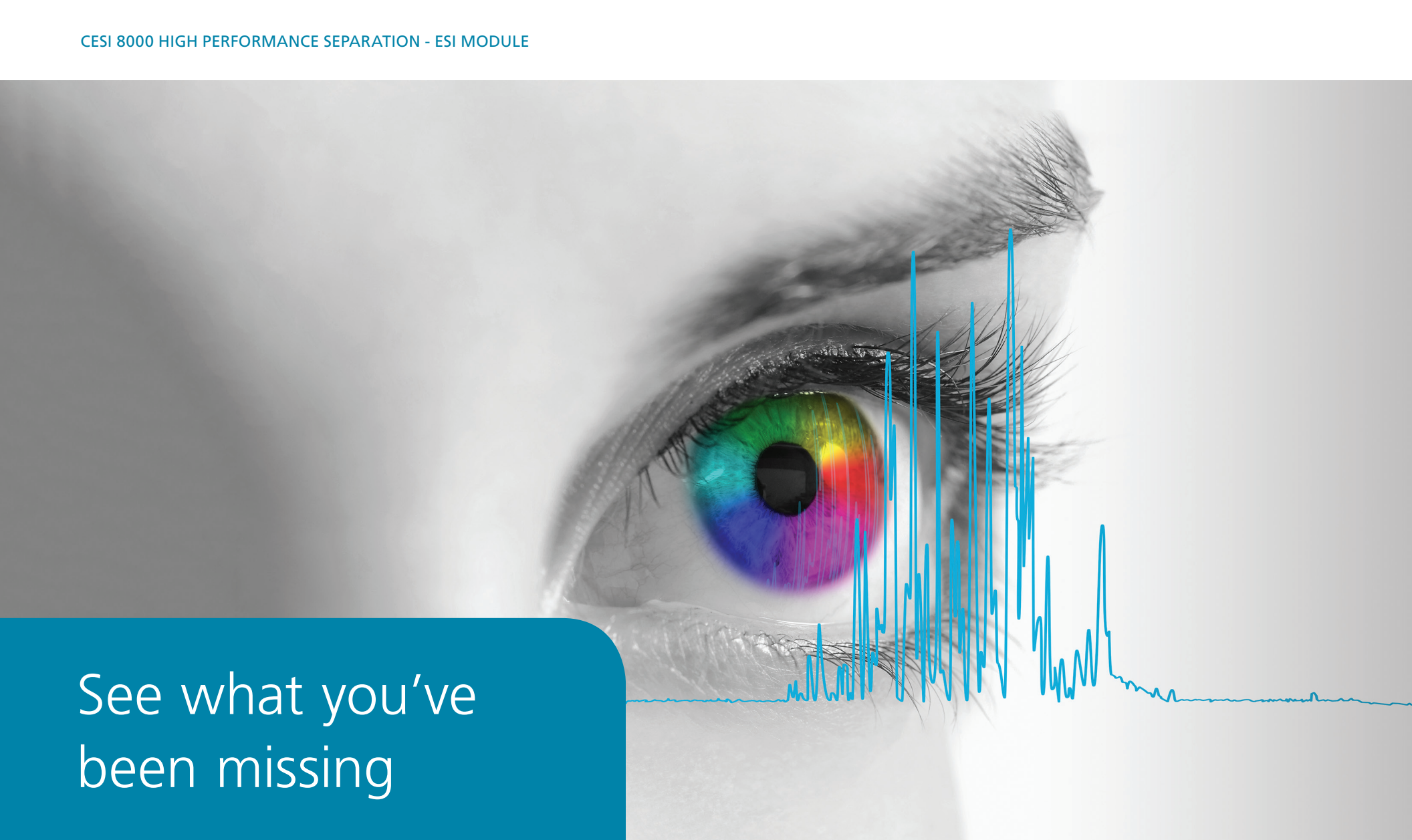




See what you've
been missing

CESI 8000 HIGH PERFORMANCE SEPARATION - ESI MODULE



Unleash the power of the full spectrum

Extending the reach of your mass spectrometer

Introducing the CESI 8000 High Performance Separation - ESI Module

Mass spectrometry (MS) has become an indispensable technology for the analysis of compounds of biological interest. Our improvements in assay sensitivity and reduction in ion suppression reveal new information that is critical to your research, whether you're characterizing a therapeutic protein, identifying the proteins that make up a specific proteome, analyzing post-translational modifications, or studying a metabolomic fingerprint.

