

# QA

## Extraordinary simplified

With remarkable robustness the Thermo Scientific™ Orbitrap Exploris™ 480 mass spectrometer is an advanced, intelligence-driven instrument, built for ultimate performance and ease of use.

Data certainty is assured with high-resolution accurate-mass (HRAM) selectivity and spectral quality. Add to this intelligent data acquisition, simplified operation and maintenance, then rich, high-confidence insights become remarkably accessible.

Sample throughput is increased through robust performance and automation, with minimal need for user intervention; and with a compact footprint, the instrument conserves laboratory bench space without compromising on performance.

## What are the five most important benefits of the Orbitrap Exploris 480 mass spectrometer?

For a superb customer experience, the Orbitrap Exploris 480 mass spectrometer was re-engineered from the ground up to deliver extraordinary:

1. Ease of obtaining information rich, high-confidence results
2. Flexibility with new capabilities and levels of experimental performance
3. Qualitative and a new level of quantitative throughput and confidence in data
4. Robustness, uptime, and serviceability for achieving the highest throughput
5. User experience designed with new or less experienced users in mind

## Which capabilities make the instrument robust and easy to service?

Mass spectrometer hardware has been designed to address laboratory requirements for maximum uptime and easy serviceability. Exceptional end-to-end robustness minimizes the need for intervention, and any required maintenance tasks are streamlined, ensuring highest throughput from consistent system performance.

- Quadrupole mass filter contamination is minimized through an ultra-robust ion source, with simplified probe capillary and ion transfer optics
- Time between maintenance is extended with low-maintenance segmented quadrupole rods, using patented configuration switching mode without sacrificing performance
- Robustness is improved with Thermo Scientific™ Ion Routing Multipole (IRM) trapping, which focuses and routes ions more effectively



Extensive testing of hardware components, including long-term testing of turbo-pumps

- Automatic system bake-out following any instrument power-down or failure saves time by getting the system ready to run samples, faster
- Space required for the pumps, noise, heat, and the number of parts requiring maintenance is reduced with a reliable six-stage pumping system controlled by a single turbo pump which also lowers the cost of ownership
- We offer a complete portfolio of services designed to maintain the sensitivity, precision and accuracy of your mass spec system. From self-service to full service, select the level that suits your labs unique requirements

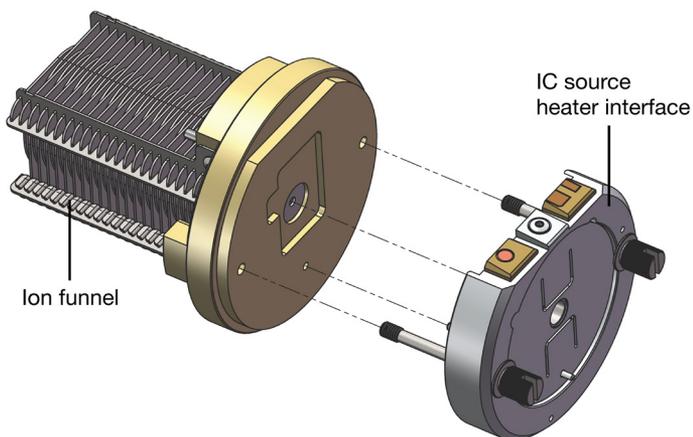
## How is the instrument easy to use for a new or less experienced MS user?

We understand that differences in users' expertise can be a challenge in many laboratories. The Orbitrap Exploris 480 mass spectrometer is designed to reduce training needs, whilst empowering staff of all skill levels to focus on their science and collect meaningful data.

The instrument control software is shared with next-generation Thermo Scientific™ Tribrid™ and Thermo Scientific™ TSQ triple quadrupole mass spectrometers<sup>1</sup> for simplicity of operation, reduced training needs, and easy transfer of methods and results from one research stage to the next.

