AF2000 MultiFlow Series
Mid Temperature Asymmetric Flow FFF

Universal Particle/Polymer/Protein Separator

AF2000 MultiFlow Series

Asymmetric Flow Field-Flow Fractionation (AF4) is an innovative new separation method for the efficient separation and characterization of proteins, polymers and nanoparticles in a fast and gentle way. The AF2000 MT from Postnova is the most advanced AF4 system on the market today and is the benchmark for the industry, indicating the maximum possible performance. The instrument shows a higher resolving power and a more advanced software system than every other device available. It is the most integrated system and with the channel inside a thermostatet housing. The system has a large, nearly universal separation range. Typically Nanoparticles can be separated from 1 nm to 1 μm and proteins, peptides, polymers from 10^3 to 10^{12} Da. The fast & gentle separation occurs based on the diffusion coefficient in an open flow channel without using ANY stationary phase as is utilized in the technology of SEC/GPC.

UNIQUE FEATURES OF AF2000 MT

Unique Channel Cartridge Design
The AF2000 MT, as all other Postnova AF4 systems as well, is equipped with a special flow channel using a channel cartridge and a channel holder for fast and easy exchange of membrane and system cleaning procedure. Depending on the application, the cartridge can be replaced by different other cartridges, which are available, analog to different HPLC columns in a chromatography system.

Complete Bio-Compatible System
The AF2000 MT can be delivered as a completely inert bio-compatible and metal-free system with a ceramic frit instead of a stainless steel frit, PEEK pumps, PEEK/PMMA channel and PEEK autosampler.

Totally Integrated One-Box-System
Completely integrated system with all important components located inside the system housing, including flow channel. Professional one-box system for use in laboratories with high-level expectations concerning system handling and user-friendliness.

Syringe Pump Cross-Flow Control
Special cross-flow control, using a unique dual syringe pump module with non-pulsing cross-flow delivery for most precise separation conditions. Completely inert, metal-free cross flow path made of glass, PEEK and Teflon/PVDF. Instant cross-flow adjustment without time-delay or hysteresis (flow over and under adjustments) known from other standard cross-flow control valves. Rugged cross-flow control insensitive to plugging without the need for fragile and corrosion sensitive valve needles. Cross flow range from 5 μL/min (with 100 μL syringe) up to 16 mL/min (with 2 mL syringe) for lowest and highest possible cross-flows of all FFF systems. Different syringes available, which can be exchanged to extend flow rate range.

Data Evaluation Software - NovaFFF Analysis
Postnova offers a special data evaluation software with unique features. Data files from different Postova FFF system/techniques can be processed. Software allows to perform absolute size calculation based on FFF theory and size calculation based on calibration with particle size standards. Possibility to calculate size of small particles by using a concentration detector (UV / RI) when light scattering is poor/not showing a sufficient signal. NovaFFF Analysis is an additional validation tool providing particle sizes of aggregates which can be directly compared with particles sizes from light scattering.

Integrated Method Wizard Expert System
Postnova offers a special NovaFFF control software with integrated Expert System. Method Wizard for accelerated and automated method generation by simply entering in the approximate size of the analyte. Advanced Simulation Module where the user can run a complete method in a simulation first. Run Parameter Optimization Tool to optimize run conditions in terms of run time, maximum resolution, etc.

Unique FOCUS Technology
The AF2000 MT uses Postnova's unique FOCUS technology which assures constant and continuous flow through the detectors all the time. This allows a higher recovery, higher resolution and greater flexibility levels in general. Now AF4 can be coupled to flow sensitive viscometers and RI detectors successfully.

APPLICATIONS OF AF2000 MT
Biotechnology   : Viruses, Aggregates, Cell Organelles, Bioparticles
Pharma   : Proteins, Antibodies, Liposomes, Drug Delivery, Micelles
Environment   : Humic and Fulvic Acid, Environmental Colloids, Clay Particles
Material Science : Latex Beads, Nanoparticle, High-Tech Nano Materials
Polymers   : Biopolymers, Starches, Polyelectrolytes, Technical Polymers

Technical specifications are subject to change without further notice.   Rev.2025-1

Specifications

- Typical Measurement Range:
  Particles   : 1 nm to 1 μm
  Polymers   : 500 Da to 10^{12} Da

- Temperature Range:
  5°C cooling up to 90°C heating, depenting on channel and frit material (PMMA channel up to 70°C, with ceramic frit up to 40°C)

- Channel Dimensions:
  Volume   : between 0.5 - 2.5 mL
  Size   : 335 x 60 x 40 mm
  Thickness : 350 μm (other sizes available on request)

- Carrier Liquids:
  Aqueous   : any aqueous liquid, pH from 2 - 11 (depending on acid and conditions, please inquire) ionic strength from DI water to saline
  Organic   : THF, MeOH, etc.

- Membranes:
  reg. cellulose, PC, PES
  Molar Mass : 0.3; 1; 2; 4; 5; 10; 30; 100 kDa

- Detectors:
  UV, RI, laser light scattering, viscometry, fluorescence and more; multiple detectors in line

- Channel Flow Range:
  0 - 10 mL/min

- Cross Flow Range:
  6.25 μm/min - 7.5 mL/min

- Pressure Limit:
  0 - 35 bar

- Power Requirements:
  110V or 240V, 50/60 Hz; 2.5 A

- PC Requirements:
  Windows, min. 64 MB RAM, 2 RS232 ports

- System Software:
  NovaFFF AF2000 Control
  NovaFFF Analysis

- Maintenance Parts:
  Consumables: pistons and piston seals, inline filters, membranes

- Injection volume:
  1 - 1000 μL
  Standard 20 μL
  optional > 1000 μL

- Injected sample mass:
  Typical injection mass 20 - 100 μg

- Injection method:
  Via manual injection valve or via PN5300 autosampler

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