



**Chromatography & Mass Spectrometry
Product Reference Guide**

more capabilities.
new possibilities.

Thermo Scientific + Dionex

Leading technologies • Applications expertise • Global support

Thermo
SCIENTIFIC

more capabilities. new possibilities.

Dionex products are now a part of the Thermo Scientific brand, bringing leading capabilities in ion chromatography (IC), liquid chromatography (LC), and sample preparation to the industry's leading portfolio, creating new possibilities for scientific analyses.

Our excitement about this winning combination is about more than adding the Dionex range of IC, LC, and sample preparation instruments to the Thermo Scientific portfolio. For over 30 years, Dionex has built a reputation for continuous innovation, for leading the industry with pioneering advances in separations chemistry, consumables and software, and for providing solutions to challenging analytical problems in diverse areas, including critical applications in environmental protection and those in life sciences.

The following pages illustrate the range, scope and excellence of our combined offerings, where you'll find the best of separation science meeting the leading mass spectrometry solutions to help move your science forward.

table of contents

+ UHPLC for all LC Systems	2-3	+ Orbitrap LC-MS	14-15
+ UHPLC Accessories and Supplies	4-5	+ Ion Chromatography (IC)	16-17
+ HPLC and UHPLC	6-7	+ IC and RFIC Accessories	18-19
+ GC, GC-MS and ICP-MS	8-9	+ Chromatography, MS and LIMS Software	20-21
+ Columns and Accessories	10-11	+ Sample Prep	22-23
+ LC-MS	12-13	+ Service and Support	24-25

Leading
Instruments



Optimized
accessories



Informative
software

new discoveries.

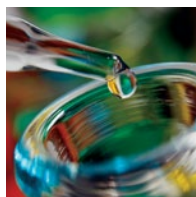
Liquid chromatography

Leading LC, UHPLC and nano-LC systems



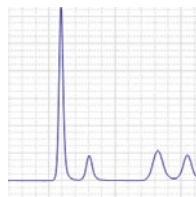
Gas chromatography

Our portfolio of GC, GC-MS and GC-MS/MS solutions



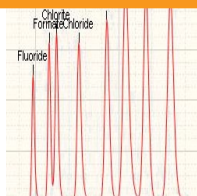
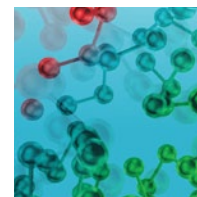
Ion chromatography

Standard, reagent-free IC and capillary IC systems from the world-wide leader



Mass Spectrometry

Systems for precise identification and quantification



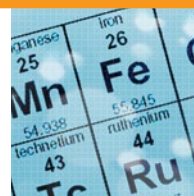
Chromatography, MS and LIMS Software

Faster data interpretation and information flow



Sample Prep

Better extractions in less time



ICP-MS

Outstanding productivity and greater confidence

Knowledgeable
method
development



Timely
service



Unsurpassed
commitment

more capabilities. new possibilities.

UHPLC delivers important benefits – faster runs, better resolution, and lower operating costs. With Dionex now part of the Thermo Scientific brand, UHPLC performance can be offered at standard HPLC prices to a greater number of laboratories across a wider range of applications.

UHPLC⁺ focused

The Dionex UltiMate 3000 HPLC system offers UHPLC compatibility across all modules, ensuring maximum performance. With flow rates from 20nL/min to 10mL/min and offering a wide range of pumping, sampling, and detection modules, the UltiMate 3000 series provides solutions for all your chromatography needs.

Features and Benefits:

- UHPLC design for all RSLC, nano and standard analytical systems
- 620 bar maximum pressure for basic and standard analytical systems – setting a new benchmark in HPLC
- x2 Dual systems form a unique platform for routine analysis, increased productivity solutions, and advanced chromatographic techniques
- Systems are controlled using Dionex Chromeleon® Chromatography Data System software – providing Intelligent Functionality and Operational Simplicity™
- Systems are offered with Viper™ and nanoViper™ fitting systems – fingertight, zero-dead-volume connections even at UHPLC pressures



UltiMate 3000 Rapid Separation LC Systems

The Dionex UltiMate 3000 Rapid Separation LC (RSLC) systems integrate unique hardware features for ultrafast separations and excellent resolution using columns with small particles. In addition, they are characterized by a maximum level of reliability and flexibility.

- Binary or quaternary systems for both UHPLC and conventional HPLC applications
- Extensive flow-pressure-footprint for ultrafast, ultrahigh-resolution separations
- Column pressures up to 1000 bar
- x2 Dual RSLC systems for ultimate productivity solutions



UltiMate 3000 RSLCnano Systems

The Dionex UltiMate 3000 RSLCnano systems have been designed to optimize low flow separations and facilitate easy coupling to mass spectrometry to provide the best resolution, sensitivity, and selectivity for nano LC and proteomics applications.

- Ideal for analysis with limited sample amounts
- High sensitivity to allow detection of femtomoles or even lower
- Maximum robustness and repeatability for consistent results
- Increased resolution and selectivity for more reliable identification
- Widest nano/cap/micro flow range from 20nL/min up to 50µL/min

more versatile UHPLC for all LC Systems

UHPLC compatibility has been added to all standard and basic automated Dionex HPLC systems, and we've extended the UHPLC performance of the UltiMate® 3000 RSLC systems, giving you more versatility for your analytical needs.



**UltiMate 3000
Standard LC Systems**

The Dionex UltiMate 3000 Standard LC systems provide the right solution for demanding, analytical, and semipreparative LC applications.

- Optimal performance and reliability for conventional LC applications
- 620 bar maximum pressure and 100Hz detectors for UHPLC compatibility
- Widest range of system configurations for maximum application flexibility
- Flow rates up to 10mL/min covering all application needs
- Biocompatible version available (up to 350 bar)



**UltiMate 3000
Basic LC Systems**

The Dionex UltiMate 3000 Basic systems are cost-effective solutions for conventional HPLC and UHPLC. Fully-scalable, modular basic systems are designed to provide consistent, robust operation and are even compatible with UHPLC applications.

- Cost effective system for routine applications
- 620 bar maximum pressure and 100Hz data rate for UHPLC compatibility
- Optional Autosampler Column Compartment with integrated sampling and temperature control



**more capabilities.
new possibilities.**

Dionex LC modules integrate innovation and intelligent features into a broad selection of autosampler, injector, pump, flow-control, thermostatted column compartment, and detector modules. We offer a wide variety of LC and Bio columns for any analytical application, as well as accessories for use with our HPLC systems.



