

expression
CMS

Compact. Fast. Easy
& Affordable!

A high performance
mass spec designed
just for chemists



Advion

expression_{CMS} Compact Mass Spectrometer

The Advion expression CMS quickly provides essential information and improves the chemist's workflow. Modern organic labs have become automated, yet real-time mass assays remain just out-of-reach — the expression CMS solves this. The 11 inch wide, 22 inch deep, fume hood-installable expression CMS DELIVERS:

- Real-time reaction monitoring of batch reactions: understand kinetics and reach intelligent quench decisions
- Mass confirmation of flash fractions: eliminate TLC plate spotting or 2nd guessing UV peaks and TLC spots
- On-line flow chemistry reaction monitoring
- A mass detector which can be integrated into existing HPLC, UPLC and SFC systems, replacing expensive mass spectrometers purchased from another era
- Mass directed (or mass confirmed, UV directed) fraction collection from normal phase flash chromatography, prep LC and SFC



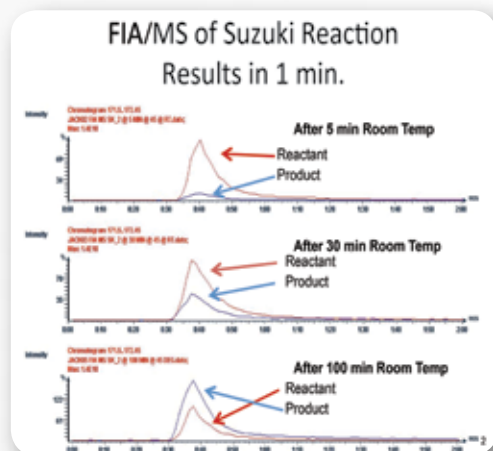
Advion's unrivalled expertise in mass spectrometry, as a producer of ion sources for >40 mass specs and microfluidic flow synthesis systems, has produced a mass spec solution *just for the chemist*. Whether you are a biopharmaceutical company, academic teaching/research lab, or any industry requiring routine mass assays, the expression CMS delivers *high performance* in a *compact, easy-to-use* package at an *affordable price*.

Size and Design Matters

- The only mass spec which fits in a fume hood with the sash closed
- All mission critical and commonly used components are located on the front of the instrument for users to execute their workflow easily.
- Pump and source exhaust are bi-directional (left or right hand) to allow for optimal hood or bench location
- Solvent-resistant exterior package
- Enclosed and N₂-purged source and enclosed electronics for safety



Walk-up Open Access CMS



Unrivalled Utility and Flexibility

The expression CMS is a work horse and performs when and where called upon. Regardless of the role you define, its deployment is limited only by your creativity and imagination.

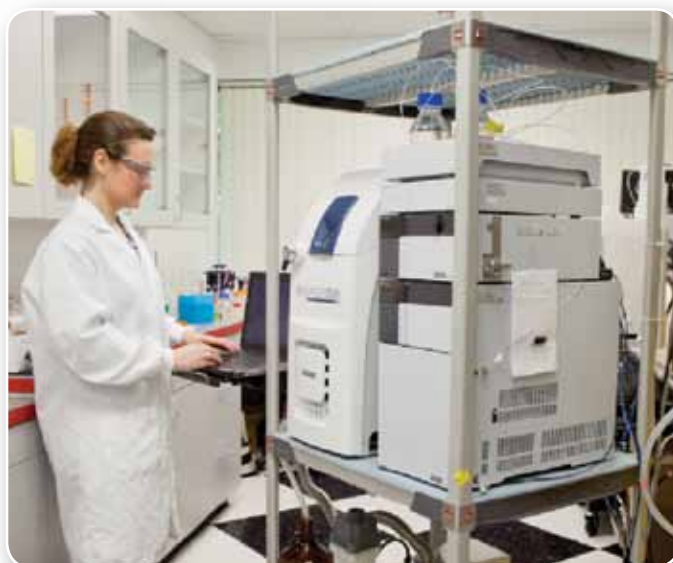
Online Flash/CMS UV Fractionation and Mass Confirmation



Scale-up Flow Reactor real-time LC/CMS



Cart-based LC/CMS with 100-220 VAC line power



Co-located with Flow Reactors, Hydrogenation and Batch Chemistry



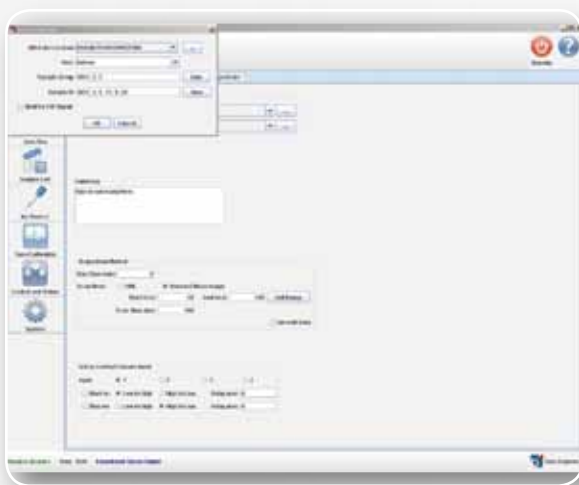
Software. An Inviting Interface with Powerful Depth

What do you want to do today?

