

Excellims MA3100 for Thermo Scientific™ Orbitrap® and Ion Trap Mass Spectrometers

Adding a new dimension of separation, separating isobaric compounds, and providing molecular collision cross section information

- Orthogonal separation mechanism to compliment subsequent mass analysis
- High resolving power (≤ 120) ion mobility pre-filtering capability
- Total flexibility for user defined selective mobility transmission
- Four modes of operation allow freedom in experiment design
- Simple interface that can be mounted or removed in minutes, requiring no hardware modifications or break in system vacuum
- Integrated software control for select Orbitrap® models
- Amenable to a variety of ionization sources, including Excellims' Infusion, Directspray™, and Thermal Desorber

The newly developed MA3100 offered by Excellims brings the unique advantages of high performance ion mobility spectrometry (HPIMS) to multiple Thermo Scientific™ mass spectrometer product lines. For the very first time, existing users who already experience the benefits of this industry leading ion trap technology now have the opportunity to extend the potential of their instrumentation by incorporating pre-separation and mobility control over ion populations. Beyond accomplishing rapid high resolution separation, the mobility selection afforded by the MA3100 facilitates the removal or inclusion of specific ions for subsequent MS and MS/MS analysis thereby reducing spectral complexity/congestion. By enriching desirable ion populations, the MA3100 delivers added confidence in compound identification and provides the opportunity to gain insight into the behavior of gas-phase ions that is not possible from mass spectra alone. The HPIMS – Orbitrap® combination delivers an ultra high resolving power multi-dimensional separation platform for the effective analysis of highly complex samples, while simultaneously providing direct collision cross-section measurements as low field ion mobility is related to the ion size and shape under the given drift media conditions.



HPIMS™

EXCELLIMS

Innovation for Excellence in Detection Technology

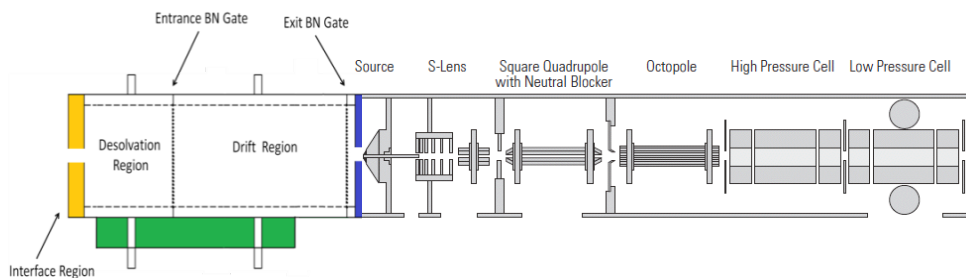
Hardware	
Excellims MA3100	
Drift tube length	~10 cm
Drift tube voltage	≤10 kV
Ion gate pulse width (Bradbury-Nielson entrance & exit gates)	30 μs-maximum drift range setting
Thermo Scientific™ MS	Orbitrap/Ion trap platforms; see specific Hardware Manual

Software	
Thermo Scientific™ Tune Plus	Driver controls of the MA3100 are embedded within MS software package (Exactive Plus, Exactive Plus EMR, Q Exactive, and Q Exactive Plus)
Excellims VisIon™ Control and VisIon™ Analysis	MA3100 control and data acquisition software for compatible mass spectrometers outside of Exactive product line

Performance Characteristics	
Resolving power	60-120
Drift time range	0-50 ms
Drift time accuracy	±30 μs
Drift gas	N ₂ , Air, He, etc.
Operating temperature	30-250°C
Operating pressure	Ambient conditions
Ion mass for mobility analysis	Fully compatible with Thermo Scientific MS

Options:

Faraday plate-detector for HPIMS	For independent stand-alone ion mobility measurements
Excellims Infusion ESI source	Continuous liquid sample introduction; compatible with the use of an autosampler-or HPLC
Excellims Directspray™ ESI source	Rapid liquid sample screening; no additional pump needed
Excellims Thermal desorber / corona discharge ionization source	Solid phase sample introduction
Direct gas phase sample inlet	Gas phase sample introduction
CTC Autosampler	Automated sample introduction; control is fully integrated into Excellims control software



MA3100 interfaced with a Thermo Scientific™ Velos Pro Dual-Pressure Linear Ion Trap Mass Spectrometer indicating ionization interface region (shown with no source), desolvation region, ion gate #1, drift region, ion gate #2, and focusing lens of the IMS-MS interface.

DGMU Drift gas modification unit allows introducing volatile / semi-volatile chemicals into drift gas for advanced separation specificity

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