We developed a new front-end separation and ionization technology called CESI, which combines the high efficiency and ultra-low flow of capillary electrophoresis (CE) with an integrated electrospray ionization source. This optimization of electrospray ionization (ESI) into the nanoflow region has shown to greatly improve assay sensitivity and reduce ion suppression.^{1,2}

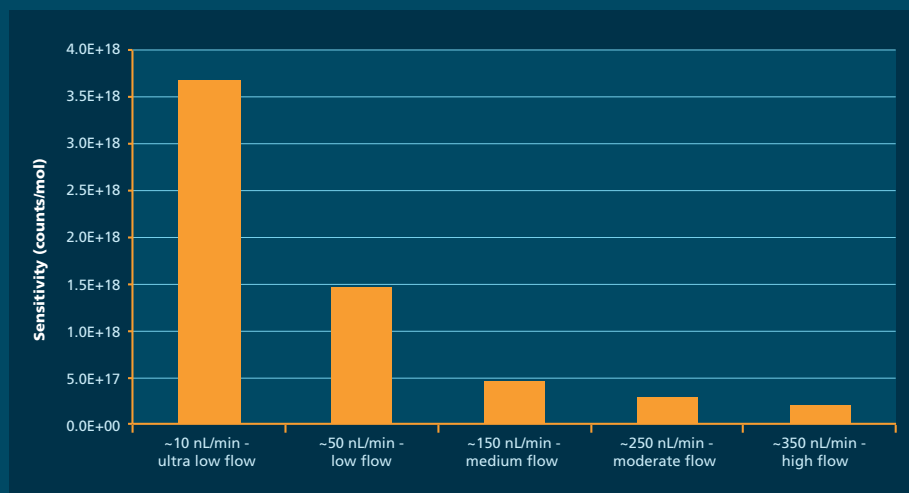
Advantages of CESI-MS

Ultra-low flow separation-ESI

- Minimize ion suppression
- Maximize ionization efficiency
- Increase sensitivity
 - New analytes discovered, identified, and quantified
- Non-tapered, open-tube capillary, with no dead volumes – maximizing peak efficiency and sensitivity
- High resolution separation without a stationary phase: no small peptides lost in the flow-through and no large peptides excessively retained
 - No time lost on minimizing void volumes and dealing with clogging
 - No sample carry-over
 - Orthogonal and/or superior coverage to other technologies

1 – Kelly RT, Page JS, Zhao R, Qian W, Mottaz HM, Tang K, Smith RD, *Anal. Chem.* 2008, 80, 143-149

2 – Schmidt A, Karas M, Dulks T, J. *Am. Soc. Mass Spectrom.* 2003, 14, 492-500



Infused sample, Angiotensin I at 2 ng/mL in 10% acetic acid. ESI voltage, -1,350 V; detection range, 50-3000 m/z

Easy-to-use OptiMS cartridge

- Plug-and-spray design
 - Interfacing with MS is fast and easy

Higher throughput

- Open-tube capillary design doesn't require lengthy column equilibration
 - Decreased injection-to-injection time

CESI mobile design

- Equipped with a height adjustable mobile bench
 - Switching between LC/MS and CESI-MS has been made swift and simple



“CESI-MS is the ideal coupling between CE and MS. The technology follows the theories developed by Professor Mann and Professor Karas on the increase of sensitivity and the decrease of ion suppression with the use of ultra low flow.”

Yannis-Nicolas Francois Ph.D., Associate Professor
Laboratory of Mass Spectrometry of Interactions
and Systems, University of Strasbourg

CESI

The integration of capillary electrophoresis (CE) with electrospray ionization (ESI) into a single dynamic process within the same device.

High performance separation and ESI module upstream from MS

Improved ionization efficiencies result in reduced ion suppression and increased overall sensitivity.

