



Dionex expands its Intelligent LC (LCi) series with the UltiMate 3000 Titanium HPLC system. This fully biocompatible, turn-key solution optimizes analysis of challenging biomolecules, including protein-, antibody- and nucleic acid-based drugs and biologics. The UltiMate 3000 Titanium improves reliability and ensures confidence in results through its careful design. The system features a biocompatible flow path, consisting only of titanium, ceramics, and high-performance polymers. This design eliminates iron contamination of samples and solvents, while ensuring system and column longevity.

Optimized Bioanalysis

- Dedicated HPLC analysis of proteins, antibodies, peptides, nucleic acids, and other biomolecules
- Fully biocompatible flow path to maintain protein integrity and labile post-translational modifications during separations
- Increased system longevity even under harsh salt and pH environment, ensuring robust and reliable operation
- Compatible with industry-leading Dionex ion-exchange columns, including ProSwift®, ProPac®, and DNAPac®
- Single and dual gradient versions for superior application flexibility and throughput
- Modular adaptability for sample-optimized workflows
- Advanced system wellness monitoring using Chromeleon® software
- Multidimensional LC methods for enhanced peak capacity

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Thermo Scientific brand

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High-Performance Bioseparations

The titanium pump heads and PEEK™ flow path (see Figure 1) of the UltiMate 3000 Titanium system ensure compatibility with biological buffers, harsh salts, and pH solutions. This compatibility allows the system to deliver ultrahigh-performance analysis of proteins, monoclonal antibodies (MAbs) (see Figure 2), peptides, nucleic acids, amino acids, and other biomolecules. The inert flow path improves system lifetime under demanding conditions, assures reproducibility (see Figure 3), and maintains protein integrity and labile post-translational modifications during separations (see Figure 4).

Single- and Dual-Gradient Options

The UltiMate 3000 Titanium is available in single gradient (quaternary) and x2 dual gradient versions. The quaternary system, with the widest range of solvent options, provides routine applications as well as easy implementation of different buffers for method development. The x2 dual gradient system delivers advanced workflows, such as multistep purification, column or application switching, and multidimensional chromatography for challenging applications. The x2 version is also used for parallel LC, boosting productivity while saving cost and bench space.

System Components

Single- or Dual-Gradient Pump

The core capabilities of the UltiMate 3000 Titanium system lie in its pump—available in single- or dual-gradient (x2) versions. The pump's design and its fully biocompatible parts ensure superior accuracy and precision, eliminating a concern about iron contamination of the column and sample. The pump uses a serial dual piston design, delivering flow rates up to 10 mL/min

