS

General

Interfaces	USB (internal and external hub connections)
Display	Module-front LED status indicators
Leak Detection Method	Optical sensor

Physical

Power Supply	100–240 V AC, 50/60 Hz, auto-sensing
Operating Temperature	4 to 40 °C °C
Dimensions (W×H×D)	Single-width module: 224 x 421 x 564 mm; Double-width module (DC): 447 x 421 x 564 mm mm
Weight	18.1 kg (SP) / 22.7 kg (DP) / 19.1 kg (EG) / 36.3 - 40.8 kg (DC) (module-dependent) kg

System Configuration & Pump Specifications

Pump Configuration	Single (SP) or Dual (DP) serial dual-piston analytical pump
Flow Rate Range	0.001 to 10.000 mL/min
Flow Rate Accuracy	< 0.1%
Flow Rate Precision	< 0.1% RSD
Maximum Operating Pressure	35 MPa (5000 psi)
Pressure Ripple	< 1.0% (at 1.0 mL/min)
Flow Rate Resolution	0.001 mL/min
Wetted Materials	Chemically inert PEEK, Tefzel, Teflon, ceramic, and sapphire (completely metal-free flow path)
pH Range Compatibility	0 to 14
Vacuum Degasser Channels	2 channels (SP) or 4 channels (DP)
Vacuum Degasser Control	Automatic, microprocessor-controlled
Piston Seal Wash Support	Automated, active wash system
Delay Volume	< 400 µL (without EG), < 1.0 mL (with EG)

Eluent Generation & Conditioning

Eluent Generator Type	Electrolytic Eluent Generation (EG module)
Eluent Concentration Range	0.1 to 100 mM (KOH, NaOH, LiOH); 0.1 to 80 mM (Methanesulfonic Acid)
Concentration Increments	0.01 mM
Maximum Flow Rate for Eluent Generation	3.0 mL/min
Maximum Pressure for Eluent Generation	21 MPa (3000 psi)
Eluent Cartridge Capacity	0.75 equivalents
Carbonate/Bicarbonate Generator Support	Yes (using EGC Carbonate cartridge and Carbonate Mixer)
Continuously Regenerating Trap Column (CR-TC) Support	Yes (CR-CTC or CR-ATC)

Injection & Autosampler Specifications

Injection Valve Type	2-position, 6-port Rheodyne valve, electrically actuated
Autosampler Compatibility	Dionex AS Autosampler
Autosampler Capacity	Up to 120 vials (1.5 mL) or 81 vials (10 mL)
Injection Volume Reproducibility	< 1.0% RSD (using full loop injection)
Sample Carryover Percentage	< 0.01%

Column Temperature Control

Column Oven Temperature Range	10 to 70 °C (upper zone/column chamber)
Column Oven Temperature Stability	±0.1 °C
Column Oven Temperature Accuracy	±0.5 °C
Detector Compartment Temperature Range	10 to 40 °C (lower zone)
Column Capacity	Up to 4 columns (up to 250 mm length each)
Pre-column Eluent Heater Support	Yes (integrated in DC module)

Suppression Technology

Suppressor Type Support	Electrolytic or Chemical suppression
Electrolytic Suppressor Compatibility	Dionex SRS, AES, and CES suppressors
Chemical Suppressor Compatibility	Dionex MMS suppressors
Suppressor Regeneration Modes	Recycle, External Water, or Chemical Regenerant
Maximum Electrolytic Suppression Current	500 mA (for 4 mm suppressors)

Conductivity Detector Performance

Conductivity Detector Type	Microprocessor-controlled digital signal processor (CD)
Conductivity Measurement Range	0 to 15,000 μ S
Electronic Resolution	0.0023 nS
Electronic Noise	< 0.1 nS
Drift	< 2 nS/°C
Cell Volume	1.0 μ L
Cell Temperature Control Range	5 °C above ambient to 55 °C
Cell Temperature Stability	< 0.01 °C
Maximum Operating Pressure of Cell	10 MPa (1450 psi)
Temperature Coefficient Range	0.0% to 10.0% per °C (user adjustable)

Alternative & Auxiliary Detectors

Electrochemical Detector Compatibility	Yes (ED module)
Electrochemical Detector Modes	DC Amperometry, Pulsed Amperometry (PAD), Integrated Pulsed Amperometry (IPAD)
ED Potential Range	-2.0 to +2.0 V in 1 mV steps
UV-Vis Detector Compatibility	Yes (VWD or PDA modules)
Mass Spectrometer (MS) Coupling Support	Yes (MSQ Plus or other MS interfaces)

Software & Digital Communication

Control Software Compatibility	Chromeleon Chromatography Management System
Communication Interface	USB
GLP/GMP Compliance Support	Full audit trails, electronic signatures, and system wellness monitoring

Physical & Environmental Specifications

Single-Width Module Weight	DP: 24 kg (53 lbs); SP: 19 kg (42 lbs); EG: 19 kg (42 lbs)
Double-Width Module Weight	DC: 39 kg (86 lbs)
Operating Humidity Range	5% to 95% relative humidity (non-condensing)
Regulatory Compliance	CE, TUV, UL, RoHS

Power

DP/SP Module Power Consumption	DP: 250 VA max; SP: 150 VA max
EG Module Power Consumption	150 VA max
DC Module Power Consumption	500 VA max
AS Module Power Consumption	150 VA max

Inputs & Outputs

DC Module TTL Inputs	4
DC Module Relay Outputs	4
DP/SP Module TTL Inputs	2
DP/SP Module Relay Outputs	2
EG Module TTL Inputs	2
EG Module Relay Outputs	2
AS Module TTL Inputs	4
AS Module Relay Outputs	4

Operating Requirements

Gas Pressure Requirement	34 - 55 kPa (5 - 8 psi) recommended for eluent reservoirs
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Chromatography

Auxiliary Valve Options	Up to 2 optional 6-port or 10-port high-pressure valves (DC module)
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Flow Path

Degasser Membrane Material	Teflon AF
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Autosampler

Autosampler Syringe Sizes	100 µL, 250 µL, 500 µL, 1000 µL, 5000 µL
Autosampler Injection Volume Range	0.1 to 1000 µL (standard) / up to 5000 µL (with 5.0 mL syringe and loop)

Eluent Generator

Eluent Generator Cartridge Compatibility	EluGen EGC KOH, EGC NaOH, EGC LiOH, EGC MSA, EGC K ₂ CO ₃
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Electrochemical Detector

Electrochemical Detector Working Electrodes	Gold, Platinum, Silver, Glassy Carbon
Electrochemical Detector Reference Electrodes	Ag/AgCl, pH-Ag/AgCl, Palladium (Pd)

TECHNOLOGY

Ion Chromatography

APPLICATIONS

Chemical and biological analysis of ionic species and polar compounds

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