- Enables time savings with “Set and forget” single, full mass range calibration; one external calibration covers the entire mass range from  $m/z$  40 to 6000 (or to  $m/z$  8000 with the Orbitrap Exploris 480 mass spectrometer BioPharma option) with sub 3-ppm mass accuracy for highest-confidence data
- Method development and instrument-control software is the same across the portfolio, reducing training time for laboratories choosing to invest in more than one mass spectrometer from Thermo Fisher Scientific
- Simplified method creation and data visualization with drag and drop method development, where a single method contains both acquisition and instrument control parameters
- Eliminate time spent on method creation, or the number of steps involved in method development, with ready-to-use application-specific method templates with intelligent data acquisition schemes; stay up to date with instant notification of available methods through our cloud-based template deployment

- The optional and field upgradable Thermo Scientific™ EASY-IC™ (internal calibration) source adds ease and confidence with automated internal calibrant delivery for constant sub-1 ppm mass accuracy (up to  $m/z$  1500) for every scan; the source delivers a regulated number of calibrant ions into the much larger population of analyte ions; the calibrant ions are used as a lock mass to improve the  $m/z$  assignment accuracy; the instrument control software uses the precisely known mass-to-charge ratio of the calibration mass peak to provide real-time fine adjustment of the instrument's calibration



The optional and field-upgradable EASY-IC source

### What other capabilities make laboratories more productive, especially new and less experienced MS users?

First impressions are important. With concealed waste ports and syringe pump, the streamlined design is cleaner and smarter. Despite its power, the Orbitrap Exploris 480 mass spectrometer is compact, lightweight and easy to use.

- To reduce clutter and improve waste management, waste is routed through the instrument with exit at the rear for easy connection to a waste drain
- The accessories cabinet reduces clutter, hosting the syringe driver and divert valve, as well as providing USB ports for accessory control and charging

- To improve system access and usability, users can remotely monitor system status through [Thermo Scientific™ Almanac](#), the web or smartphone application, to check on acquisition status, review instrument log books, set-up automated notices for acquisition completion or error status, schedule access and provide service-related information to Thermo Fisher Scientific service teams, should there ever be an issue

### Can I run a wide variety of experiments with high performance?

The Orbitrap Exploris 480 mass spectrometer has unique capabilities which impart extra speed, depth, and certainty to enable you to run more experiments or to gain deeper insights into your research.

Instrument performance highlights include:

- 480,000 Max Resolution
- Up to 40 Hz scan speed
- $m/z$  40 to 6000 mass range and up to  $m/z$  8000 with the BioPharma option
- >5000:1 dynamic range
- Mass accuracy: Internal <1 ppm RMS; External: <3 ppm RMS
- Broader range of experiments with multiple scan modes: data-dependent acquisition (DDA), data-independent acquisition (DIA), spectral multiplexing (MSX), TopN and new TopSpeed (TopS), BoxCar DIA and DDA experiments, tSIM, tSIM MSX, ddMS/MS, targeted MS/MS

Thermo Scientific™ OptaMax™ NG electrospray (HESI) ion source housing is fully compatible with the [Thermo Scientific™ H-ESI II \(Heated ESI\)](#) and [Thermo Scientific™ EasySpray™ sources](#). The ESI, APCI, and APPI probes can be used with the H-ESI II source.

The source housing supports the optional Thermo Scientific™ EASY-IC™ source and also fits the [Thermo Scientific™ FAIMS Pro™ interface](#). In addition, new USB ports offer future expandability, and even charge your smart phone.

## What are the benefits of the Orbitrap Exploris 480 for quantitative experiments?

Intelligent data acquisition methods—for example Thermo Scientific™ SureQuant™ Method internal standard (IS) triggered targeted protein quantitation and Thermo Scientific™ TMT™ Isobaric Mass Tagging Kits for multiplexed MS<sup>2</sup> quantitation—leverage the new levels of instrument performance to deliver high-confidence, high-throughput quantitative workflows with less optimization and effort. Breakthroughs in method intelligence include:

- Improved limits of detection (LODs) and real-time management of analysis with SureQuant internal standard (IS) triggered targeted protein quantitation
- Increased peptide detection and faster scan acquisition rates for TMT multiplexing with Thermo Scientific™ TurboTMT intelligent data acquisition mode, powered by  $\Phi$ -SDM
- Superior MS/MS spectral quality and TMT quantitation accuracy with Thermo Scientific™ Theoretical Precursor Envelope Fitting (Precursor Fit)
- Wider dynamic range for enhanced identification and quantification with data-dependent acquisition (DDA) and data-independent acquisition (DIA) with BoxCar acquisition scans

## Reference

1. Thermo Scientific™ Tribrid™ mass spectrometers, Thermo Scientific™ TSQ Altis™ mass spectrometer, Thermo Scientific™ TSQ Quantis™ mass spectrometer, and Thermo Scientific™ TSQ Fortis™ mass spectrometer.

Find out more at

[thermofisher.com/OrbitrapExploris480](https://thermofisher.com/OrbitrapExploris480)

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