



Thermo Scientific
Vanquish Flex UHPLC Systems

**Experience More Flexible
UHPLC Technology**

Thermo
SCIENTIFIC

Separate Yourself from the Status Quo



Every scientific breakthrough starts with a challenge

With more than 30 years of experience developing liquid chromatography products, we could have designed a system that simply improved upon what we had already produced. But our team of developers in Germany challenged the status quo. They had a vision to create a chromatography system that would excel in all aspects of chromatography and deliver uncompromised UHPLC.

The result was the Thermo Scientific™ Vanquish™ platform with unrivaled performance and throughput. The Thermo Scientific™ Vanquish™ Flex UHPLC systems enable users to run more chromatographic modes on an application-inspired UHPLC platform for biopharmaceutical, chemical, environmental and food analyses.

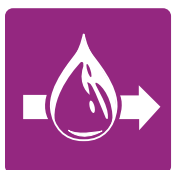


Benefits of the Vanquish Flex UHPLC Systems

In today's challenging research and production environments, companies are being asked to cut costs without compromising quality, operational efficiency and performance. At the same time, there is significant pressure to increase productivity and drive innovation.

The Vanquish Flex UHPLC systems are tools to enable you to meet these goals. Whether you need an LC or LC-MS solution, the flexibility of binary or quaternary solvent blending provides the most advanced performance through better separations, more results and easier interaction.





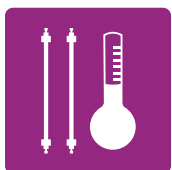
Drive the Separation

with a selection of pump types that fit your application



Handle the Sample

with accuracy for confidence in results



Control the Separation

with advanced thermostating to optimize your chromatography



Detect the Analyte

with multiple detection options to see the complete picture



Seamless MS Integration

with dedicated solutions for exceptional LC-MS performance



Transfer Your Method

with unique tools to easily transfer methods between your lab



Expand Capabilities through Software

with the gold standard chromatography data system for regulatory compliance



Innovative Architecture

with attention to detail to enhance and simplify all aspects of chromatography



Drive the Separation

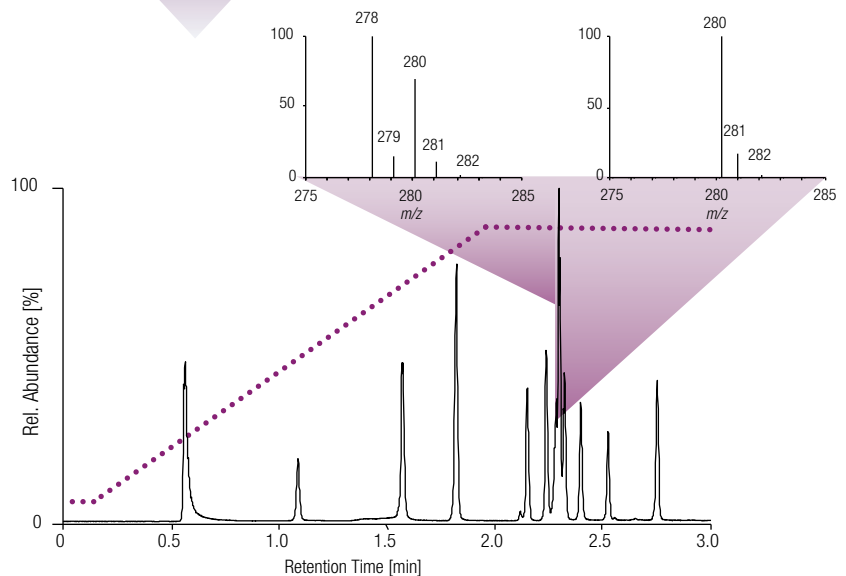


Engineered with a biocompatible flow path, the Vanquish Flex systems are available with two pump options, binary and quaternary. The Vanquish Flex systems enable you to run more chromatographic modes on an application-inspired UHPLC platform.