Mass Express, the expression CMS software, was developed with very simple objectives: you want to analyze your sample and to obtain your answer in the fewest steps and in the shortest period of time. Our team started by creating an inviting user interface. Then we focused on the minimum steps and most efficient range of motion required for decision-bearing answers.

While each modality of the system has its own workflow, we illustrate below how this is achieved for Flow Injection Reaction Monitoring (FIA/CMS). The total elapsed time from walk-up to data is < 1 minute.

Step 1: Choose Method



Step 2: Load Sample



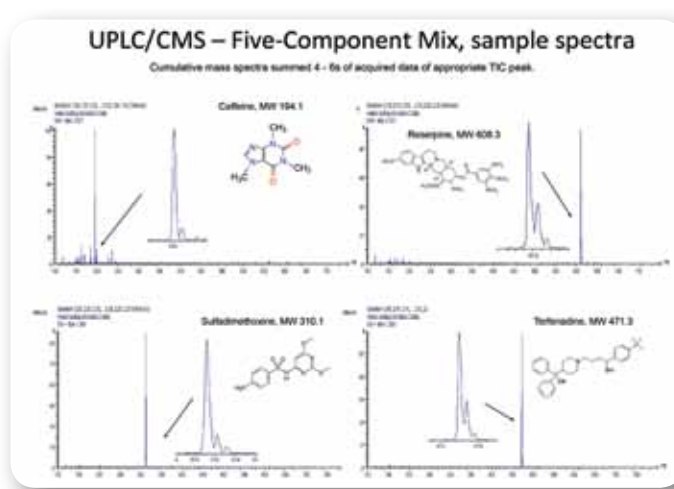
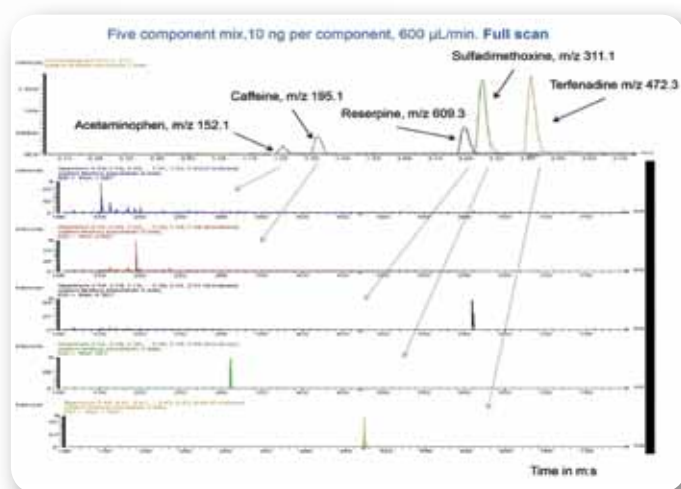
Step 3: Hit "Run"



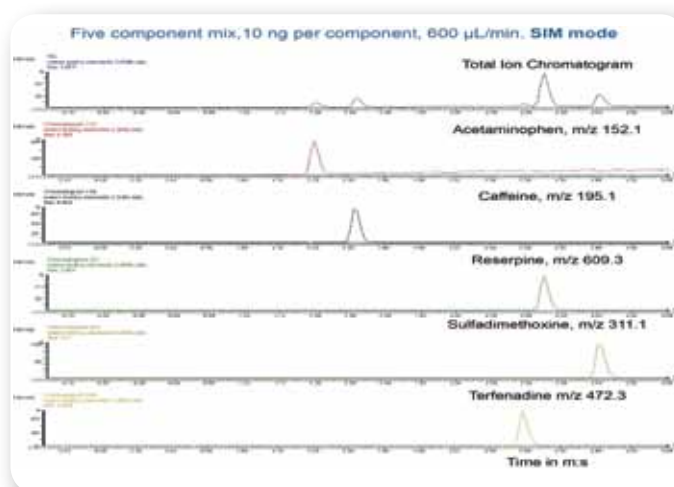
Whether your application is FIA/CMS, Flash/CMS, LC/CMS, or flow reaction monitoring, our data acquisition and workflow approaches are the same – simple, inviting and efficient.

What do you want to do with your Data?