**UltiMate 3000
Pumps**

The Dionex UltiMate 3000 pump family offers the most complete choice in the industry. From nano LC to rapid separation applications, from conventional applications to UHPLC, the UltiMate 3000 pumps always provide industry-leading flow, pressure and precision.

Isocratic: Analytical

Binary: RSLCnano, Analytical, RSLC

Quaternary: Micro, Analytical, RSLC

Dual-Gradient: Micro, Analytical, RSLC



**Samplers and
Column Compartments**

The Dionex UltiMate 3000 auto-samplers ensure reliable, precise, and accurate injections of nL to mL sample volumes, with extremely low carry-overs. Fraction collection options range from simple collection to advanced collection-reinjection workflows such as automated off-line 2D-LC.

Autosamplers: Split-Loop, Pulled-Loop with integrated column compartment

Fraction Collectors: Fraction Collector, Autosampler/Fraction Collector, MALDI Spotter

Column Compartments: Integrated Switching Valves



Detectors

Optical Detectors: The Dionex UltiMate 3000 optical detectors are available for UV-vis absorbance, fluorescence, and refractive-index detection of a wide variety of analytes.

Charged Aerosol Detectors: The Dionex ESA Corona[®] charged aerosol detectors provide universal detection of any non-volatile analyte and are compatible with gradients.

Electrochemical Detectors: The Dionex ESA Coulochem[®] III is an electrochemical detector for easily oxidized or reduced analytes. It offers outstanding performance for amperometric, coulometric, and pulsed amperometric detection.

Accessories and Supplies

more comprehensive UHPLC



MSQ Plus Mass Spectrometer

The Thermo Scientific MSQ™ Plus Mass Spectrometer can be used in a wide range of applications and methodologies in both HPLC and IC. Only 12 inches wide, the MSQ Plus is a compact mass spectrometer providing universal detection and characterization of analytes in the 17–2000 m/z range. Compatible with existing LC and IC methods, the MSQ Plus is sensitive, rugged, powerful, easy to use, and integrates seamlessly with LC and IC systems.



Viper Fitting System

The Viper and nanoViper fitting systems eliminate problems experienced with conventional fitting systems. They provide a perfect fit each time and ensure superior chromatographic performance.

- Zero-dead-volume UHPLC fingertight fittings for nano/cap, micro, and analytical LC
- Compatible with virtually every type of valve and column hardware
- Flexible stainless steel or fused silica capillaries



LC Columns

Nano Columns: A wide range of dedicated Acclaim® PepMap™ nano columns with zero dead-volume connections

Rapid Separation LC Columns: Acclaim RSLC columns for ultimate speed and resolution in UHPLC

Mixed-Mode Columns: Includes unique chemistries with tunable selectivities for charged and non-charged analytes

Bio Columns: Chemistries that include a unique monolith technology for separations of biomolecules

Specialty Columns: Customized selectivities for dedicated application requirements

Standard Columns: Acclaim columns with innovative bonding for a wide range of different selectivities



**more capabilities.
new possibilities.**

The leader in LC-MS innovation provides additional liquid chromatography solutions for a range of dedicated analytical needs. Whatever your requirements, Thermo Scientific LC, UHPLC, nano-LC, and LC-MS systems deliver the performance your laboratory demands.



SpectraSYSTEM LC System

The Thermo Scientific SpectraSYSTEM LC is an economical system that can be configured to match a range of application and performance demands.

The Thermo Scientific SpectraSYSTEM provides a full range of degassers, pumps, autosamplers and detectors in a compact, modular HPLC system. Low delay volume and excellent gradient precision ensure highly reproducible chromatographic separations and compatibility with all column types. Available in standard isocratic and gradient configurations.



Accela High Speed LC

Thermo Scientific Accela High Speed LC is a robust modular system with a large suite of integrated features to increase application flexibility and efficiency. Designed for maximum performance, reliability and productivity, Accela provides seamless operation from conventional LC pressures up to 1250 bar for UHPLC separations of complex matrices.

The new Accela 1250 pump features Force Feedback Control (FFC) which eliminates the need for pulse dampening while improving flow accuracy and gradient precision under extreme operating conditions. It operates at a top pressure of 1250 bar with flow rates of up to 2mL/min, reducing run times and improving productivity.



Accela Open Autosampler

The Thermo Scientific Accela Open Autosampler provides a versatile, modular design for maximum application flexibility. Its automatic open architecture enables easy access to samples, syringe, valves and injection ports. Configurable for any LC and LC-MS application, it is designed to carry out sample injections automatically and reliably with fast sample cycles, outstanding reproducibility and extremely low carryover.

more dedicated HPLC and UHPLC Systems



Transcend LX System

The Thermo Scientific Transcend™ LX series systems are designed to improve MS efficiency, productivity and throughput. The LX-4 system achieves the throughput of four separate LC-MS systems with only a single MS. The LX-2 system doubles the productivity of your mass spectrometer by achieving the throughput of two separate LC-MS systems with a single MS.

- Accelerates results – achieve up to a 4X improvement in mass spectrometry throughput
- Enhances productivity – analyze more samples per hour
- Improves efficiency – mass spec idle less than 4 percent of the time
- Increases flexibility – run up to four different assays at the same time



EASY-nLC II

Thermo Scientific EASY-nLC II nanoflow liquid chromatograph provides effortless split-free nano chromatography excellence for LC-MS.

Easily installed and running within hours, the EASY-nLC II delivers unrivaled ease-of-use and productivity for busy life scientists. The EASY-nLC II achieves precise, accurate and reproducible split-free chromatography that provides high resolution results in even the most difficult of proteomics LC-MS analyses.



EASY-nLC 1000

The Thermo Scientific EASY-nLC 1000 is a split-free, nanoflow LC optimized for separating biomolecules such as proteins and peptides at ultra high pressures up to 1,000 bar or 15,000 psi. The instrument seamlessly integrates with various mass spectrometers, providing trouble-free operation. EASY-nLC 1000 is a fully integrated LC-system with a binary nano flow gradient pump, a cooled auto-sampler, switching valves and high precision flow sensors for accurate solvent control before high-pressure mixing.