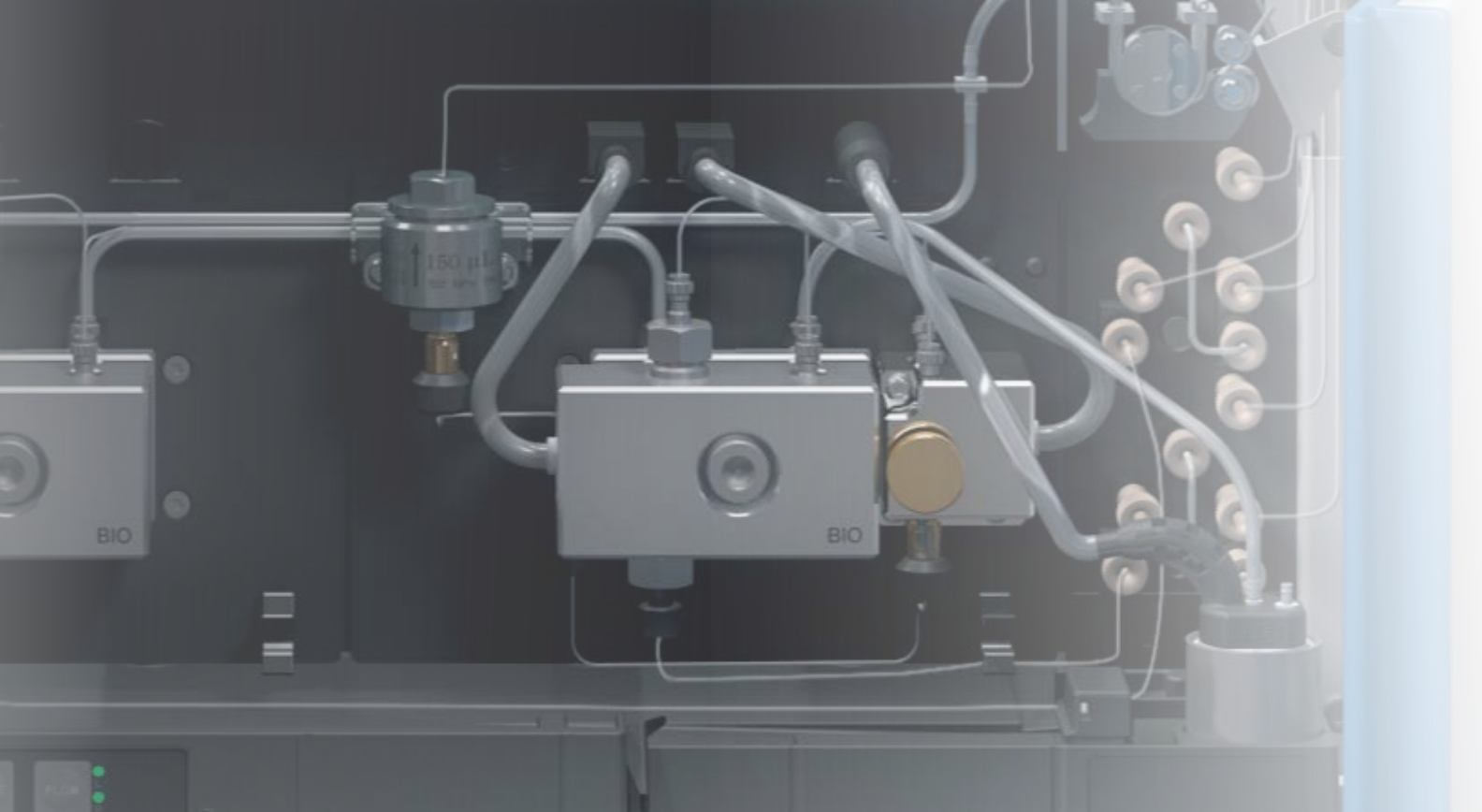
- 1000 bar (15,000 psi) of pump pressure and flow rates up to 8 mL/min
- Industry-leading flow and gradient precision
- Four solvent channels for quaternary solvent mixing or two out of six solvent channels for binary solvent mixing
- Maximum application flexibility from biocompatible fluidics and UHPLC pressures
- Obtain highest data confidence from excellent retention time precision

Speed for LC-MS

The Thermo Scientific™ Vanquish™ Flex Binary system provides you with the power you need for high-throughput capabilities and fast separations in LC-MS and LC applications.

