FILTERTEC II NFF LAB SYSTEM

Intelligent bioprocessing system with dead-end single and multi-filtration functionality

The FilterTec™ II is an automated laboratory scale normal flow filtration (NFF) system that monitors, adjusts and documents filter back pressure and filtrate.

The result is a system that can optimize filtration parameters, maximize filter throughput and can also be used as a tool to evaluate / compare different filters by calculating Vmax. The system also offers the patented R/P Stat (rate / pressure) method, which has been proven to increase filter throughput up to 30%.

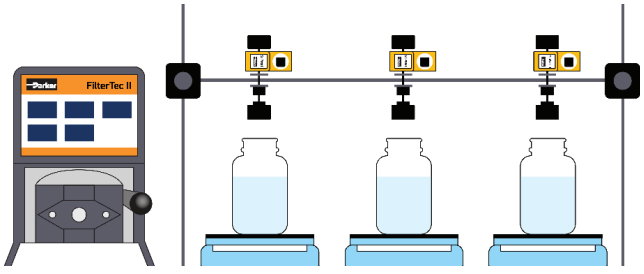
The automatic documentation and alarm / pump stop settings allow the user to focus on other tasks while the system is running. Programmable end points ensure the system stops operating when a given back pressure, filtrate rate or total filtrate limit has been reached. When sold with SciDoc software, documentation capabilities include a collection of real-time filtration parameters.

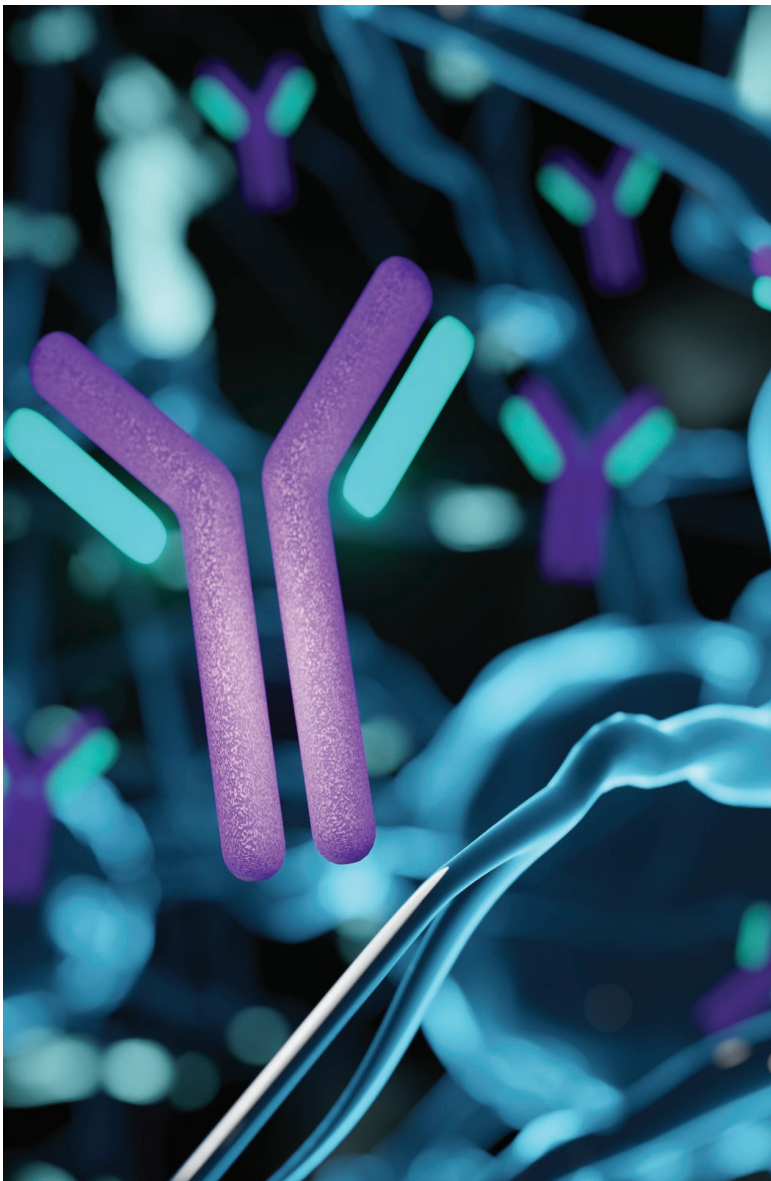
Currently available in North America only.

Features & Benefits

- Safe, walk-away system operation
- Filterability studies and Vmax determination
- Real-time data collection of filtration parameters
- Increased NFF filter efficiency up to 30%
- Three pressure sensor connections for serial or parallel filter trains
- Compatible with all filters
- Optional scale enables gravimetric control

Triple your NFF productivity for filterability studies, filter size determination and filter scale-up. The FilterTec II can communicate with up to three electronic balances and control three pump heads simultaneously. This product allows for testing of three identical NFF filters at the same rates or three different filters at the same pressure. Parallel processing of a solution through three filters provides statistical verification of filter capacity and is compatible with all manufacturers' filters.





Applications

Normal Flow Filtration (NFF)

The FilterTec II uses a pressure sensor and scale feedback to perform normal flow operations by constant rate or constant pressure. The end point controls ensure the system shuts off when a user defined maximum filter pressure, minimum filtrate rate or maximum filtrate limit is reached.

Normal Flow Filtration (NFF) - Optimized

The FilterTec II achieves optimized normal flow operations by utilizing the patented R/P Stat Method. This automated procedure maintains a selected pump rate until a user-defined upper pressure limit has been attained as a result of filter plugging. The system automatically switches from a constant rate to a constant pressure fluid delivery (see Fig. 1). The pump continuously reduces the flow rate to maintain the pressure across the filter until a user-defined minimum filtrate rate is attained. This method allows full utilization of the existing filter capacity and is accompanied by a significant increase in total filter throughput upwards of 30% compared to constant pressure or constant flow throughput data.

