

TECHNICAL SPECIFICATIONS

Zentriq

Tandem Quadrupole Mass Spectrometer

Product technical document

LabCore Instruments

ZENTRIQ TANDEM QUADRUPOLE MASS SPECTROMETER

Engineered for peak performance in mass spectrometry, the Zentriq is a compact tandem quadrupole platform that harnesses next-generation ion optics and advanced acquisition technologies to achieve exceptional sensitivity. Its streamlined design delivers reliable quantitative and qualitative analyses across a diverse range of analytes.

Ultra-Fast Data Capture for High-Throughput Workflows

With ultra-fast scanning and rapid polarity switching, the Zentriq can monitor multiple transitions at once with very short cycle times. This makes it perfect for high-throughput applications like pharmacokinetics, metabolomics, and proteomics. You'll get more samples analyzed in less time without compromising data quality. Enhancing an existing gas chromatograph (GC) by integrating Zentriq mass spectrometry (MS) system is a feasible and effective upgrade option.

Expanded Range for Seamless Quantitation

Thanks to its advanced Dynamic Range technology, the Zentriq can measure both trace and abundant compounds in a single run. You won't need to dilute or concentrate your samples anymore. This wide linear range also makes it easier to transfer methods between labs or instruments, streamlining workflows and saving time.

Integrated Ionization–Detection

The Zentriq uses a unique ionisation and detection system that merges ionization and detection into one smooth step. This design boosts sensitivity, making it easier to detect even tiny amounts of analytes in complex samples—whether biological, environmental, or pharmaceutical. It works with extremely small injection volumes, helping maintain signal clarity and reducing sample carryover. The result? Reliable, high-quality measurements every time.

Smarter, Faster Method Optimization with Spectracore Software

Zentriq's Spectracore software makes method development intuitive and efficient. It offers real-time data visualization, automatic peak integration, and flexible acquisition settings. You can adjust parameters on the fly and get immediate graphical feedback, making it easier to fine-tune methods and interpret complex datasets quickly.

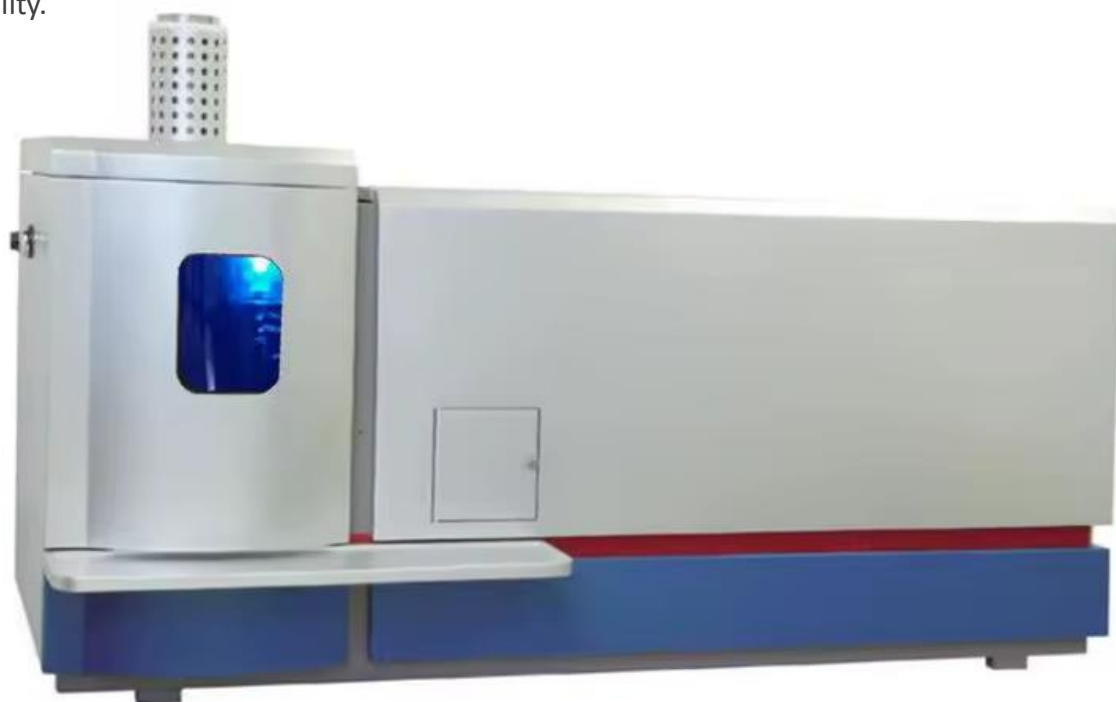
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Consistent Results with Trusted Quantitation