Designed for mass spectrometry applications that analyze charged and polar molecules, the CESI 8000 is the next evolution in technology. With CESI-MS the advantages of CE are delivered without dilution or disturbance to the mass spectrometer. Stable ultra-low flow ESI serves to reduce ion suppression and increases sensitivity.

CESI technology

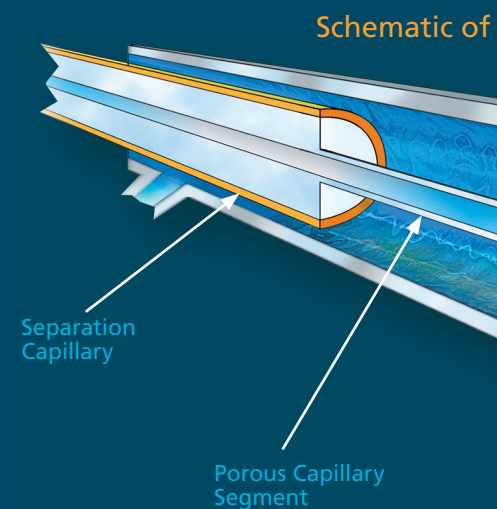
Unleash the power of CE separation for the best in mass spectrometry detection.

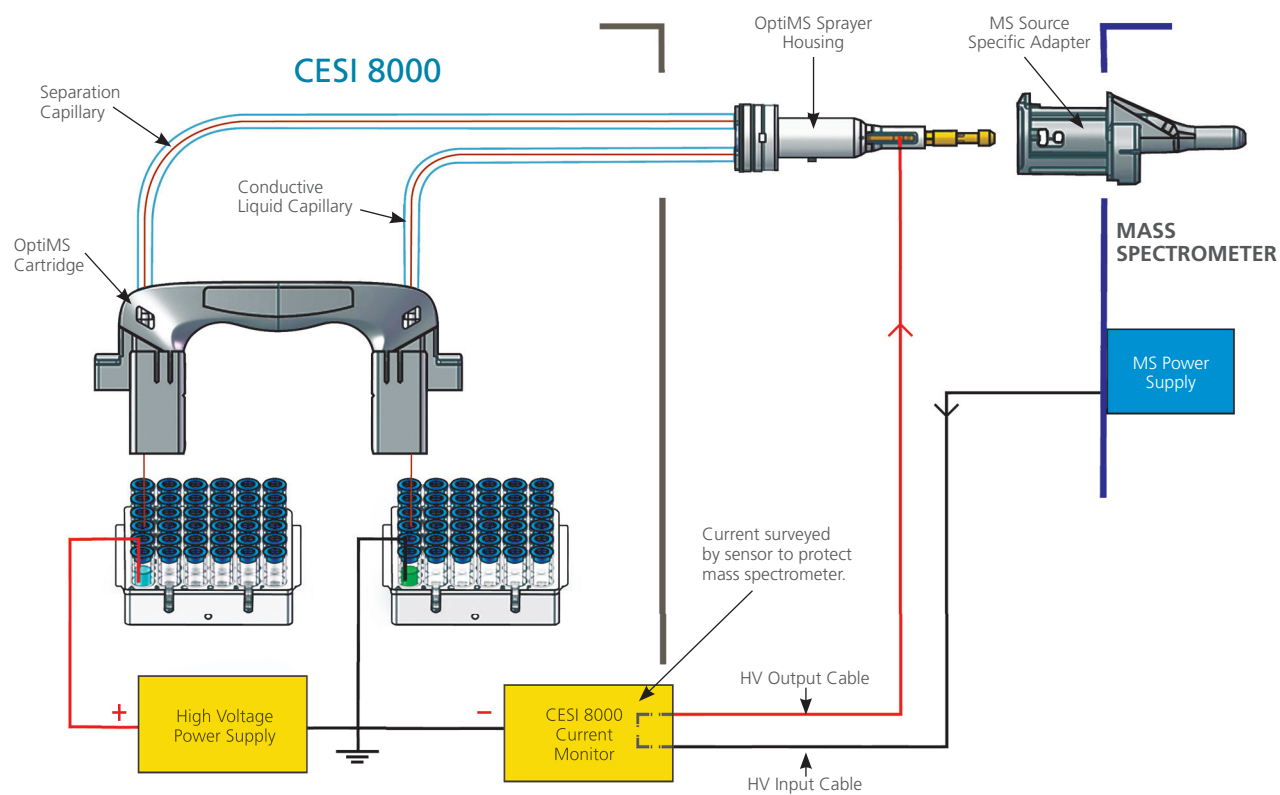
The OptiMS cartridge assembly consists of a separation capillary terminating in the porous sprayer, a conductive liquid capillary, circulating liquid cooling, and sprayer housing. Conductive fluid is delivered automatically from a system vial that completes the CE circuit.