**more capabilities.
new possibilities.**

Environmental, food safety, toxicology, and forensic gas chromatography applications are more demanding than ever. Our portfolio of GC, GC-MS, GC-MS/MS and ICP-MS is geared to meet the challenge.



FOCUS GC

The Thermo Scientific FOCUS™ GC is a compact, single-channel gas chromatograph designed for use in routine quality control laboratories and is available with either FID or TCD. Conceived and built around the “core” of the TRACE GC Ultra’s hardware and unique features, the FOCUS GC is the reference for precision and accuracy of results, as well as a standard for ruggedness for QA/QC and high throughput environments.



TRACE GC Gas Chromatographs

The Thermo Scientific TRACE GC responds to the needs of modern laboratories for higher productivity and increased sensitivity.

The “Ultra” platform combines the reliability of the TRACE GC with extended system usability, performance, and automation. It addresses a wide range of large volume and split/splitless techniques, overcoming sensitivity boundaries of conventional GCs without additional investment, training or revalidation of methods. Can be configured with up to two injectors and three detectors, making it ideal for the analysis of crude oils, pesticides, hydrocarbons as well as food and flavor characterizations. Dedicated turnkey analyzers for chemical and petrochemical applications are available.



ISQ Single Quadrupole GC-MS

The Thermo Scientific ISQ™ system offers rugged and reliable performance and nonstop productivity.

The Thermo Scientific ISQ GC-MS features a new source design ideal for continuous high-throughput operation. The vacuum interlock enables source removal without venting the system, for nonstop productivity.

more productive GC and ICP-MS Systems



ITQ Series GC-Ion Trap MS

Thermo Scientific ITQ Series GC-Ion Trap MS offers outstanding full-scan electron ionization sensitivity and upgradeability.

From a small-footprint entry-level QA/QC instrument to a fully-featured, research-grade system with advanced MSⁿ functionality, the Thermo Scientific ITQ Series offers a broad range of standard features along with an impressive list of options. As needs change, the ITQ Series offers upgrade options to expand instrument capabilities and add flexibility and versatility.



TSQ Quantum XLS Ultra Triple Quadrupole GC-MS/MS

The Thermo Scientific TSQ Quantum XLS Ultra is the new “Gold Standard” in GC-MS/MS. HyperQuad™ technology delivers highly increased mass resolving quadrupoles for ultra selective SRM, with best in class sensitivity, and allows unsurpassed analytical performance for the most difficult matrix challenges. TSQ Quantum XLS Ultra is engineered to meet the requirements of the most demanding analytical tasks across food safety, environmental, clinical, forensic, toxicology, pharmaceutical and metabolomics and applications.



XSERIES 2 ICP-MS

The Thermo Scientific XSERIES 2 ICP-MS offers outstanding productivity in a quadrupole ICP-MS for both routine and high performance analytical work. Laboratories can achieve analytical objectives faster, with greater confidence and less hands-on time from the operator. Advanced H²/He collision cell technology provides uncompromised multi-element analysis for all elements including Ca, Fe, As and Se, with outstanding signal/background.

more capabilities. new possibilities.

Discover the most comprehensive array of chromatography solutions available. From sample preparation to separation and analysis, Thermo Scientific tools help you achieve repeatable, predictable results – separation after separation.



Thermo Scientific GC Columns and Accessories

Redefine your expectations for GC with our line of GC Columns

TraceGOLD GC Columns provide a leap forward in column performance by delivering low bleed and superior inertness.

TracePLOT GC Columns offer the latest innovation in PLOT column technology, providing reproducible analyses of permanent gases, hydrocarbons and solvents.

GC Accessories:

All the tools necessary for today's gas chromatographer.



Thermo Scientific LC Columns and Accessories

Hypersil GOLD LC Columns:

- Excellent peak shape
- Increased sensitivity
- Improved resolution
- 1.9 to 12 μ m particles

Hypercarb LC Columns: 100% porous graphitic carbon provides extended separation, exceptional retention of very polar analytes.

- pH stable from 0 to 14
- Ideal for high temperature

Columns for Fast LC: 1.7 μ m Synchronis and 1.9 μ m Hypersil GOLD columns provide high speed, high efficiency, excellent peak shape and consistent separations.

Columns for Biomolecules:

BioBasic reversed phase, ion exchange and size exclusion columns are ideal for the analysis of a wide range of biomolecules.



Thermo Scientific Sample Preparation Solutions

Our sample preparation solutions remove uncertainty by applying science to SPE.

HyperSep Retain: offering fast and easy sample preparation.

WebSeal: products for high throughput screening.

QuEChERS: solutions for efficient sample preparation and clean-up.

eVol: the world's first analytical syringe.

GC, HPLC and SPE more versatile Columns and Accessories

For more information, visit the Chromatography Resource Center, an extensive and fully searchable library featuring over 6000 applications and references encompassing liquid chromatography, gas chromatography and solid-phase extraction.

thermoscientific.com/chromatography



Thermo Scientific Vials and Closures

A comprehensive range of solutions for any instrument and any application.

Certified and Mass Spec Certified Vials:

- Unmatched consistency
- Unique pre-cleaned vials and packaging
- 13 tests ensure highest integrity
- Micro sampling options
- Headspace vials
- High recovery vials
- Tools and accessories



Thermo Scientific Chromatography Tools and Supplies

Enhance and optimize the performance of your chromatography instruments.

- Autosampler Syringes
- Chromatography Standards – Complete sets of chemical standards available for each EPA method
- Connectors
- Ferrules
- Gas Filters
- Gas Tight Syringes
- Hydrolysis Tubes
- Port Injection Liners
- Septa



Thermo Scientific GC Derivatization Reagents and Standards, Reacti-Therm System

Derivatization reagents for mass spectrometry, high-pressure liquid chromatography and gas chromatography.

Reagents designed to provide selectivity and improve sensitivity.

- Derivation and Visualization Reagents for HPLC
- GC Derivatization Reagents
- HPLC and Spectrophotometric Grade Solvents
- HPLC Ion Pair Reagents
- Other HPLC Reagents
- Siliconizing Fluids

more capabilities.
new possibilities.

Robust Thermo Scientific triple quadrupole LC-MS systems enable the quantitation and confirmation of compounds in complex matrices.