The system's finely tuned quadrupole filters and collision cell dynamics ensure consistent fragmentation and reproducible transitions. This stability is crucial for regulated labs where accuracy and traceability matter. Whether you're running one sample or hundreds, you can count on precise, repeatable results that meet strict compliance standards.

Rapid Scan Technology for Maximum Throughput

With accelerated scan speeds and lightning-fast polarity switching, the Zentriq can track multiple transitions simultaneously at minimal cycle times. This high-throughput capability is ideal for pharmacokinetic studies, large-scale metabolomics, and targeted proteomics. Shorter run times translate into more samples processed per day without sacrificing data quality.



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Zentrig Mass Spectrometer – Technical Specifications

Ionization and Source Configuration

- **Dual-Orthogonal Atmospheric Pressure Ionization (API) Sources:** Enabled
- **Ionization Modes:**
 - Multi-mode source: Electrospray Ionization (ESI) & Atmospheric Pressure Chemical Ionization (APCI)
 - Dedicated single-source configurations: ESI or APCI
- **Desolvation Temperature:** Up to 700 °C for both ESI and APCI
- **Source Flow Rate Range:** Supports up to 3.0 mL/min

Mass Analysis and Detection

- **Mass Analyzer:** Dual quadrupole configuration (MS1/MS2)
- **Mass Range:** 2–2000 m/z
- **Scan Speed:** Up to 22,000 Da/s
- **Mass Resolution:** Auto-adjustable with selectable FWHM settings (0.50, 0.75, or 1.00 Da)
- **Mass Stability:** Less than 0.1 Da over a 24-hour period
- **Polarity Switching Time:** ≤5 ms between positive and negative ion modes
- **Dwell and Delay time:** Less than 0.5 ms
- **MS to MS/MS Switching Time:** ≤3 ms
- **Dynamic Range:** 6 orders of magnitude
- **Detector Type:** Electron Multiplier Tube (EMT)

Collision Cell and Fragmentation

- **Collision Cell Configuration:** Q2/MS2 with CID (Collision-Induced Dissociation)

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- **MS/MS Performance:** Optimized for high-speed data acquisition

Sensitivity and Quantitation

- **MRM Sensitivity (ESI+):**
 - 1 pg reserpine (on-column) yields S/N >650,000:1
 - Instrument Detection Limit (IDL):
- **MRM Sensitivity (ESI-):**
 - 1 pg chloramphenicol (on-column) yields S/N >650,000:1
 - Instrument Detection Limit (IDL):

Acquisition Capabilities

- **Supported Acquisition Modes:**
 - Multiple Reaction Monitoring (MRM)
 - Product Ion Scan
 - Precursor Ion Scan
 - Constant Neutral Loss/Gain
 - Full Scan MS
 - Selected Ion Monitoring/Recording (SIM/SIR)
 - Advanced Scan Modes
- **MRM Channel Capacity:** Up to 32,000 channels
- **MRM Acquisition Rate:** Up to 555 transitions/sec

System Integration and Software

- **Auto-Tuning and Calibration:** Fully integrated and automated
- **Data Management Platform:** Spectracore Software
- **Software Interface:**

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- Seamless integration with – Spectracore software
- Enables real-time switching between full-scan MS and targeted MS/MS acquisition
- Facilitates simultaneous exploration of sample complexity and refinement of quantitation strategies during method development

Hardware and Infrastructure

- **Vacuum System:** Single automated vacuum pump for streamlined operation