This capillary is housed in a protective cartridge that allows easy transfer and routine use in a rugged and robust manner. With the CESI 8000 system, the cartridge simply clicks into place creating an easy-to-use plug-and-spray set up for your mass spectrometry.



The CESI 8000 was developed in collaboration with mass spectrometry researchers covering a number of applications. They sought to expand their range of detection and increase sensitivity. In order to achieve this goal, a low flow pre-MS separation technology was integrated with novel ESI coupling technology.

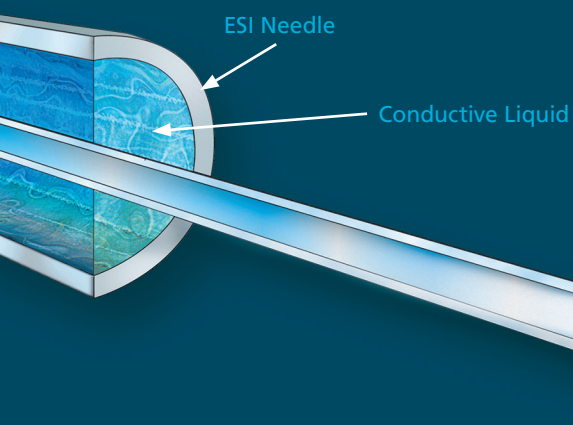




Swift and simple
“plug-and-spray” design
increases operational
efficiency

- Automated sample handling from microvials
- Simple interfacing with automatic triggering of MS data collection
- Easy switching between liquid chromatography (LC) and CESI-MS