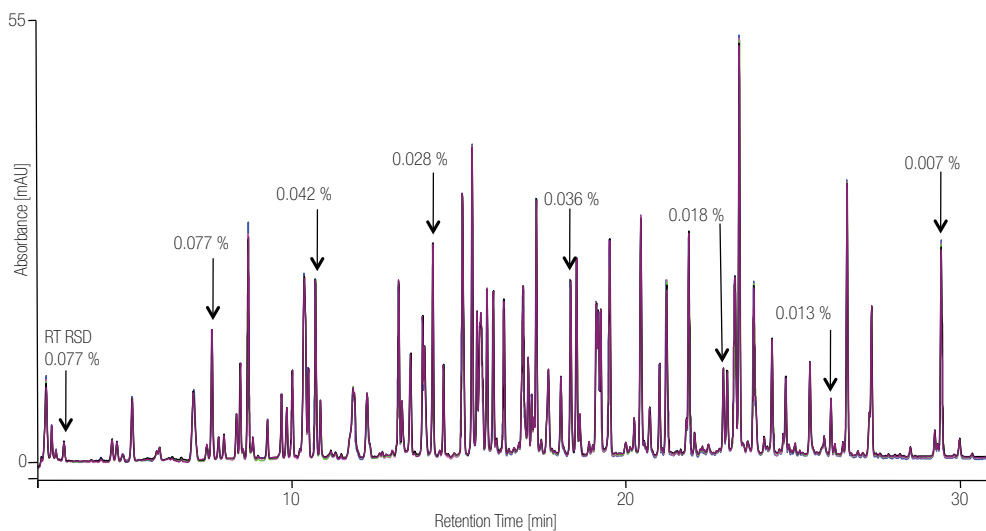


High-throughput pesticides analysis by full scan LC-MS presented as extracted ion chromatogram.



Flexibility for High-Resolution LC

The Thermo Scientific™ Vanquish™ Flex Quaternary system gives you the flexibility to deliver excellent binary, ternary and quaternary gradients, ideal for method scouting and buffer blending.



Five replicate injections in peptide mapping of a BSA tryptic digest.

Binary or Quaternary Pump

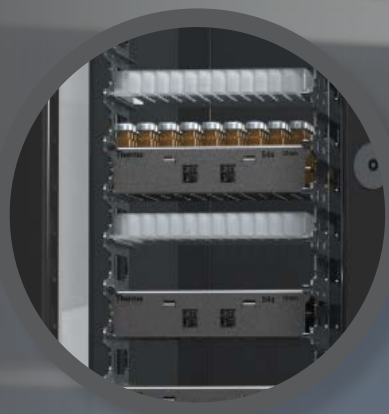
The Vanquish Flex Binary system mixes solvents after the pump head, resulting in a very low delay volume.

The Vanquish Flex Quaternary system mixes solvents before the pump head. This enables multicomponent gradients with up to four solvents.

Both pump types use our patent-pending Thermo Scientific™ SmartFlow™ solvent delivery technology with automatic compressibility compensation. This ensures excellent flow and gradient precision independent of eluent composition.

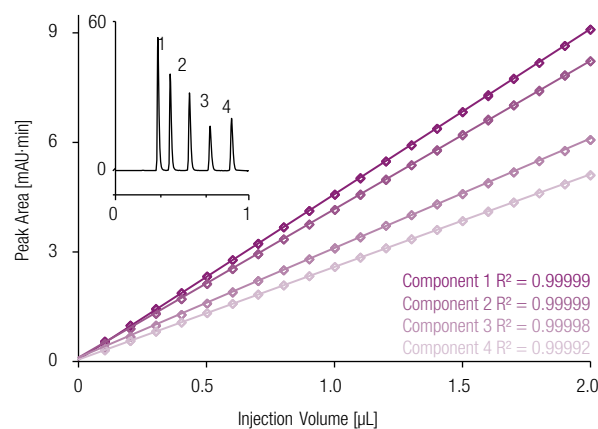


Handle the Sample



The Vanquish Flex systems supply the highest injection precision, sample capacity and throughput capabilities.

