

UltiMate 3000 Titanium System



The UltiMate® 3000 Titanium HPLC system is a fully biocompatible, turnkey solution for the analysis of challenging biomolecules, including protein-, antibody-, and nucleic acid-based drugs and biologics. The Titanium system improves reliability and ensures confidence in results through its careful design. The system features a biocompatible flow path, consisting of titanium, ceramics, and high-performance polymers. This design eliminates iron contamination of columns, 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 environments, ensuring robust and reliable operation
- Compatible with industry-leading Dionex ion-exchange columns, including ProSwift®, ProPac®, and DNAPac® columns
- Biocompatible autosampler with optional sample fractionation and automated reinjection for advanced multi-step or multi-dimensional LC workflows
- Single- and dual-gradient versions for superior application flexibility and throughput
- Modular adaptability for sample-optimized workflows
- Advanced system wellness monitoring using Dionex Chromeleon® software
- Multidimensional LC methods for enhanced peak capacity



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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 concerns about iron contamination of the column and sample (Figure 2). The pump uses a serial dual piston design, delivering flow rates up to 10 mL/min.

The reliable and robust design ensures optimal performance for semipreparative, standard, and micro scale 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.

High-Precision Autosampler

The UltiMate 3000 biocompatible well plate 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 system maintains sample integrity.

The Fraction Collection version of the autosampler (WPS-3000TBFC, Figure 3) features a second biocompatible valve that can be used for sample fractionation. The optimized flow path (Figure 4) and low delay volume assure that chromatographic resolution is maintained. The dual needle design allows fractionation in (sealed) well plates and capped or uncapped vials. Automated reinjection of samples reduces manual handling steps and ensures the highest level of precision.



Figure 3. The WPS-3000TBFC features two biocompatible PEEK valves that allow sample injection, fractionation, and automated reinjection.

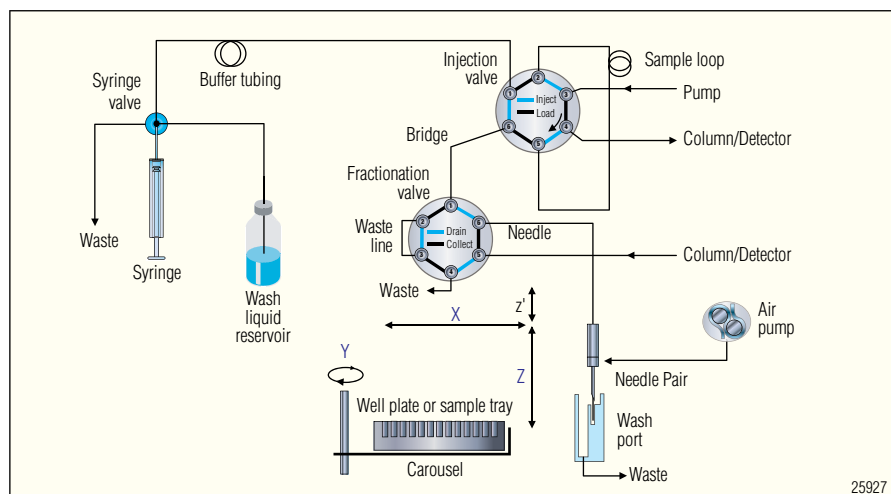


Figure 4. Flow diagram for injection and fractionation on a single instrument.

Thermostatted Column Compartment

With unique column switching capabilities and precise temperature control for the highest retention time precision, the column compartment is an integral part of the unique x2 dual technology. The user-installable 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 a column identification system 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.

UV-Vis Detector

The variable wavelength UV-vis detector delivers 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.

Chromeleon Data Management

Chromeleon 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. The software's tools for visualizing two-dimensional LC data simplify the interpretation of results.

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 6000 $\mu\text{L}/\text{min}$ gradient

Flow Rate Precision:

<0.1% RSD at 1 mL/min

System Pressure Range:

0.1–35 MPa (5000 psi)

pH Range:

1–13

Sample Capacity:

3x well-plate-sized sample containers and
15 \times 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

Fractionation Modes:

Time slices, peak signal, manual trigger,
external trigger

Fractionation Containers:

96 and 384 (deep) well plates
(un)capped vials, 0.3–10.0 mL

Delay Volume:

15 μL

Sample Thermostatting:

From 4 to 45 $^{\circ}\text{C}$

Column Compartment:

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

Column Thermostatting:

From 5 to 70 $^{\circ}\text{C}$

UV Detection:

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

Wetted Parts:

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

Software Control:

Chromeleon Chromatography Data
System provides full control and trace-
ability for all components and automated
diagnostic tests

GLP Features:

System wellness monitoring and record-
ing of all system parameters in audit
trail by Chromeleon software; Tracking
system for columns, lamps, and flow
cells; Automated instrument qualifica-
tion (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	Part Number
Solvent Rack without Degasser SR-3000	5035.9200
Solvent Rack with six Degasser Channels SRD-3600	5035.9230
Titanium Pumps	Part Number
UltiMate 3000 Biocompatible Quaternary Analytical Pump LPG-3400AB.....	5037.0015
UltiMate 3000 Biocompatible Dual Ternary Analytical Pump DGP-3600AB	5037.0014
UltiMate 3000 Biocompatible Quaternary Micro Pump LPG-3400BM.....	5042.0036
UltiMate 3000 Biocompatible Dual-Gradient Micro Pump DGP-3600BM	5042.0066
Static Mixer Modification Kit	6037.1980
Autosampler	Part Number
Biocompatible Analytical Autosampler WPS-3000TBPL	5823.0020
Biocompatible Analytical Autosampler with Fraction Collection WPS-3000TBFC	5825.0020
Column Compartment and Valves	Part Number
Thermostatted Column Compartment TCC-3000SD.....	5730.0010
Valve Actuator Kit HP for Right Side on TCC-3200SD	6730.0003
Valve Actuator Kit HP for Left Side on TCC-3200SD	6730.0004
Pod for 2-Position, 6-Port HP Valve, Biocompatible	6723.9013
Pod for 2-Position, 10-Port HP Valve, Biocompatible	6723.9023
Biocompatible Eluent Preconditioner, 2 μ L.....	6723.0232
Biocompatible Eluent Preconditioner, 7 μ L.....	6723.0242
Biocompatible Eluent Preconditioner, 11 μ L.....	6723.0252
UV Detectors and Flow Cells	Part Number
Variable Wavelength Detector VWD-3400 (without flow cell).....	5074.0010
Biocompatible Analytical Flow Cell for VWD, 11 μ L	6074.0200
Biocompatible Semi-Micro Flow Cell for VWD, 2.5 μ L	6074.0300
UZ-View Flow Cell for VWD, 180 nL	6074.0290
Biocompatible Semi-Prep Flow Cell for VWD, 0.7 μ L.....	6074.0320

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