TSQ Quantum Access MAX Triple Stage Quadrupole Mass Spectrometer

Thermo Scientific TSQ Quantum Access MAX triple stage quadrupole mass spectrometer is the value-conscious choice for a wide variety of LC-MS applications, including pharmaceutical, environmental, food safety, clinical research, and forensic toxicology.

- Best in class mass range of m/z 10 - 3000
- Up to 3000 timed SRMs with fast positive/negative mode switching of ≤ 25 ms
- Precise, consistent and reproducible results at amazingly low levels of quantitation



TSQ Quantum Ultra Triple Stage Quadrupole Mass Spectrometer

Thermo Scientific TSQ Quantum Ultra mass spectrometer provides maximum productivity for bio-analytical analysis.

Faster method development at the highest possible specificity is routinely achievable with the TSQ Quantum Ultra mass spectrometer.

- Advanced technology facilitates development of robust quantitative methods
- High selectivity significantly reduces matrix interferences



TSQ Vantage Triple Stage Quadrupole Mass Spectrometer

Thermo Scientific TSQ Vantage triple stage quadrupole mass spectrometer delivers the highest sensitivity with the lowest noise for the quantitative analysis of small molecules, peptides, biosimilars, and biologics.

- Precise, consistent and reproducible results at amazingly low levels of quantitation
- Robust new ion source, second generation (G2) ion optics and hyperbolic quadrupoles
- Provides a 10X S/N improvement over competing systems
- 1,000 SRM/sec, 3,000 timed SRMs per LC run
- >4 orders linear dynamic range

more robust LC-MS Systems

Versatile ion trap LC-MS systems offer unique capabilities such as MSⁿ and data dependent analysis along with excellent full scan sensitivity to provide routine detection and rapid identification of low level analytes.



LCQ Fleet Ion Trap Mass Spectrometer

The cost-effective Thermo Scientific LCQ Fleet Ion Trap Mass Spectrometer delivers rich information for routine analysis of complex samples while providing excellent full-scan sensitivity, ruggedness and reliability.

- Proven performance for compound identification in complex matrices
- Easy to use single-point LC-MSⁿ for non-MS operators



LTQ XL Linear Ion Trap Mass Spectrometer

Thermo Scientific LTQ XL ion trap LC-MS mass spectrometer delivers high MSⁿ high performance to generate extensive structural information for routine proteomics and metabolism applications. Its high capacity 2D linear ion trap configuration with powerful software is a complete solution for structural elucidation questions.

LTQ XL offers multiple dissociation techniques, PQD, ETD and CID.

- PQD is a proprietary technique that eliminates the low mass cut-off concern inherent with all ion traps
- Extensive coverage for predicted and unpredicted metabolites, and the ability to perform peptide quantification using iTRAQ™ labels



Velos Pro Ion Trap Mass Spectrometer

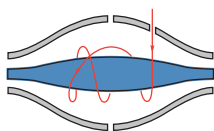
With the improved robustness of Generation 2 ion optics, the Thermo Scientific Velos Pro ion trap mass spectrometer delivers reliability on the fastest, most sensitive, highest capability ion trap available today.

- New detection electronics enable linear quantitation of up to 6 orders of magnitude for enhanced reproducibility and confidence in results
- Fast scanning up to 66,000 Da/sec enables ultra high-throughput analyses, compatible with the fastest UHPLC systems
- New Trap-HCD fragmentation offers complementary, triple quadrupole-like fragmentation that facilitates structural elucidation, sequence assignment and quantitation of isobarically labeled peptides

more capabilities. new possibilities.

Orbitrap technology is the recognized gold standard for high-resolution, accurate mass (HR/AM) analyses. It is available in a variety of mass spectrometry platforms, from routine screening tools to ultra-high performance research instruments.

The Technology of Choice for Accurate Mass and High- Resolution Measurement



Since its commercial introduction in 2005,

Orbitrap technology has become the recognized standard for routinely achievable ultra-high resolution (>100,000) mass spectrometry with reliable accurate mass. Combined with superior dynamic range and unsurpassed sensitivity, Orbitrap-based platforms are the only LC-MS and MS/MS systems capable of providing all four benefits at the same time, without compromise.

The addition of an ion trap mass analyzer to an Orbitrap detector enables multiple levels of fragmentation (MSⁿ) as well as multiple fragmentation modes (CID, HCD, and ETD) for the elucidation of analyte structures. Coupling with continuous ionization sources such as atmospheric pressure chemical ionization source (APCI), electrospray (ESI), or nanoelectrospray (NSI), or with matrix-assisted laser desorption/ionization (MALDI) provides increased analytical flexibility and power.



Exactive High Performance Benchtop LC-MS Mass Spectrometer

Thermo Scientific Exactive Mass Spectrometer is an easy-to-use benchtop system combining premium performance with a simple, intuitive interface, resulting in a LC-MS system that is smaller, faster and affordable for virtually any lab.

- High Resolving Power (up to 100,000) provides precise mass accuracy for complex sample analysis
- Mass accuracy of better than 2ppm in full scan using fully automated AGC and mass calibration procedures
- Scan Speed operating at a 10Hz scanning frequency Exactive is fully compatible with UHPLC and ensures exact mass measurement for fast chromatography applications



Q Exactive High Performance Benchtop LC-MS Mass Spectrometer

Thermo Scientific Q Exactive™ benchtop Orbitrap system combines high-performance quadrupole precursor selection with high-resolution, accurate-mass (HR/AM) Orbitrap detection enabling identification, quantitation and confirmation of compounds in a single run, an innovative capability known as “quanfirmation.” The Q Exactive can identify, quantify and confirm more trace-level proteins, peptides, metabolites and contaminants in complex mixtures.

- Resolving power of up to 140,000 FWHM provides high confidence
- High scan speed and multiplexing capabilities fit with UHPLC timescale
- Fast positive-negative scan-to-scan polarity switching enables detection of the widest possible range of compound types

more resolution Orbitrap LC-MS Systems



LTQ Orbitrap XL

Thermo Scientific LTQ Orbitrap XL hybrid mass spectrometer supports a wide range of applications from routine compound identification to the most challenging analysis of low level components in complex mixtures. Excellent mass accuracy, mass resolution and high sensitivity MSⁿ make it ideally suited for general proteomics and metabolism applications.

