Thermo Scientific AccelerOme automated sample preparation platform

Benefits

- Creation of statistically sound experiments to ensure the detection of protein changes in the study
- Simplified workflows through improved chemistry
- Minimized user involvement and improved reproducibility through instrument functionality and automation
- Increased efficiency and productivity through workflow automation
- Method standardization through pre-built and validated sample preparation methods and reagents delivered in kit format, ensuring experiment democratization
- Reduced total cost of sample prep by eliminating the need for dedicated personnel for mass spectrometry sample preparation

The Thermo Scientific™ AccelerOme™ automated sample preparation platform enables you to break free from the time, cost, and complexity of manual sample preparation, transforming your proteomics workflow. With factory-supplied reagents and kits, and step-by-step onscreen instructions supporting both label-free and tandem mass tag (TMT) multiplexing strategies, the AccelerOme platform makes short work of complex tasks. Designed with a unique experimental design experience, the AccelerOme platform has been optimized to fit into the Thermo Scientific™ Orbitrap™ mass spectrometry ecosystem, delivering confident results with speed, accuracy, and high reproducibility and allowing researchers to spend more time on more valuable tasks. The AccelerOme platform offers:

- Experiment Designer software guides the user through the experiment planning process to input sample names and assign study factors, values, and also provides an estimate of statistical power.
- An integrated touchscreen display with user interface for instrument control and operation through a graphical wizard
- Liquid Handling Robot with a capacity to process up to 36 label-free samples, 33 Thermo Scientific™ TMT11plex isobaric labeling reagent samples or 32 Thermo Scientific™ TMTpro™ 16plex label reagent samples per session
- Integrated in-line miniaturized spectrophotometer for automatically measuring the final peptide concentration in each sample
- Optional cooling tray for output samples stability

Designing for success

The Experiment Designer software enables method file creation for a maximum of 36 samples per run, which run on the AccelerOme platform. The application provides analysis of statistical power on proposed label-free or TMT experiment based on the stated experimental hypothesis, providing guidance on optimized study design to minimize errors. Once the experiment is properly designed and the method is created, the method file is transferred to the platform to proceed with the experiment. All the information including experimental factors and values, or sample order are retained for subsequent use with the Thermo Scientific™ Xcalibur™ acquisition software and the Thermo Scientific™ Proteome Discoverer™ data analysis software.

On completion of the experiment design workflow, the Experiment Designer software provides a summary containing the following:

- A graphical representation of the input plate, including factor assignment
- The estimated run time for the sample prep experiment
- Estimated statistical power
- A graphical representation of the output plate

Touchscreen display and user interface

With the AccelerOme user interface, a robust and intuitive software supports scientists in their journey from the experiment design through data analysis from the interactive touchscreen display. The software guides the user through every step of the process with an onscreen graphical wizard.

Pre-built sample preparation workflows for label-free proteomics and TMT multiplexing

Automated and standardized workflows are used to increase reproducibility and productivity. The comprehensive hardware and software features greatly reduce the dependence on manual steps and errors associated with proteomics sample preparation. The AccelerOme platform is part of an integrated workflow solution, from experiment design and sample preparation, to LC/MS analysis reducing training requirements while improving data quality.

Integrated peptide measurement

Unique to the AccelerOme platform, an integrated in-line UV spectrophotometer extends data reliability by measuring the final peptide concentration for each sample. Accurate peptide quantitation permits the standardization of sample peptide input for downstream LC/MS analysis, increasing data quality, reliability, and robustness.

Built-to-purpose consumable kits

Sample preparation reagents and consumables are provided in convenient and easy-to-use cartridge formats. Cartridges are placed directly on the deck, guided by the intuitive wizard on the touchscreen display. No reagent dilutions or liquid transfers are needed.

AccelerOme platform specifications	
Sample capacity	
Label Free	Up to 36 samples per run
TMT11plex reagent	Up to 33 samples per run
TMTpro 16plex reagent	Up to 32 samples per run
Maximum supported protein mass per sample	100 µg (with current kits)
Minimum supported protein mass per sample	10 µg (with current kits)
Thermal mixer	
Accuracy	50 °C: ± 1.5 °C
Optional tray cooling	
Temperature range	• 6 °C–40 °C in 1 °C increments. • Peltier element for cooling functionality of the device
Integrated in-line peptide measurement	
UV Limit of detection (LOD)	50 ng/µL
System software	
Experiment Designer software	
Wizard-guided experiment design	Included
Automatic assignment of TMT plexes and channels	Included
Automatic creation of bridge samples	Included
Graphic display of designed experiment, including study factors, values, and TMT channels	Included
Randomization of TMT channels, plexes, and run order, to remove experimental bias	Included
Estimates statistical power of designed experiment	Included
User interface	
Wizard-guided experimental set-up and consumable loading	Included
Monitoring of process status	Included
Instrument control	Included
Provides sample reconstitution guidance based on automated peptide quantification	Included
Output files compatible with Xcalibur software and Proteome Discoverer software	Included
Physical specifications	
Power requirements	100–240 V, 50/60 Hz
Dimensions (h × w × d)	88.5 × 84.2 × 63.5 cm (34.8 × 33.1 × 25.0 in)
Weight	70 kg (154 lbs)
Operating temperature range	15 to 26.6 °C (59 to 80 °F)
Maximum relative humidity	80%, Non-condensing

Learn more at **thermofisher.com/AccelerOme**