

## ICS-1000 Ion Chromatography System



*The ICS-1000 is an integrated and preconfigured system that performs isocratic IC separations using conductivity detection. Configurations are available with a dual-piston pump, thermally controlled conductivity cell, and optional column heating and optional in-line vacuum degassing. Coupled with AutoSuppression®, the ICS-1000 provides high performance with ease of use. Automation provides full control and digital data collection from a PC using USB high-speed communication protocol.*

**Versatile**

- Performs isocratic IC separations using 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.

**Simple and Precise Control**

- Built-in control for the SRS® and Atlas® electrolytic suppressors. AutoSuppression with electrolytic suppression eliminates the need to hand-prepare acid or base regenerants. Electrolytic suppression reduces background conductivity and provides high signal-to-noise ratios.
- Full control and digital data collection available with Windows® based Chromeleon® Chromatography Workstation Software using a USB high-speed communication protocol.
- Application templates preload all instrument parameters for fast and easy operation.



- Through Chromeleon software control, an electronic logbook provides monitoring of user-selectable operational parameters by creating virtual channels.

### High Performance

- For improved reproducibility, the heated and thermostated high-performance conductivity detection cell permits measurements that are unaffected by temperature variation.
- Advanced single-range digital output with operating range to 15000  $\mu$ S full scale. Alternate mode permits single-range analog signal output.

- Optional column heater provides day-to-day consistency, ensuring reproducibility and stability. Preheating of the eluent prior to the column ensures 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 and metal contamination-free chromatography.

### Convenient

- Versatile eluent organizer tray accommodates 1-, 2-, or 4-liter eluent bottles.
- Electrically actuated six-port Rheodyne PEEK injection valve.
- 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 through virtual channels

## ICS-1000 IC SYSTEM SPECIFICATIONS

### Analytical Pump and Hydraulics

*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

*Control Mode:*

Full control through Chromeleon software; alternative control through TTL or relay closures

*Maximum Operating Pressure:*

35 MPa (5000 psi)

*Pressure Ripple:*

<1.0 % from 0.4 to 2.0 mL/min at 1000–3000 psi

*Flow Rate Range:*

0.05–5.0 mL/min in 0.01 increments; typical operating range is 0.4–2.0 mL/min

*Flow Precision:*  $\pm 0.1\%$

*Flow Accuracy:*  $\pm 0.25\%$

*System Flow Constancy:*

Typically <0.25%

*Flow Maximum Error:*

Typically <1.0 %

*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 (Option):*

Single channel, automatic

### Conductivity Detector Electronics and Flow Cell

*Type:*

Microprocessor-controlled digital signal processor

*Cell Drive:*

8 kHz square wave

*Linearity:*

1% at 1 mS

*Resolution:*

0.1 nS

*Full-Scale Output Ranges:*

Digital signal range 0–15000  $\mu$ S  
Analog signal range 0–15000  $\mu$ S

*Electronic Noise:*

$\pm 0.1$  nS when background conductivity is 0–150  $\mu$ S  
 $\pm 2$  nS when background conductivity is 151–3200  $\mu$ S

*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 to 55 °C

*Temperature Stability:*

$\leq 0.01$  °C

*Cell Electrodes:*

Passivated 316 stainless steel

*Cell Body:*

Chemically inert polymeric material

*Cell Volume:*

<1  $\mu$ L

*Heat Exchanger:*

Low dispersion

*Maximum Cell Operating Pressure:*

2 MPa (300 psi)

*Suppressor Control:*

AES<sup>®</sup>, 0–150 mA in 1 mA increments  
SRS, 0–500 mA in 1 mA increments

### Column Heater (Optional)

*Operating Temperature Range:*

Ambient +5 °C to 60 °C

*Temperature Stability:*

To  $\pm 1$  °C

*Temperature Accuracy:*

$\pm 2$  °C at 40 °C using external validation thermometer

### Physical Specifications

*Power Requirements:*

100–240 V ac, 50/60 Hz (power supply is autosensing, no voltage adjustment required)

*Voltage Requirements:*

90–265 V ac, 47–63 Hz

*Operating Temperature:*

4–40 °C (40–104 °F); cold-room- (4 °C) compatible as long as system power remains on

*Operating Humidity Range:*

5–95% relative, noncondensing

*Control Modes:*

Full control through Chromeleon software; alternative control through TTL or relay closures; two relay out, two TTL out, four programmable inputs

*USB Communication Protocol:*

One input, built-in two-output USB hub

*Leak Detection:*

Built-in, optical sensor

*Dimensions (h × w × d):*

22.1 in × 8.8 in × 21 in  
56.1 cm × 22.4 cm × 53.3 cm

*Weight:*

54 lb  
24.5 kg

## Ordering Information

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

## PART NUMBERS

### ICS-1000 Ion Chromatography System with Software and PC

An ICS-1000/Chromeleon SE/Windows Workstation bundled package includes: an ICS-1000 with isocratic dual-piston pump, injection valve, heated conductivity cell, USB cable, Chromeleon SE version 6.7, Computer (with Windows XP), and USB dongle. Chromeleon SE comes with one SE timebase controlling one ICS-1000 system. The ICS-1000 is supplied without a front control panel, and must be controlled through Chromeleon 6.7. Consumables must be ordered separately.

ICS-1000 Ion Chromatography System without .....	061076
Degas, Chromeleon SE, Windows XP Workstation	
ICS-1000 Ion Chromatography System with .....	061077
Degas, Chromeleon SE, Windows XP Workstation	
ICS-1000 Ion Chromatography System without .....	061079
Degas, Chromeleon SE, no PC	
ICS-1000 Ion Chromatography System with .....	061078
Degas, Chromeleon SE, no PC	
Optional Column Heater .....	061301



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\* Designed, developed, and manufactured under an NSAI registered ISO 9001 Quality System.