- Based on the fast and highly sensitive Thermo Scientific LTQ XL linear ion trap and the proprietary Orbitrap technology
- New HCD collision cell for greater flexibility in fragmentation experiments for advanced proteomics and small molecule research
- Can be upgraded to include ETD and MALDI capabilities



Orbitrap Velos Pro

Thermo Scientific Orbitrap Velos Pro hybrid mass spectrometer blends the unsurpassed speed and sensitivity of the Velos Pro dual-pressure ion trap with the ultra-high resolution and outstanding mass accuracy of Orbitrap™ technology.

- High mass resolution (>100,000) and mass accuracy (1ppm) allows accurate measurement and identification of intact proteins
- Outstanding performance in multiplexed experiments using isobaric labels
- Stability, mass accuracy and wide dynamic range required for successful label-free analyses
- Parallel MS and MSⁿ analysis
- Multiple fragmentation techniques: CID, HCD, and optionally ETD



Orbitrap Elite

Thermo Scientific Orbitrap Elite combines a novel high-field Orbitrap with the Velos Pro dual-pressure linear ion trap to deliver unsurpassed resolving power, increased sensitivity, high scan speeds and a larger dynamic range.

- Resolving power of >240,000 FWHM provides unprecedented confidence
- Highest resolution for meaningful top-down protein characterization experiments
- Highest sensitivity for the detection of very low abundance proteins, peptides and metabolites

more capabilities. new possibilities.

Since 1975, the Dionex brand has been synonymous with the forefront in ion chromatography. Continuous Dionex innovations in instrumentation, chemistry, applications and software ensure that you get the best IC solutions available –

Reagent Free Ion Chromatography (RFIC™) Systems Deliver Superior Results

Dionex IC technology has evolved over many product generations, each providing enhanced performance, greater reliability, and easier operation.

Reagent-Free™ IC eliminates daily tasks of eluent and regenerant preparation, saving time, preventing errors, and increasing convenience.

RFIC-EG systems use electrolytic technologies to generate eluent on demand from deionized water, and to suppress the eluent back to pure water. They deliver unmatched sensitivity and the separating power of gradient IC, all with “just add water” convenience.

Capillary IC takes convenience to a new level. Using only 5L of eluent per year, and needing no service or calibration for months at a time, a capillary ICS-5000 is always ready to run samples. It's the world's first IC that enables true walk-up analysis on demand.

RFIC-ER systems use electrolytic technologies to suppress the eluent prior to detection, and to continuously regenerate eluent from the column effluent. With RFIC-ER, you can run routine applications for a month on a single batch of eluent.



**ICS-5000 Modular
RFIC-EG System**

The world's most advanced IC system provides unmatched capability, flexibility, and convenience. Available in single or dual configurations in analytical-scale and/or capillary formats, and with a broad selection of detectors, the Dionex ICS-5000 provides optimum performance for any IC application.

Key Features:

- Modular design adapts to diverse and changing analytical needs
- RFIC-EG, plus quaternary gradient proportioning and vacuum degasser, provides ultimate eluent flexibility
- Extremely precise temperature control dramatically reduces noise and drift



**ICS-2100
RFIC-EG System**

This compact integrated Dionex IC makes its own eluent from deionized water. Just add water, and get excellent results for a wide range of conductivity-based methods using isocratic or gradient elution.

Key Features:

- Compact design conserves bench space while providing easy access to fluidics
- Touchscreen LCD display allows convenient front-panel control
- Integrated eluent generator produces precise gradients on demand – just add water!
- Column heater reduces noise and drift

more confidence Ion Chromatography Systems

solutions that deliver reliable analytical results while saving you time and money. A range of modular and integrated systems gives you the flexibility to choose the level of features and performance that's right for your application and your budget.



**ICS-1600, ICS-1100
RFIC-ER Systems**

Compact, integrated Dionex ICs provide good performance for common conductivity-based IC methods.

Key Features:

- Compact design conserves bench space while providing easy access to fluidics
- Touchscreen LCD display allows convenient front-panel control (ICS-1600)

- RFIC-ER option allows continuous operation for up to a month using a single bottle of eluent
- Column heater reduces noise and drift (ICS-1600)
- Electrolytic suppression effortlessly improves signal/noise ratio
- Support for standard-bore and microbore formats offers flexibility
- Optional vacuum degasser saves labor and prevents cavitation (ICS-1600)



**ICS-900
Basic IC System**

This compact, entry-level unit delivers good performance for basic Dionex IC applications using manually prepared eluents.

Key Features:

- Compact design conserves bench space while providing easy access to fluidics
- Displacement Chemical Regeneration suppression provides low noise and stable baselines
- Support for standard-bore and microbore formats offers flexibility
- Optional external column heater reduces noise and drift

more capabilities. new possibilities.

Staying the leader in IC for over 35 years requires more than having the best instruments. Dionex products encompass not only instruments, but also industry-leading automation, software, and chemistries – all of which work together to provide you with comprehensive



Autosamplers

A selection of Dionex IC autosamplers, all with metal-free flow paths, supports diverse application and budgetary requirements.

AS-AP: This high-performance autosampler provides increased sample capacity, fast injection times, maximum precision, and broad application flexibility. Inject from vials and/or wellplate positions in any desired order, automate sample preparation, and deliver samples to one or two instruments.

AS-DV: This economical autosampler automatically filters samples as it delivers them. It supports 5mL and/or 0.5mL vials, and can load sample onto an injection loop or concentrator column.

AS-HV: This versatile autosampler supports a wide range of sample containers, and is ideal for applications involving trace-level contaminants in high-purity water.



Eluent Generation Cartridges (EGC III)

The EGC III cartridge generates high-purity hydroxide, carbonate, or methanesulfonic acid (MSA) eluents electrolytically. Stop spending time manually preparing eluents. With EGC, you just add water.

Key Features:

- Simplified operation; no need to prepare eluents or regenerants
- Improves analytical reproducibility, day-to-day, week-to-week, month-to-month
- Ensures system-to-system reproducibility and lab-to-lab consistency
- Achieves sensitive results with pure, uncontaminated eluent
- Eliminates errors and variability associated with manual eluent and regenerant preparation



Self Regenerating Suppressor (SRS)

Suppression works two ways to achieve the absolute best sensitivity and corresponding lowest detection limits for inorganic analyses; it increases analyte signal while simultaneously decreasing background signal and noise. The SRS 300 supports virtually all analytical scale ion chromatography applications for both anions and cations.

