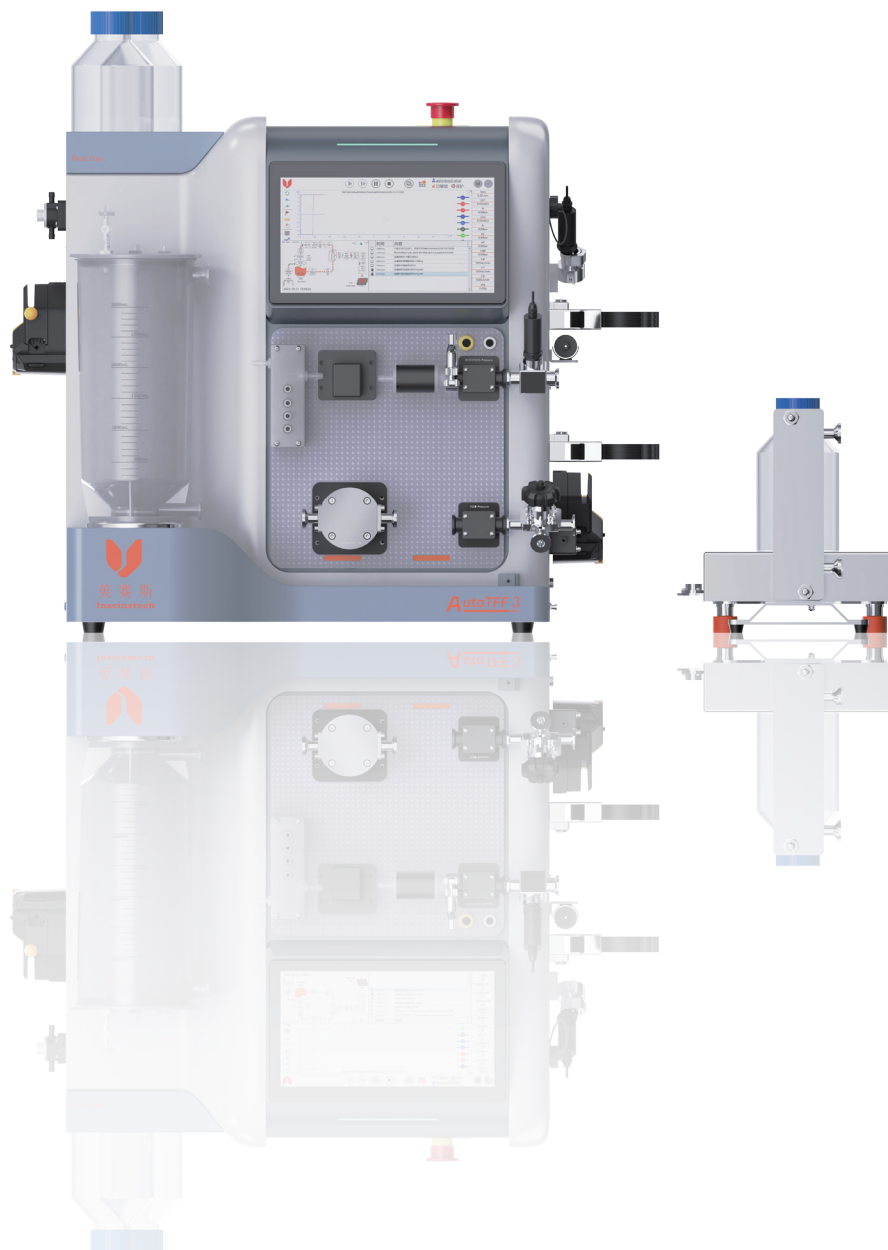




Inscinstech

■ Crossflow System Unique AutoTFF 3

For process development, scale-up study, and lab scale sample preparation



Innovation for BioProcess



Product Introduction

Unique AutoTFF3 is a flexible and automated benchtop crossflow filtration system. It can be used with hollow fiber modules, cassettes filter and other membranes for concentration, dialysis (buffer exchange), purification, and clarification of biological products such as antibodies, recombinant proteins, mRNA, nucleic acids, and viral vectors. Its flexible configuration allows for manual operation or highly automated process control, and it is equipped with a comprehensive data logging system. Suitable for small-scale process development, scale-up studies, and small-batch sample preparation.