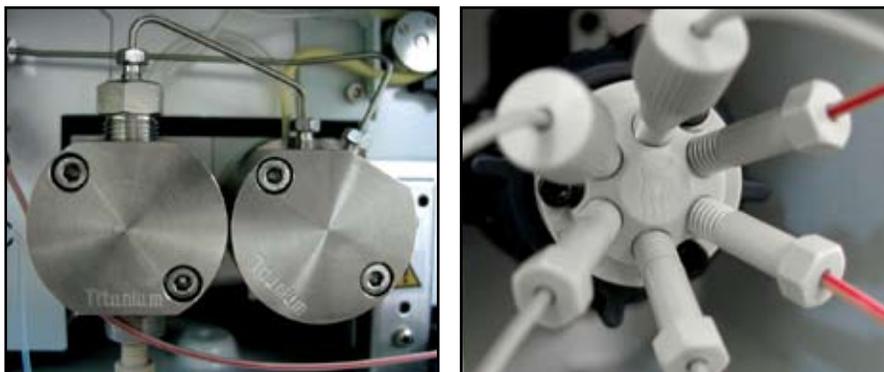
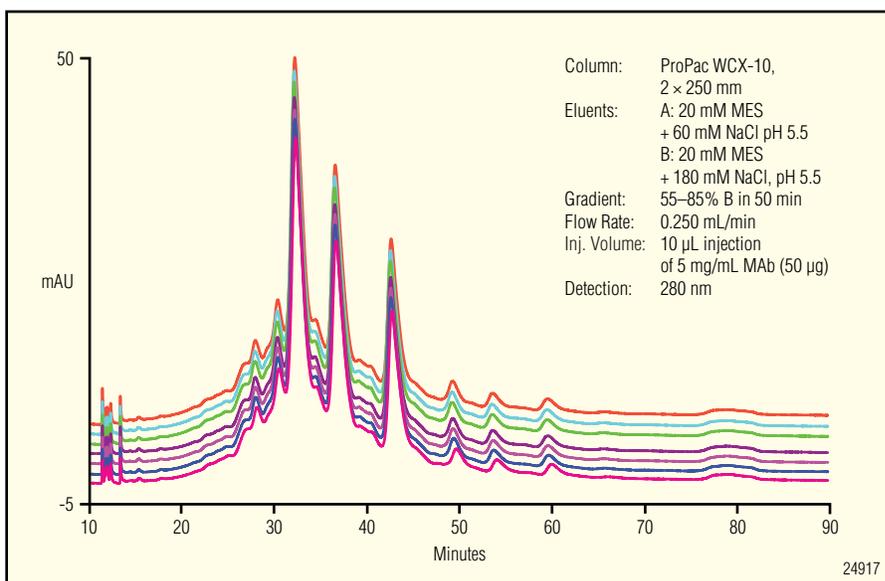
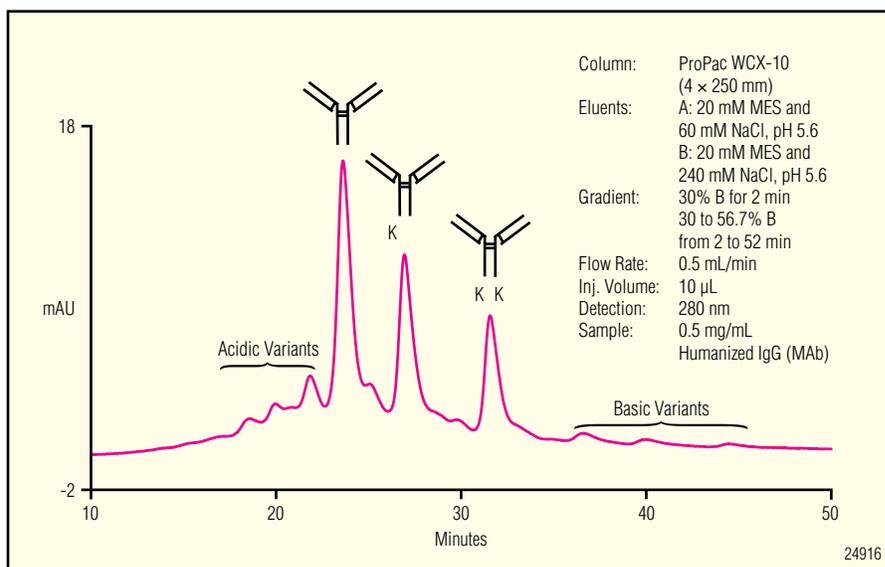


Figure 1. The UltiMate 3000 Titanium system features a fully biocompatible flow path with titanium pumps and PEEK valves and connectors.



at a maximum pressure of 30 MPa (4350 psi). The reliable and robust design ensures optimal performance for semipreparative, standard, and micro applications. The membrane solvent degasser, available with three or six channels, has a metal-free flow path. An active rear-seal wash system minimizes wear on pistons and seals. Automated monitoring of piston seal tightness predicts when seals will start leaking.

High-Precision Autosampler

The new UltiMate 3000 autosampler delivers precision and reliability, while ensuring ease-of-use and ruggedness. With its all-PEEK flow path, injection valve, sample loops, and injection needle, the risk of iron contamination of the sample is eliminated. Combined with the exceptional sample cooling option, these PEEK components ensure that the UltiMate 3000 Titanium maintains sample integrity.