- Unsurpassed sample dosage precision
- Reproducibility and enhanced column lifetime by Thermo Scientific™ SmartInject™ technology
- Method transfer made easy using the customizable gradient delay volume feature
- Increased sample capacity with the Thermo Scientific™ Vanquish™ Charger module for up to 23 well plates and 8832 samples
- Automate workflows with barcode reading



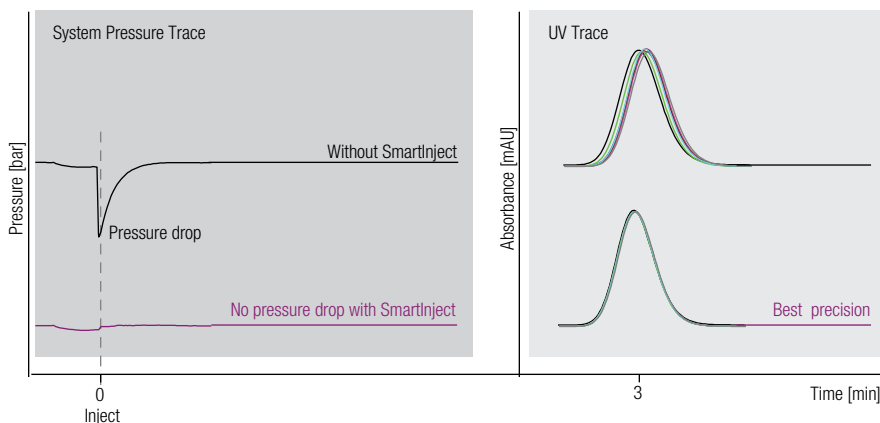
Excellent linearity from 100 nL to 2 μL with a step of 100 nL.

Why SmartInject?

During injection, the sample loop at atmospheric pressure is placed in line with the high pressure flow path, resulting in a pressure drop.

With regular UHPLC systems this adversely affects retention time precision and column lifetime.

SmartInject automatically eliminates the pressure drop providing data confidence and reduced cost of ownership.



Elimination of pressure drop after injection by SmartInject technology for best retention time reproducibility (6 replicates) and enhanced column lifetime.

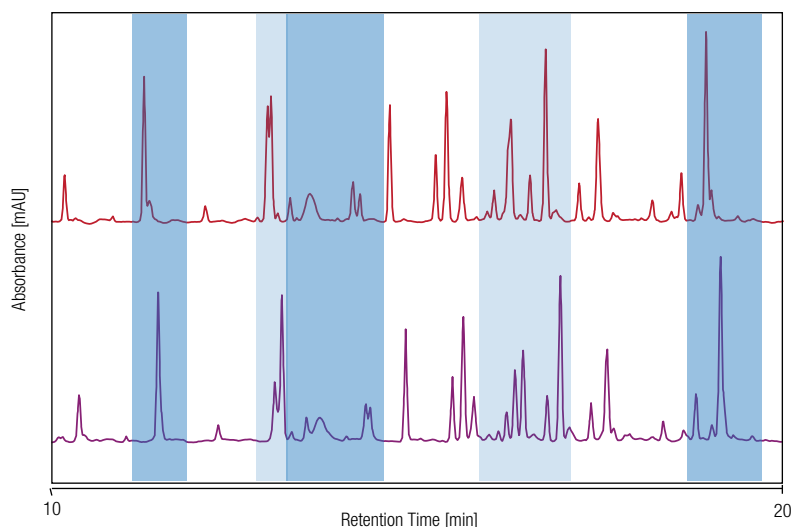


Control the Separation



Temperature changes retention, selectivity and efficiency in chromatography. The Vanquish Flex systems help control the separation with maximum efficiency and resolution through temperature control. Recreate the thermal conditions of other HPLC systems with a single click to make method transfer easy.

- Still air and forced air thermostating modes
- Active or passive pre-heating
- Up to three column compartments for method scouting
- 5 to 120 °C temperature range
- Track your column records with the new column ID system

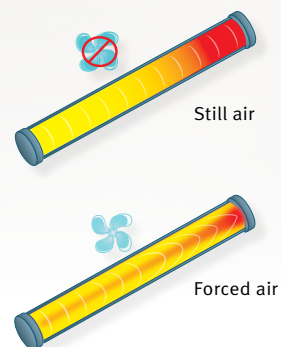


The thermostating mode can influence the separation of critical peak pairs. Here, light blue indicates where forced air is better. The darker blue shows where still air generates better results.