Product Features

- Automatic TMP control, weighing, feeding, precise control of concentration ratio and diafiltration volume
- Compact design, small recirculation volume, to meet high concentration requirements
- The User friendly control software offers easily recipe setup, operation control, data recording and user management
- Optional permeate pump for comprehensive microfiltration process control
- High automation with pre-defined method modules, recipe and recipe sequence
- Optional conductivity sensor, pH, UV, for comprehensive process monitoring
- Adapt to different type of cassette filters and hollow fibers

Unique AutoTFF3 Model Introduction Two Pump Options Available



Unique AutoTFF3-M
Peristaltic pump+Options



Unique AutoTFF3-MD
Diaphragm pump+Options

Unique AutoTFF3 Configuration Introduction



Unique AutoTFF3 system consists of buffer transfer module, recirculation vessel module, feed module, retentate module, permeate module, filter holder, control software, etc. The system can be configured according to different process requirement to realize different levels of automation.

Recirculation vessel

- The system is standard equipped with a 3L reservoir, which is made of USP Class VI compliant PP (polypropylene) material. It is fitted with bottom-mounted stirring and an integrated weighing module. This allows for real-time fluid mixing, automatic control of the reservoir weight, and enables functions such as automated constant-volume diafiltration and automatic concentration endpoint control. Its conical bottom design ensures complete drainage of the reservoir contents. Alternative reservoir volumes of 1L, 500ml, 250ml, and 50ml are also available.

Feed pump

- The feed pump can be selected as either a peristaltic pump (0-2300 ml/min) or a low-shear quaternary diaphragm pump (0-3000 ml/min), enabling control modes such as constant flow rate, constant inlet pressure, or constant pressure differential.

Buffer transfer module

- The system can be equipped with a transfer for the automatic filling of the reservoir or for automatic buffer addition during diafiltration. The makeup port can also be optionally configured with a 2-inlet or 6-inlet valve to enable the automatic addition of different liquids.

Detector

- The system is equipped with three pressure sensors (inlet, retentate, and permeate) for pressure monitoring, allowing for the calculation of pressure differential and TMP.
- Users can also optionally add sensors for conductivity, pH, etc., to achieve more precise process control and meet a wider range of process requirements.

Permeate control

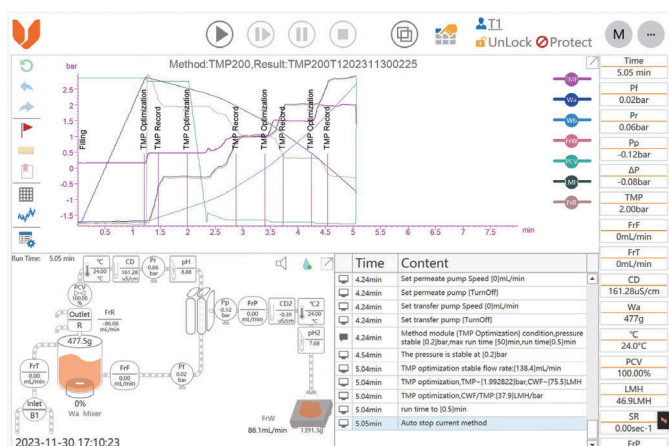
- The permeate can be optionally equipped with a permeate pump or a pinch valve for permeate flow or pressure control. This is particularly important for Tangential Flow Microfiltration (TFF/MF) processes, as controlling the permeate rate helps slow the formation of a gel layer on the membrane surface, thereby enhancing overall process efficiency.

PCV

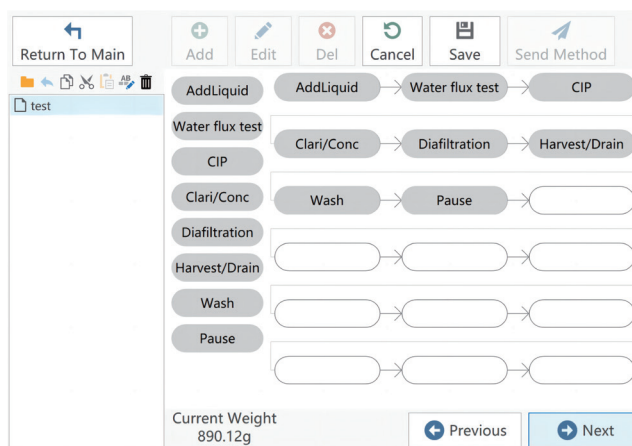
- The retentate line is equipped with an automatic pinch valve, which allows for automatic control of the retentate pressure, thereby enabling automatic adjustment of the TMP.