Key Features:

- Low background noise levels
- Fast startup equilibration times
- Trace anion and cation determinations
- Compatibility with mass spectrometry detection
- Compatibility with all Dionex ICS and DX chromatography modules
- A three-fold increase in back-pressure tolerance compared to previous generations

more applications IC and RFIC Accessories

solutions to your analytical challenges. When you need an analytical solution for inorganic ions, organic acids, amines, sugars, proteins, peptides, or other challenging species, find out what we can do for you.



Continuously Regenerated Trap Column (CR-TC)

Designed for eluent generators in RFIC systems, CR-TC columns remove all anionic or cationic contaminants in the eluent continuously and provide very low baseline drift during gradient operations.

Key Features:

- Generates contaminant-free deionized source water and eluent
- Time savings—no need to perform regeneration off-line
- Very low baseline drift for improved integration and increased sensitivity
- Increased productivity; quality data soon after startup
- Removal of carbonic acid contaminants from source water
- Compatibility with Capillary RFIC-EG systems



Carbonate Removal Device (CRD)

The Carbonate Removal Device (CRD) removes carbon dioxide from the suppressed eluent stream by diffusion through the walls of a gas permeable membrane. With carbonate eluent systems, it reduces background signals to nearly the same levels as those of hydroxide eluents.

Optimized for the removal of carbonate from hydroxide eluent systems:

- Improves quantitation by minimizing carbonate
- Lowers backgrounds, providing higher sensitivity
- Eliminates carbonic acid, increasing the linear range



IonPac® Chromatography Columns

At the heart of Dionex ion chromatography is a unique set of column chemistries that provide high selectivities and efficiencies with excellent peak shapes.

Hydroxide-Selective Anion-Exchange Columns: For isocratic and gradient separations with a wide range of capacities and selectivities

Carbonate Eluent Anion-Exchange Columns: Provides well-characterized isocratic separations for regulated drinking water and wastewater methods

Cation-Exchange Columns: Available in a wide range of capacities and hydrophobicities for isocratic and gradient applications

Ion-Exclusion Columns: Allows separation of weak acids—with strong acids eluting in the void

more capabilities. new possibilities.

Our enabling software solutions include enterprise-level offerings for global deployment, as well as software designed to maximize the functionality and efficiencies of our world-class scientific instruments.



Chromatography Data Systems

Chromeleon® Software

No other data system comes close to providing the capabilities and the usability of Dionex Chromeleon – it's Simply Intelligent™. The software is designed to take users from samples to results in the shortest possible time. Sequence set-up and processing, and result calculations can all be performed quickly, easily, and without training. It controls IC, LC and GC instruments from a wide range of manufacturers.

Atlas and ChromQuest CDS

Other Thermo Scientific CDS solutions include Atlas, an enterprise level, mission critical client/server application that is flexible and scalable from single instrument workstations to multichannel, multi user client/server implementations. It also supports instruments from a range of manufacturers. ChromQuest is a powerful CDS that can meet a wide range of LC and GC laboratory needs. It can be deployed in a variety of flexible configurations from single user/single instrument workstation to multi-user/networked instruments.



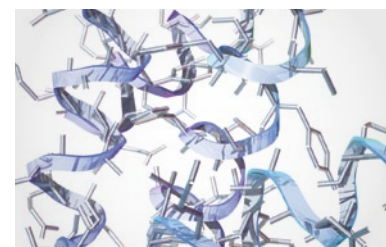
Mass Spectrometry Software

Thermo Scientific Xcalibur Software

This flexible Windows®-based data system provides instrument control and data analysis for all Thermo Scientific mass spectrometers. With extensive functionality, the ability to integrate third-party control, and availability of several application-specific modules, Xcalibur can address a wide range of applications.

DCMSLink

A free, control-only Dionex software package, providing fully integrated single-point control of any Dionex LC system through Xcalibur and mass spectrometry control software from other leading manufacturers.



Thermo Scientific Application-Specific Software

Proteomics

Proteome Discoverer: for analysis of qualitative and quantitative data.

ProteinCenter: for web-based comparison and interpretation of data sets in minutes.

ProSightPC: for top-down, middle-down and bottom-up experiments.

Pinpoint: for easy transition from early-stage biomarker discovery to larger-scale, quantitative and quantitative proteomics.

SIEVE: for label-free, semi-quantitative differential expression analysis.

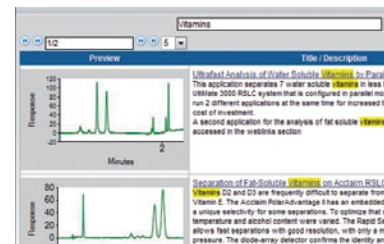
Metabolomics/Metabolism

MetQuest: for automated quan/qual metabolic screening using high resolution, accurate mass Orbitrap data.

MetWorks: for automated metabolite identification and the search for biotransformations.

Chromatography, MS and LIMS more connected Software

From single workstations to enterprise solutions, our CDS and MS solutions provide the flexibility to fully integrate with our laboratory information management systems (LIMS) and other enterprise-level data management systems.



Thermo Scientific Lab Information Management Systems

Drug Discovery and Development

QuickQuan: for high-throughput analysis in early drug discovery.

LCQUAN: for LC-MS data management in a 21 CFR Part 11 compliant environment.

QuickCalc: for fast evaluation of new compounds in drug development.

TSQ Module: integrates Watson LIMS with Thermo Scientific triple quads to simplify workflows in regulated laboratories.

Forensics/Toxicology

ToxID: for automated LC-MS/MS screening in forensic toxicology.

ToxLab and ToxLab Forms: for automated GC-MS acquisition, analysis and reporting for toxicology.

General Screening Applications

ExactFinder: provides a single streamlined workflow for targeted and general unknown screening experiments using high resolution, accurate mass Orbitrap data.

TraceFinder: for managing trace analysis workflows in testing laboratories.

Mass Frontier: manage, evaluate, and interpret GC and LC mass spectral data.

SampleManager LIMS: an enterprise LIMS for company quality control operations.

Darwin LIMS: purpose-built LIMS for pharmaceutical manufacturing; reduces validation time required for regulatory compliance.

Watson LIMS: for DMPK/Bioanalytical studies in drug development.