A mass spectrometer is often called the "ultimate truth machine", because it delivers unequivocal information about the sample, impurities and relative quantitation — far beyond the subjective spots on a TLC plate or questionable UV absorbance peaks. And we wish to make this rich information easily understandable. Data Express is the data processing software program which accomplishes the perfect balance: Easily analyze and display results, or use a wealth of software resources to mine the data for accurate decision-making, archiving or exporting. Starting with UPLC/CMS data (which the [expression](#) CMS delivers flawlessly because of fast-scanning capabilities and superb sensitivity), we dive below the total ion chromatograms (TICs) to explore what is really happening.



By simply dragging the mouse over the data, the information from these samples is displayed. Far beyond lazy UV peaks with features due to unknown causes, Data Express delivers the exact information required to monitor reactions, confirm fractions of interest, speed workflow and move on to your next research topic of interest. And if you wish to export the data into a preexisting analysis platform, Data Express exports net.cdf and .csv files which deliver you ultimate confidence that we have thought of all possible options for data archiving and interpretation.

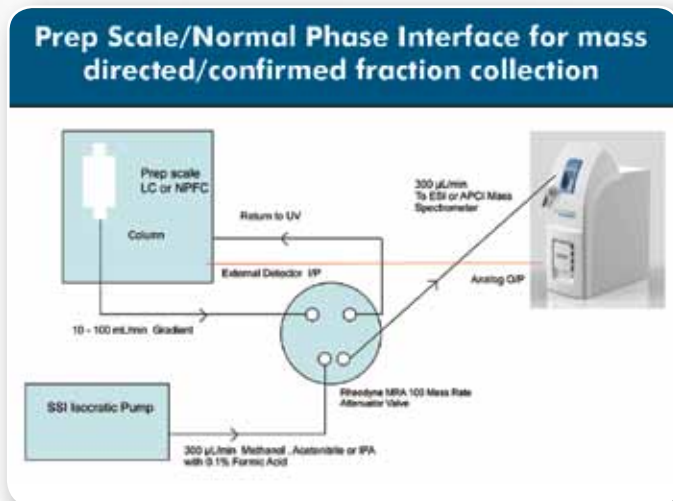
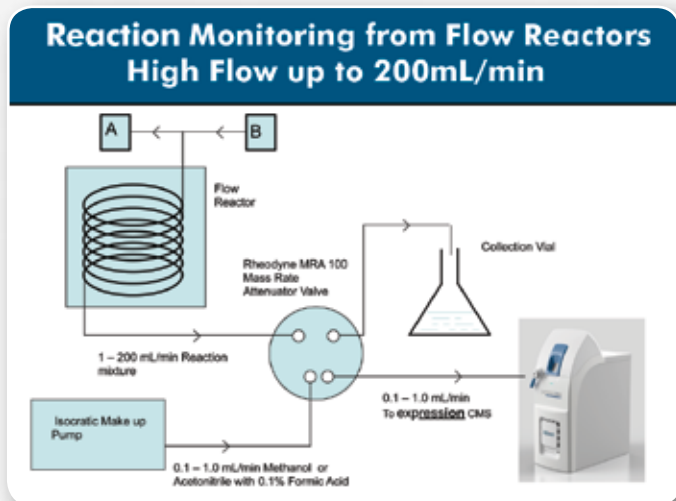


Maximize your Results and Investment

Elegant stand-alone and integrated solutions require the right accessories, training, workflow guidance, and support to be utilized to their best advantage. Depending on your utilization of the **expression** CMS, Advion has prepared Application Success Kits, Operating Flowcharts, and is prepared to train your team for the best possible outcome. For common workflows, the schematics below enable a successful application out-of-the-box.

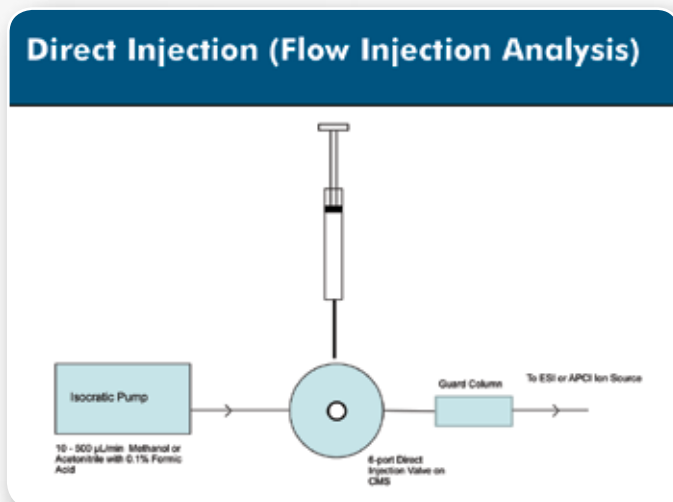
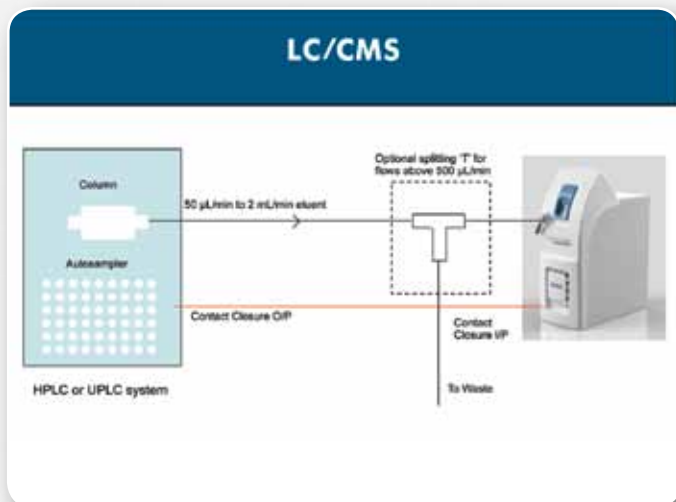
Flow Synthesis/CMS