Control software

- The control software can be used for system control, method editing, data recording, user management, equipment calibration, etc. Standard method modules include clean water flux test, CIP, clarification/concentration, dialysis, harvest/drain, filling, system flushing, etc. Users can easily create a whole recipe by combining different method modules.



Unique AutoTFF3 control software



Method editing and recipe creation



- The system comes with preset common method modules. These modules can be flexibly combined to form complete methods, and multiple methods can be further organized into sequences to achieve highly automated operation.

Method Module	Function
Filling	Add a certain amount of liquid to the circulation vessel
Water flux test	Can automatically test water flux based on defined pressure/crossflow conditions
Clarification/Concentration	Concentrate the feed liquid to the defined volume or concentration factor
Diafiltration	Constant volume diafiltration with continuous feed until predefined endpoint, eg. Diltiltration volume, conductivity, pH
Harvest/Drain	Harvest the liquid through the harvesting port or outlet valve
CIP	Used for system cleaning
Flush	Flush the system with water, buffer or other solutions
Pause	System pause
TMP Optimization	The automatic TMP optimization program can automatically generate a TMP optimization curve.
Diafiltration Optimization	By analyzing diafiltration process data, the system can identify the optimal diafiltration endpoint.

Unique AutoTFF3 Parameters

General Parameters

Dimensions(LxDxH,mm)	710 X 380 x 640 (filter holder not included)
Electrical requirements	240VAC, 50-60Hz
Weight	48kg(include 0.1m ² filter holder)
Power	160W
System language	Chinese, English
Ambient temperature	2-35°C

System Parameters

Filtration area	50cm ² - 0.5m ² (The specific filtration area can be varied with different filters)
Maximum feed pressure	5bar
Minimum recirculating volume	60ml
Process temperature	2-50°C
Feed pump flow rate	Peristaltic pump version 0-2300ml/min, diaphragm pump version 0-3000ml/min
Transfer pump flow rate	0-1200ml/min
Permeate pump flow rate	0-600ml/min
Recirculation vessel volume	3000ml
Stirring speed	0-300rpm
Pressure sensor	Detection range: 0-5Bar
Conductivity sensor	Detection range: 0.001-999.99ms/cm
Temperature sensor	Integrated in conductivity sensor, detection range: 0-99 ° C
PH	Detection range: 0-14
Feed balance	0-6kg
Permeate Balance	0-6 kg, optionally 0-25kg
Filter holder	1 pc of ABS multifunctional holder for 50cm ² Capsule capsule or hollow fiber filters with a diameter no more than 50mm 1 pc of 0.1m ² Stainless steel holder (Maximum capacity: can accommodate five 0.1 m ² cassettes)
Tube&Connector	TC25 clamp or barbed connector



Unique AutoTFF3 system configuration options

There are two standard configurations and multiple flexible options for the Unique AutoTFF3.

Configuration	Unique AutoTFF3-M	Unique AutoTFF3-MD
Feed Pump	√	√
Circulation Vessel	√	√
Circulation Vessel Balance	√	√
Inlet and Retentate Pressure Sensors	√	√
Cassette Holder and Multi-function Clamp	√	√
Control System	√	√
Leak Detector	√	√
Retentate Fully Automatic PCV Valve	√	√
Permeate Pressure Sensor	√	√
Permeate Balance (6kg)	√	√
Permeate Balance (25kg)	○	○
Transfer Pump (Peristaltic Pump)	○	○
Transfer 2 Inlet Valve	○	○
Transfer 6 Inlet Valve	○	○
Retentate 2 Outlet Valve	○	○
Permeate 2 Outlet Valve	○	○
Permeate 6 Outlet Valve	○	○
Permeate Pump & Permeate Automatic PCV Valve & Manual Valve (Choose One)	○	○
Retentate Conductivity Detector	○	○
Permeate Conductivity Detector	○	○
Retentate pH Detector	○	○
Permeate pH Detector	○	○
Permeate Flow Meter	○	○
Disposable Bag Holder	○	○
Validation Service	○	○

Note: "√" denotes standard items; "○" denotes optional configurations.



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