Nautilus LIMS: for pharmaceutical, biobanking, forensics and food laboratories with complex plate-handling requirements, allowing users to map and track processes with ease.

Galileo LIMS: for screening ADME properties in drug development. Provides data graphing and visualization for large volumes of compounds.

LIMS-on-Demand: affordable web access to a laboratory from anywhere, at any time, from any web browser.

Integration Manager: flexible, data transformation tool that automates data acquisition, and distributes point-to-point data across the enterprise.

Other Software

NextDocs Document Management: a cost-effective, intuitive, flexible and scalable solution based on Microsoft Sharepoint.

Accelrys Electronic Laboratory Notebook and Decision Support: replaces paper notebooks scientists and researchers use to document, design, execute and analyze experiments.

Thermo Scientific Kinetica: a data analysis application with a library of prebuilt, ready-to-use PK, TK, and PK/PD models for pharmacokinetic, pharmacodynamic studies.

Dionex D-Library: an application library using web 2.0 technologies to give customers maximum accessibility to LC and IC applications based on search criteria such as analyte, matrix, market, run time, column or instrument type.

more capabilities. new possibilities.

Solvent extractions that normally require labor-intensive steps are automated and performed in minutes, with reduced solvent consumption and reduced sample handling using Dionex Accelerated Solvent Extraction (ASE[®]) and AutoTrace[®] systems.



Accelerated Solvent Extraction (ASE)

Dionex ASE[®] is a patented technique for the extraction of analytes from solid and semisolid sample matrices using common solvents at elevated temperatures and pressures.

Compared to techniques such as Soxhlet and sonication, ASE generates results in a fraction of the time.

Benefits:

- Extractions for sample sizes 1–100g in minutes
- Dramatic reduction in solvent usage
- Wide range of applications
- Corrosion-resistance components
- Approved for use by the U.S. EPA and CLP Program
- Walk away automation for unattended operation
- Hood-free operation

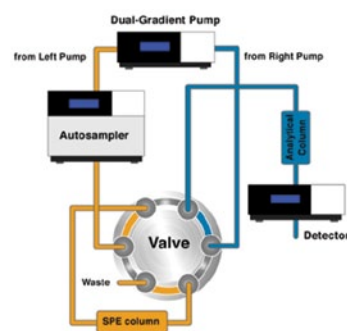


AutoTrace 280 Automated SPE

The Dionex AutoTrace[®] 280 instrument performs automated solid-phase extractions (SPE) of large-volume liquid samples for organic analysis. Liquid – liquid extractions that normally take hours can be automated using an AutoTrace SPE system.

Benefits:

- Automated extractions for liquid sample sizes of 20mL–20L
- Dramatic reduction in solvent usage and reduced sample handling
- Wide range of applications
- Approved for use by many government agencies
- Compatible with disk or cartridge configurations
- Extraction of 6 channels simultaneously



Automated On-line SPE-LC

A solution kit for the Dionex UltiMate 3000 x2 Dual HPLC systems provides fully automated on-line solid-phase extraction (SPE) for high-sensitivity analysis from even complex matrices. Samples are injected directly onto an SPE column, the matrix is removed, and the enriched analyte transferred to an analytical column.

Benefits:

- Direct injection of untreated samples
- Fast analysis and high reproducibility
- Full automation for unattended operation
- Reduction of health risks
- Highest productivity

more efficient Sample Prep Systems

ASE systems are dramatically faster than Soxhlet, sonication, and other extraction methods, and require significantly less solvent and labor. ASE methods are accepted and established in the environmental, pharmaceutical, food, polymer and consumer product industries. ASE methods are accepted and used by government agencies worldwide.



Rocket Evaporator

A revolutionary solvent evaporator for use in laboratories seeking to spend minimal time and effort to process multiple samples for analysis. It can dry or concentrate up to six 450mL flasks, or 18 ASE vials. This enables the user to focus on other tasks, confident that the Rocket will achieve perfect, reproducible results every time.

Benefits:

- Vacuum and centrifugal evaporation for controlled evaporation and minimized sample loss
- ASE and AutoTrace compatible vessels reducing solvent handling
- End point detection
- Superior solvent recovery



IC Sample Preparation Solutions

Products include solutions for IC sample preparation with AutoPrep and Reagent Free Ion Chromatography – Electrolytic Sample Preparation (RFIC-ESP).

AutoPrep automatically prepares calibration curves and performs sample analyses. Unique plumbing configurations and automated valve operations simplifies trace level analysis.

RFIC-ESP systems enable a range of automated sample preparation techniques using proprietary electrolytic devices to reduce cost and provide higher value analyses.

RFIC-ESP devices and techniques can remove cations from an anion sample before analysis using Dionex CR-TC devices, or neutralizing a strongly acidic or basic solution.

OnGuard InGuard SolEx



Sample Preparation Accessories

The Dionex InGuard™ inline and OnGuard® II offline cartridges remove matrix interferences such as phenolics, metals, cations, anions, or hydrophobic substances encountered in many ion chromatography applications.

OnGuard II Cartridges: Remove matrix interferences such as phenolics, metals, cations, anions, or hydrophobic substances, for better performance in many IC applications.

InGuard Cartridges: This line of sample pretreatment cartridges removes matrix interferences such as cations (including transition metals), anions, or hydrophobic substances encountered in many IC applications.

SolEx™ Solid Phase Extraction Cartridges: Offers a variety of chemistries and sizes to fit your needs.



more capabilities. new possibilities.

We understand the daily challenges you face – finding ways to increase productivity and reduce costs, while achieving better results in less time. The long-term performance of instruments and total cost-of-ownership will depend on the maintenance strategy selected to keep systems operating at peak efficiency. Capitalize on Thermo Scientific strengths in multiple service methods to optimize your performance and cost savings.

Maximize Resources

We will work with you to build a maintenance strategy leveraging the best combination of services to meet your needs. Whether you are looking to service one or several instruments, on one bench or across an entire laboratory, **we have a service solution to meet your needs:**

- Installation, Repairs and Calibration
- Support Plans
- Preventative Maintenance
- Certification/Compliance Services
- Technical Support
- Depot Repair
- Training and Education Services
- Parts, Accessories and Consumables
- Custom Multi-Vendor Services

Reduce Costs

A proactive maintenance strategy, based on a Support Plan, maximizes your technology investment by predicting and preventing problems before they occur. As a result, the life of instruments is extended, overall laboratory productivity remains high, and total cost of ownership is greatly reduced.