Thermostatted Column Compartment

With precise temperature control for the highest retention time precision and unique column switching capabilities, the column compartment is an integral part of the unique x2 dual technology. The valves enable a variety of advanced LC methods, such as multistep purification, column switching, multidimensional chromatography, and application switching. These LCi capabilities are made possible not just by the column compartment, but by an intelligent combination of module design and software control. The compartment also provides column parameters for automated documentation in audit trails and reports, simplifying regulatory compliance. In addition, automated diagnostic tests and an on-line troubleshooting guide minimize instrument downtime.

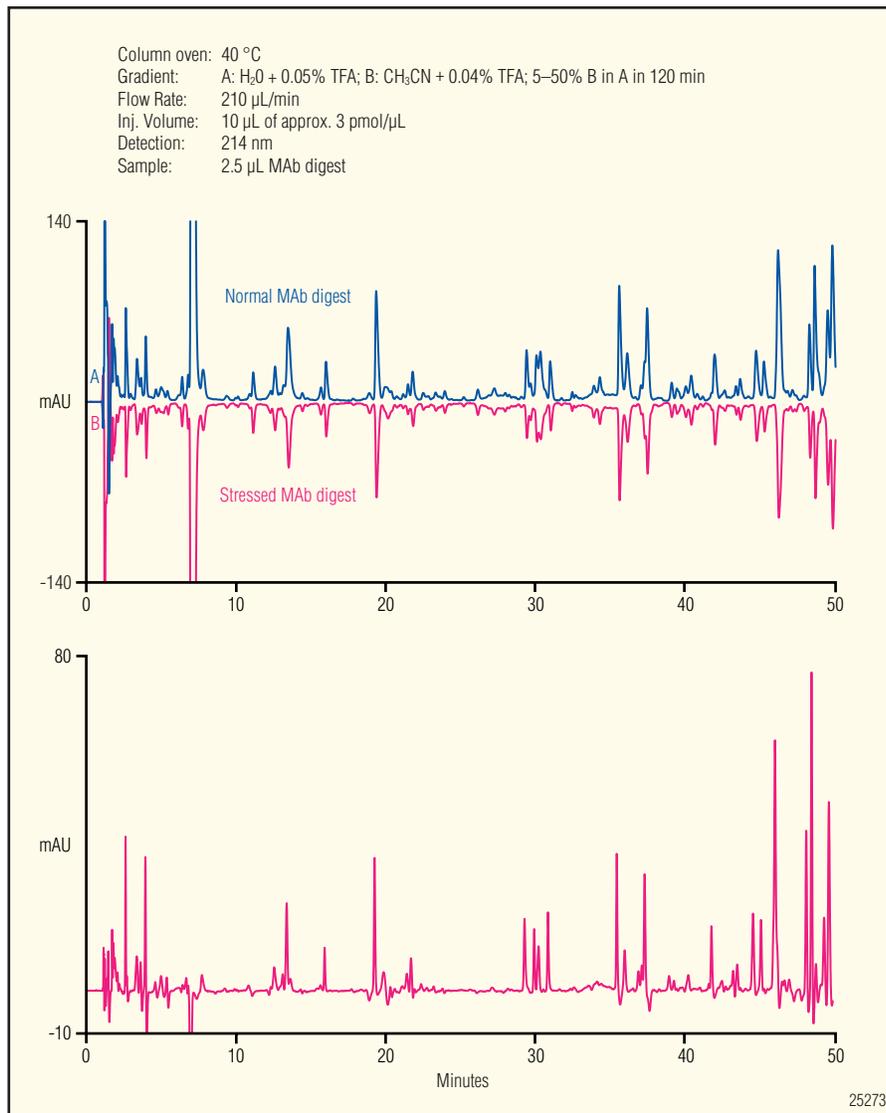


Figure 4. Separation (4A) of a MAb digest using RP-HPLC on an Acclaim® 120, 120-Å, 3-µm column, 2.0 mm x 10 cm. The mirror image represents normal sample (upper chromatogram) and stressed sample (three months at 40 °C). Figure 4B shows a differential plot of normal vs. stressed MAb digest. Peaks indicate protein modifications induced by the stress conditions.