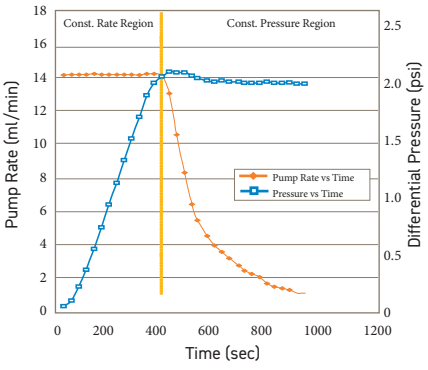
Filterability Studies

The FilterTec II is capable of simultaneously monitoring three pressure points. This capability is particularly useful in monitoring the pressure differentials of multiple filters in a serial or a parallel filter train. Excessive pressure build-up across a filtration stage element typically indicates the need for a larger porosity and/or a larger area filter element. The FilterTec II's R/P programmable mode allows you to modify the pump rate and/ or pressure over a selected time interval, in a stair-step (Step) or ramped (Scan) manner, (see Fig. 2) until the user defined filtrate weight has been attained.

Vmax Determination

When used with an electronic scale, the FilterTec II collects and documents the filtrate weight in the constant pressure, constant rate or R/P Stat Method. The parameter T / W (Time / Filtrate Weight) is plotted against time. The inverse of the resulting slope represents Vmax. The FilterTec II reports the instantaneous Vmax from the slope of the neighboring data points. (see Fig. 3).

Performance Characteristics



Cellulose Acetate Membrane Filter
Porosity: 0.45 micron, Filter Area: 17.3 cm²
Solution: Fat Free Skim Milk, 20 x Diluted

Fig. 1 - Normal Flow Filtration by R/P Stat Method

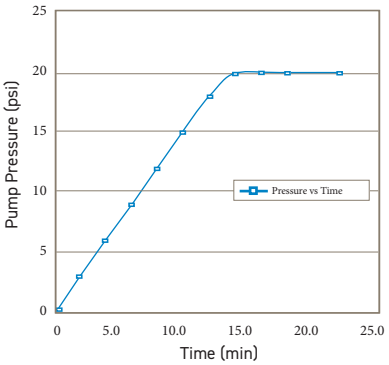
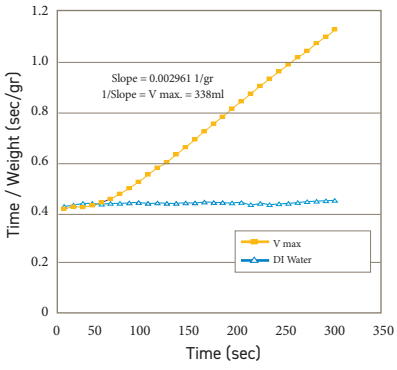


Fig. 2 - FilterTec™ R/P Programmable Mode Time-Programmable Pump Pressure



Cellulose Actate Membrane Discs, 47 mm
Porsity: 0.45 micron Surrogate Sample; 30 x Skim Milk,
Pump: #14 Silicone Tubing, FilterTec™ 'P-State Mode', 20 psi

Fig. 3 - V max: NFF Capacity Determination

Specifications

Item	Description
Power	100-240 VAC, 50/60 hz, 3.15 A
Industry Specifications	REACH, ROHS, WEEE
Dimensions	9.5 in. (24.1 cm) W x 11.5 in. (29.2 cm) H x 13.4 in. (34 cm) D
Weight	16.2 lbs / 7.43 kg
Pressure Sensor Range	0-60 psi
I/O Ports	SciPres II pressure sensors (3), SciTemp II temperature sensors (3), serial balance input (3), RS232 serial port (1) for SciDoc II data collection (USB adapter cable included), digital outputs (8) - 6 intended for remote pump control, 4 - 20 mA analog outputs (8) - for pump / drive or valve proportional control, 4 - 20 mA analog inputs (4) - 1 dedicated to pH input

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Motor RPM/Pump Head Choices

Pump Head Model		TANDEM 1081						TANDEM 1082		
Approved Tubing Size		13	14	16	25	17	18	15	24	35
Silicone Part #		400-113	400-114	400-116	400-125	400-117	400-118	400-115	400-124	400-135
PharMed Part #		400-313	400-314	400-316	400-325	400-317	400-318	400-315	400-324	400-335
Pump Rate Range (Nominal values, +/-5%)		ml/min	ml/min	ml/min	ml/min	ml/min	ml/min	ml/min	ml/min	ml/min
CP-120	160 RPM	0.5 - 10	1.7 - 35	6.3 - 129	12.5 - 283	18.5 - 405	24.7 - 554	9.6 - 240	14 - 412	16-650
CP-200	600 RPM	2 - 34	8.6- 132	29 - 533	49 -974	70 - 1048	103 - 1515	59-993	85-1348	111 - 2258

Options and Accessories

FilterTec Tandem Pump Heads

Pressure: 25 psi continuous
45 psi max.

1081 Flow Rate (ml/min): 0.03 - 1515
1082 Flow Rate (ml/min): 0.5 - 2258

Electronic Scales

160 or 600 RPM System: 8200g capacity x 0.1g resolution

Ordering Information

FLTR2 – ☐ ☐ – ☐

Code	Motor (RPM)
2	160
3	600

Code	Pump Head
1	1081
2	1082

Code	Scale
Blank	No scale
1	1 scale
2	2 scales

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