Flash/CMS



LC/UPLC/CMS

FIA/CMS



Based upon Advion's decades of LC/MS experience, each installation includes dilution guidance, frits, and guard columns/scavengers to provide the **expression** CMS with a sample which will produce excellent results, while allowing the instrument to perform well over time — and maximizing the capital investment made by your company or organization.

Specifications and Installation Considerations

- Ion Sources: ESI and APCI (Switchable with minimal effort)
- Polarity: +ve and -ve ion in sequential analyses
- Atmospheric Pressure Ionization Interface: Patent-pending design reduces contamination, allows for small vacuum pumps and reduces size and cost
- Flow rate range: 10 $\mu\text{L}/\text{min}$ to 500 $\mu\text{L}/\text{min}$ (2:1 split if running at 1 ml/min LC flow rate)
- m/z Range: m/z 10 to m/z 1,200 (ideal for small molecules, natural products and small peptides)
- Acquisition rate: 5,000 m/z units/sec (compatible with UPLC)
- Resolution: 0.5-0.7 m/z units (FWHM) at 1000 m/z units/sec over entire acquisition range
- Sensitivity: 10 pg Reserpine (FIA - 5 μL injection at 100 $\mu\text{L}/\text{min}$) 100:1 S/N (RMS) with SIM of m/z 609.28. 100 pg Reserpine (FIA - 5 μL injection at 100 $\mu\text{L}/\text{min}$) 100:1 S/N (RMS) with Full-Scan acquisition from m/z 100 to m/z 1200.
- Accuracy: 0.1 m/z units over the entire acquisition range
- Stability: 0.1 m/z units over 12 hour period (59 °F to 75 °F (15 °C to 24 °C) operating temperature)

System/Space Requirements

Gas Supply	Nitrogen (N_2) 99% pure 4 Bar (60 psi for APCI or 40 psi for ESI)	4mm OD or 0.25 in. line required
Gas Consumption	ESI and APCI up to 10 L/min	
Solvents	HPLC-grade solvents	
Weight	70 lb (32 kg) 66 lb (30 kg) 5 lb (2.2 kg)	expression CMS Detector Rotary Pump Laptop (PC)
Dimensions (H x W x D)	26 x 11 x 22 in (66 x 28 x 56 cm) 10 x 9 x 18 in (26 x 23 x 46 cm) 10 x 16 x 11 in (26 x 41 x 28 cm)	expression CMS Detector Rotary Pump Laptop (PC)
Power Plug	NEMA 5-15 (15A / 125V grounded) CEE 7/7 (16A / 250V) BS1363 (UK) (13A / 250V) IEC60320-13 (customer must supply)	North America Europe England, UK All other countries
Line Voltage	100 - 240VAC	Nominal +/-10%
Line Frequency	47 - 63HZ	Nominal +/- 3HZ
Power Consumption	300VA maximum 550VA maximum 65VA maximum	expression CMS Detector Rotary Pump Laptop (PC)

About Advion

Co-Founded 20 years ago by Dr. Jack Henion - whose Cornell laboratory was the inventor of Ion Spray - Advion became one of North America's largest bioanalytical Contract Research Organizations, operating nearly 60 high performance LC/MS/MS systems in 3 facilities across the USA. This unrivalled expertise in integrating the power of chromatography and Mass Spectrometry was further leveraged a decade ago when the company expanded into making the world's premier ion sources including the TriVersa NanoMate® for the most demanding applications in partnership with leading mass spec vendors across the globe. In 2007, Advion launched a microfluidic flow synthesis system for radiochemistry. For the last 5 years, Advion has invested heavily in the development of the expression CMS in partnership with academic and industry collaborators. We will continue to expand our range of space-conscious, performance-oriented and affordable mass spec, ion source and synthesis solutions in a global and customer-focused manner.



expression CMS



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Chip-Mate™



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