Why Temperature Control Matters

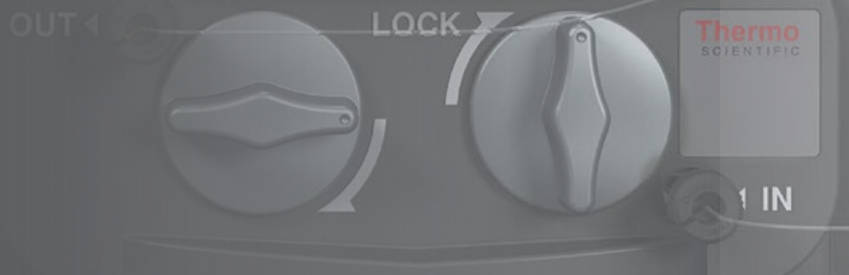
Very complex temperature dynamics take place inside the column. Particularly under UHPLC conditions, frictional heat distribution inside the column can affect data quality.

The Vanquish column compartment has the widest range of temperature control capabilities, ensuring that there is a setting for even the most challenging separations.





Detect the Analyte

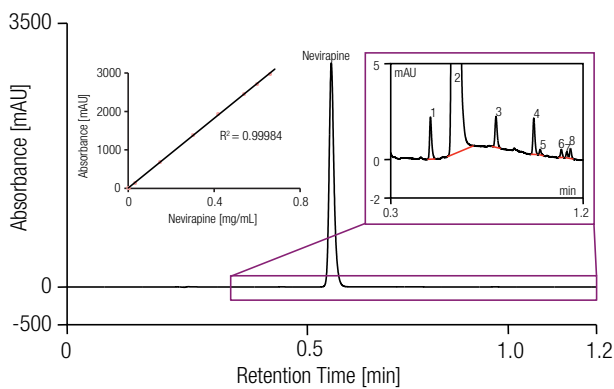


Detection Technology for Every Application

Choosing the right detection technology is key to revealing all components of interest in an analysis. The Vanquish Flex systems cover this need with a wide range of detection capabilities that can be easily integrated and combined.

Industry-Leading Diode Array Detection

Increase your detection sensitivity by low baseline noise and low dispersion Thermo Scientific™ LightPipe™ flow cells.



High-speed Nevirapine impurity analysis with diode array detection.

Cost-Effective and Reliable UV-Vis

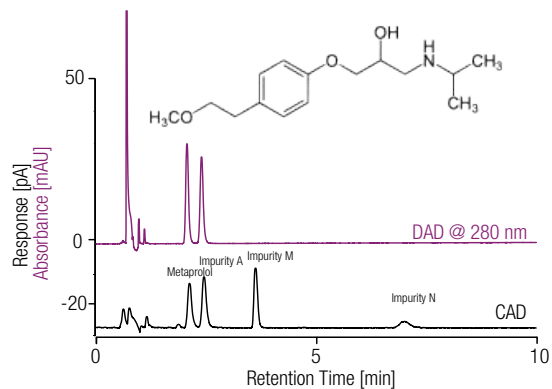
Streamline lab capability with excellent trace detection and linearity in targeted compound analysis.

Powerful Fluorescence Detection

Record even more sensitive signals for fluorescent compounds.

Unique Charged Aerosol Detection

Detect compounds that lack a chromophore or poorly ionize.



Simultaneously detect Metoprolol and impurities.