UV-Vis Detector

The variable wavelength and photometric diode array UV-Vis absorbance detectors deliver high sensitivity and low noise and drift. Fast data collection rates preserve integrity even during very fast LC applications. Biocompatible flow cells are available for microbore to semipreparative LC applications.

Chromleon Data Management

Chromleon software provides panels for on-line control of each module. Intuitive wizards and data mining tools simplify method development and quickly process results. Automated system wellness monitoring helps to eliminate downtime and ensure reliable operation. Chromleon's tools for visualizing two-dimensional LC data simplify the interpretation of results. The program overview window enables method programming for the most demanding applications.

SPECIFICATIONS

Gradient Formation:

Single quaternary or dual ternary
low pressure gradient

Flow Rate Range:

1–10,000 $\mu\text{L}/\text{min}$ isocratic
Up to 6,000 $\mu\text{L}/\text{min}$ gradient

Flow Rate Precision:

<0.1% RSD at 1 mL/min

Pressure range:

0.1–30 MPa (4,350 psi)

pH range:

1–13

Sample Capacity:

3x well-plate-sized sample containers 15 x 10-mL vials
for reagents, diluents, and transport liquids

Injection Volume:

0.1–250 μL , depending on loop and syringe

Injection Methods:

Full-loop, partial-loop, microliter pickup,
and user-defined injection procedures

Sample Thermostatting:

From 4 to 45 °C

Column Compartment:

Forced-air design with up to two biocompatible 10-port
switching valves

Column Thermostatting:

From 5 to 85 °C

UV Detection:

Variable wavelength or diode array detector with
biocompatible analytical or semi-microflow cells

Wetted Parts:

Titanium, sapphire, ruby, PEEK, PTFE,
UHMW polyethylene, Tefzel®, Teflon® AF, PPS,
zirconium oxide, aluminum oxide, PCTFE

Software Control:

Chromeleon Chromatography Management System
provides full control and traceability for all
components and automated diagnostic tests.

GLP Features:

System wellness monitoring and recording of all system
parameters in audit trail by Chromeleon software

Tracking system for columns, lamps, and flow cells

Automated instrument qualification (AutoQ™) with
qualification period monitoring

ORDERING INFORMATION

To order, using the following part numbers, contact your local Dionex
office or distributor nearest you. In the U.S., call (800) 346-6390.

In other regions, refer to the phone numbers below.

Solvent Racks

Solvent Rack without Degasser SR-3000	5035.9200
Solvent Rack with six Degasser Channels SRD-3600	5035.9230

Titanium Pumps

Quaternary Analytical Pump LPG-3400AB	5037.0015
Dual Ternary Analytical Pump DGP-3600AB	5037.0014
Quaternary Micro Pump LPG-3400MB	5037.0055
Dual Ternary Micro Pump DGP-3600MB	5037.0060

Autosampler

Biocompatible Analytical Autosampler WPS-3000TBPL	5823.0020
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Column Compartments

Column Compartment without Switching Valves TCC-3000	5722.0000
Column Compartment with Two PEEK 10-port 2-position valves TCC-3200B	5723.0025

UV Detectors and Flow Cells

Variable Wavelength Detector VWD-3400 (without flow cell)	5074.0010
Biocompatible Analytical Flow Cell for VWD	6074.0200
Biocompatible Semi-Micro Flow Cell for VWD	6074.0300
Photodiode Array Detector PDA-3000 (without flow cell)	5080.0020
Biocompatible Analytical Flow Cell for PDA	6080.0200
Biocompatible Semi-Micro Flow Cell for PDA	6080.0220

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LPN 2040 8M 03/08
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