Increase Productivity

To ensure consistent productivity, consider the close, personal attention and rapid response you receive with an instrument Support Plan.

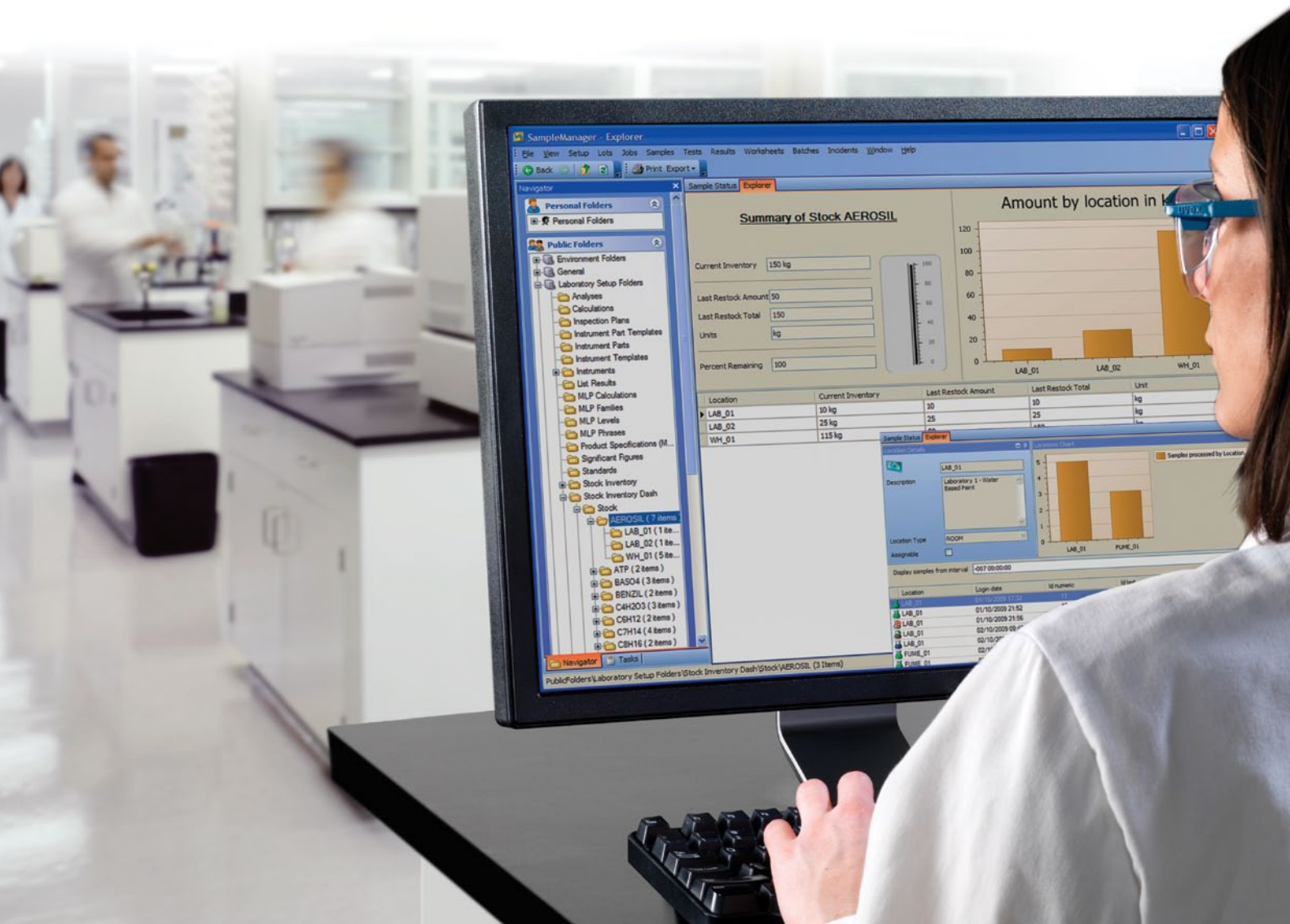
It will eliminate the guesswork and unnecessary charges to your operating budget, as well as the cost of replacement parts. Whether you have a hardware issue or a critical application question, you can rely on experienced, factory-trained engineers to troubleshoot repairs, replace common-wear items, fine tune components, diagnose problems, and implement corrective actions that will help you avoid potential downtime that will delay your efforts.

more options Service and Support

We manage your instruments so you can
focus on the science.

To improve your laboratory's efficiency, you should be focused on your work, not managing instrument service. When you buy a Thermo Scientific product, you gain the peace of mind that comes from being backed by the largest team of service experts committed to your long-term success. We offer programs to service and maintain multiple instruments, *regardless of manufacturer.*

Let our expertise complement yours.





www.thermoscientific.com

www.thermoscientific.com/dionex



Thermo Fisher Scientific,
San Jose, CA USA is ISO Certified.

Thermo Fisher Scientific (Bremen)
GmbH Management System
Registered to ISO 9001:2008

www.thermoscientific.com

©2011 Thermo Fisher Scientific Inc. All rights reserved. iTRAQ is a trademark of Applied Biosystems Corporation. Windows® is a registered trademark of Microsoft Corporation in United States and other countries. All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.

Africa-Other +27 1 70 1840
Australia +61 3 9757 4300
Austria +43 1 333 50 34 0
Belgium +32 53 73 42 41
Canada +1 800 530 8447
China +86 10 8419 3588
Denmark +45 70 23 62 60

Europe-Other +43 1 333 50 34 0
Finland/Norway/Sweden
+46 8 556 468 00
France +33 1 60 92 48 00
Germany +49 6103 408 1014
India +91 22 6742 9434
Italy +39 02 950 591

Japan +81 45 453 9100
Latin America +1 561 688 8700
Middle East +43 1 333 50 34 0
Netherlands +31 76 579 55 55
New Zealand +64 9 980 6700
Russia/CIS +43 1 333 50 34 0
South Africa +27 11 570 1840

Spain +34 914 845 965
Switzerland +41 61 716 77 00
UK +44 1442 233555
USA +1 800 532 4752

Thermo
SCIENTIFIC

Part of Thermo Fisher Scientific