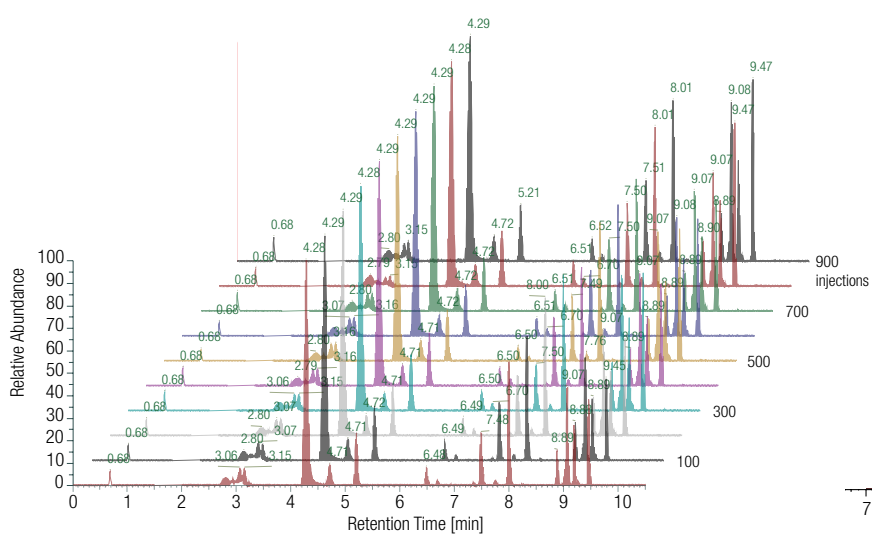


Seamless MS Integration



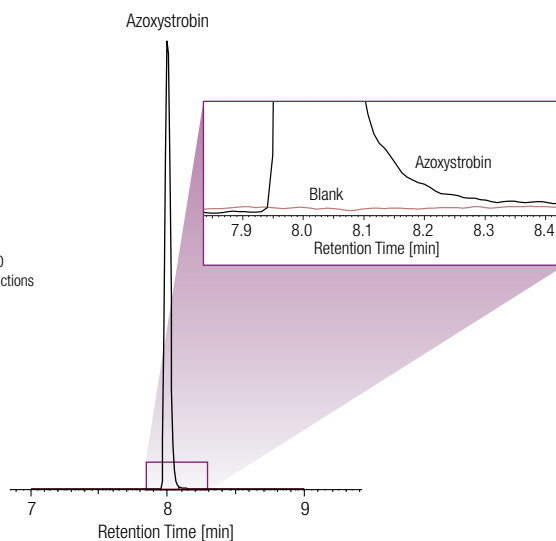
Confidence in Accurate and Efficient LC-MS Quantification

Designed for high reproducibility, reliability, and throughput, the Vanquish Flex Binary system consistently delivers exceptional LC-MS performance. For single point control of your LC-MS setup, it seamlessly integrates with our LC-MS software.



Retention time stability for 900 injections of 18 pesticides in onion matrix.

- Best-in-class retention time precision for optimal selected-reaction monitoring (SRM)
- Excellent peak shape reproducibility from the first to the last injection



Carry-over determination with a blank injection after a 500 ppb Azoxystrobin injection.

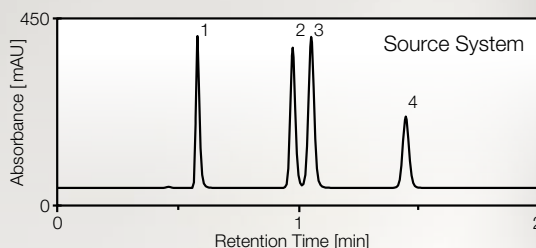
- Minimum carry-over for reliable trace level LC-MS quantification



Transfer Your Method



Transferring methods between instruments and departments can be a challenge for scientists. Method transfer is more than just taking the same column. In certain cases it requires fine-tuning of the system to make results match. The Vanquish Flex systems make transferring methods easy. With its software and hardware capabilities, you can easily address the two main factors affecting method transfer, gradient delay volume and column temperature, allowing for a seamless transition.



Select from a variety of mixers to modify the delay volume similar to the source system.



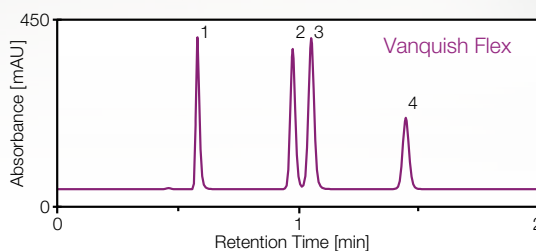
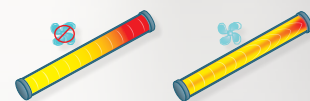
Fine-tune the delay volume with the metering device of the sampler and Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data Systems (CDS) software.

Volume adjustment

Thermostating

Recreate consistent column temperature of any UHPLC system by eluent pre-heating for best retention time match.

Still air or forced air mode the Chromeleon software mimics the behavior of the source column oven.