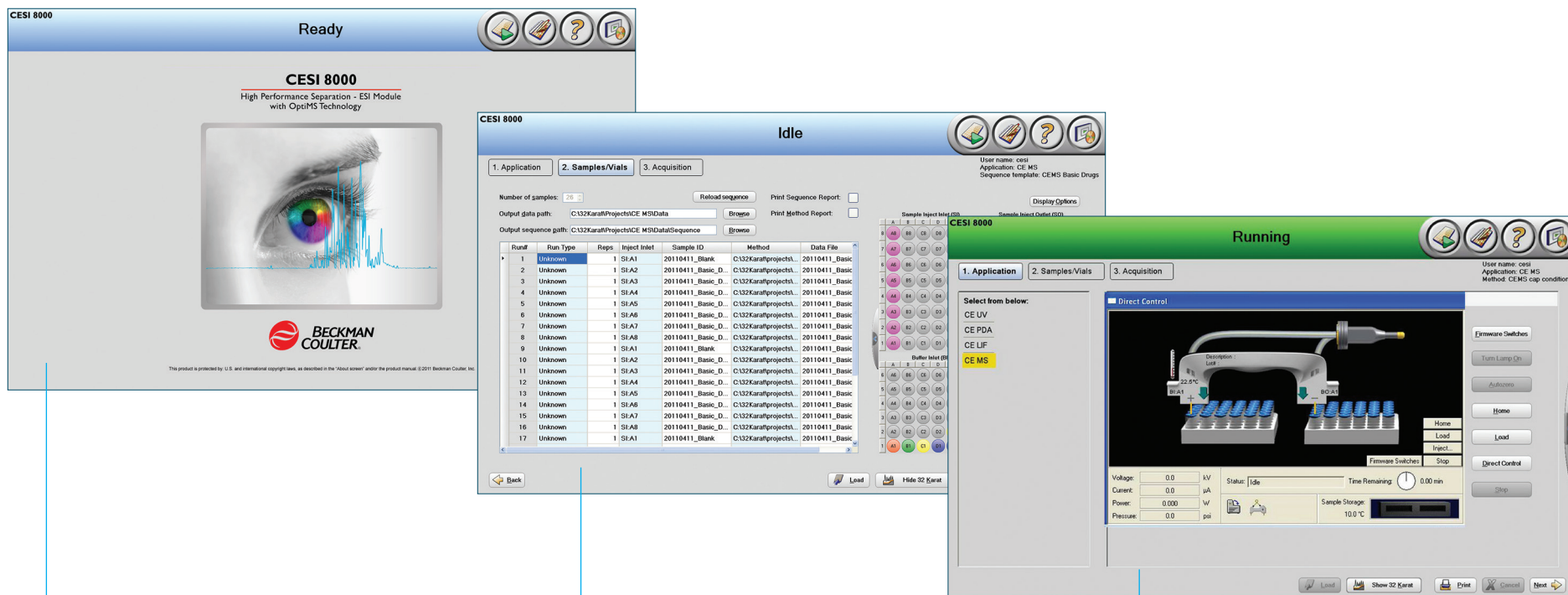
CESI Sprayer



Located within a protective housing, the CESI 8000's sprayer combines an intrinsically low-flow CE separation with electrospray ionization (ESI) within a single, simple device that has no liquid junction or dead volume.

- Capillary's distal end is porous to allow ion flow
- Electrical contact for the CE is achieved through an ESI needle filled with conductive fluid
- ESI's electrical contact is achieved through the protruding capillary tip
- Low flow at the tip terminus instantly generates a fine spray when ESI voltage is applied
- All electrochemistry associated with electrolysis of water is hereby decoupled from the spray
- Capillary inlet and exit are of the same dimension, reducing the clogging often associated with nanoscale techniques
- ESI is generated at lower voltages, which reduces the risks of oxidation artifacts

CESI 8000 software



The software simply needs the routine user to select one of the CESI 8000's pre-loaded methods, set the number of samples, load the reagents and start running.

The software is graphic and easy to work with. All vial positions may be annotated, allowing you to easily track the contents of any given vial.

Programmed control or direct control can be implemented to allow the user the maximum flexibility to optimize the separation.

Module specifications

Dimensions:

Height: 29.2 in (74.2 cm)
Door Open: 38.8 in (98.6 cm)
Width: 25 in (63.5 cm)
Depth: 28.4 in (72.1 cm)

Height Adjustable Portable Lab

Bench with Memory Settings:

36 in x 30 in (91.4 cm x 76.2 cm)
Height adjustable from 27 in to 44 in (69 - 112 cm)

Weight (uncrated):

188 lbs (85.3 kg)

Electrical Requirements:

Voltage: 100 - 240 V; 50/60 Hz

Voltage Range:

1 to 30 kV programmable
at 0.1 kV increments

Current Range:

3 to 300 μ A programmable
at 0.1 μ A increments

Operating Environment Range:

15 - 30°C
20 - 60% relative humidity (non-condensing)

Sample Trays:

2 x 48 CESI vials / 0.3 mL microvials

Buffer Tray:

2 x 36 CESI vials

Sample Temperature Adjustment Range:

4 - 60°C

Capillary Temperature Adjustment Range:

15 - 30°C

Pressure Delivery Range:

-5 to +100 psi

Required Sample Volume:

50 μ L



Ordering information

A98089: CESI 8000 High Performance Separation

- ESI Module

Includes CE separation module, OptiMS Sprayer cartridges, system controller pre-loaded with CESI 8000 software, portable height-adjustable lab bench designed for rapid change between LC and CESI front end.

For more product information on our capillary electrophoresis systems visit www.sciex.com/ceproducts. For information on CESI 8000 and supported MS models/sources, contact your SCIEX Separations representative.



Learn more at www.sciex.com/cesi.

Request information using your smartphone.

See the inside back cover of this brochure for specific ordering information.

For SCIEX worldwide office locations and phone numbers visit our website at www.sciex.com/offices.

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