Expand Capabilities through Software



The Gold Standard Chromatography Data System Software

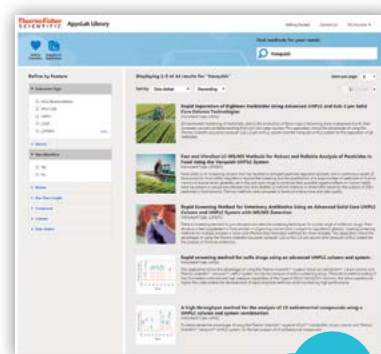
The Vanquish Flex systems perfectly integrate with our industry-leading Chromeleon CDS. Designed with operational simplicity in mind, Chromeleon CDS facilitates the Vanquish promise of easier interaction, delivering a new UHPLC experience.

- Monitor data acquisition live in the ePanel or sequence overview
- Protect your work from data loss during a network failure
- Reduce training effort in the lab with intuitive eWorkflows
- Use integrated mass spectrometry support for single point control of Vanquish LC-MS setups

AppsLab Library

Search, find, and download applications with the Thermo Scientific™ AppsLab Library of Analytical Applications. This online application repository offers examples and complete methods for immediate execution within Chromeleon CDS.

- Access to LC, LC-MS, GC, GC-MS, IC, and IC-MS applications in a single online location
- Quick identification of optimum chromatographic separation conditions
- Shared community experiences by rating and commenting on applications
- Interact directly with application experts through “ask the expert” and “suggest an application” options





Innovative Architecture

1 Most Versatile Detection Capabilities

Differing molecular characteristics of your analyte, from small molecules to complex biomolecules, necessitate multiple detector methodologies. The Vanquish Flex systems have been built to utilize a wide range of analytical detectors, including mass spectrometry (MS), diode array detection (DAD), charged aerosol detection (CAD), variable wavelength detection (VWD), and fluorescence detection (FLD).

2 Precise Sample Handling

Offers premium ruggedness and uptime, by ten times lower injection volume than industry average and the highest precision at low injection volumes < 1 μ L.

3 Delivering Powerful Separations

The Vanquish Flex systems are designed around the column, the core to every LC separation. Our growing family of Thermo Scientific™ Vanquish™ UHPLC columns, partnered with the Vanquish UHPLC platform ensure superb chromatographic separations.

4 Unique SmartInject Technology

Superior retention time precision and enhanced column protection by intelligent SmartInject technology.

5 Easier Sample Handling

Forget about tedious rack configuration thanks to the automated barcode reader.

6 Higher Sample Throughput

High sample capacity as standard (four plates vs two plates on industry average). Increase capacity further still via the optional charger.

7 Proprietary Injection and Switching Valves

The valves used in the Vanquish Flex systems are designed to meet the performance and longevity needs to make UHPLC run robustly and routinely. The valves are long-life, biocompatible and follow a no maintenance philosophy.

8 Easier Operation

Uses patented tool-free finger-tight Thermo Scientific™ Viper™ fittings with near-zero dead volume operation and ergonomic design.

9 Versatile Column Management

Greater column capacity (two 30 cm columns or a greater number of shorter columns), plus class-leading temperature range and temperature stability.

10 Simple Maintenance

Modules can be repaired without de-stacking by drawer concept, each unit has handles for ease of maneuvers, plus smart, light bars on the system front and tool free maintenance.

11 Accurate Flow for More Data Confidence

Improved data precision with up to ten times better flow accuracy than other UHPLC systems (0.1% vs 1%), plus 10× lower and 4× higher flow rate capability than most other systems.

12 Keep Your Lab Tidy

The built-in drawer stores accessories, related documents, or any other useful material for the system.



Our Promise To You

We help scientists meet the challenges they face in the lab or in the field every day. From routine analysis to new discoveries, our innovations help professionals do the science they need to do, the way they want to do it. Our high-end analytical instruments, laboratory equipment, software, services, consumables and reagents help our customers solve complex analytical challenges and increase laboratory productivity.

Whatever the challenge, we are there.

Unity Lab Services

We take serving science seriously, providing a single source for integrated lab service, support and supply management. Our customized service offerings and world-class service experts have the flexibility and experience to uniquely address your business needs.

As your laboratory partner, Unity Lab Services maximizes your ability to focus on science and drive innovation by providing you with what you need, when you need it.

Let our expertise complement yours.

Service Options Tailored For Your Lab

Our selection of service options is provided to help lower the cost of ownership, improve instrument uptime and give you greater peace of mind.



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