

# Novel, high-flux single-use filtration for fed-batch clarification

TFDF® (Tangential Flow Depth Filtration) unites the benefits of tangential flow (TF) and depth filtration (DF) in an integrated solution with filter, flow path and system. The thick-walled tubular depth filter captures cells and cell debris with negligible product retention. Operation in tangential mode reduces fouling associated with concentration polarization. The combination produces a high-flux, high-capacity clarification solution with low permeate turbidity and minimal dilution. Incorporation of the filter into a single-use, Gamma-irradiated ProConnex® Flow Path with integrated sensors provide rapid validation and seamless operation on a KrosFlo® TFDF® System programmed with application-specific process control logic.

## TFDF® Filter



Sweeping action for reduced concentration polarization and fouling

## ProConnex® TFDF® Flow Path



Closed, Gamma-irradiated and customizable flow paths

## KrosFlo® TFDF® System



Integrated hardware, software and flow path

- **Thick-walled depth filter:** High capacity with negligible product retention
- **Tangential flow:** Low concentration polarization
- **Integrated system:** typically 3 - 6 hour run time at > 1000 LMH

## KrosFlo® TFDF® Systems

The KrosFlo® TFDF® System delivers application-specific process control logic for optimal TFDF® process performance. Systems scale from 1 L to 2000 L in a small footprint between 41 and 59 inches in length.



### KrosFlo® TFDF® Lab System

1 L - 50 L volume  
Standard configuration



### KrosFlo® TFDF® Pilot System

50 L - 500 L volume  
Customizable configuration



### KrosFlo® TFDF® Process System

500 L - 2000 L volume  
Customizable configuration

Actual products subject to change. All images shown for reference only.



# Specifications

	KrosFlo® TFDF® Lab System		KrosFlo® TFDF® Pilot System	KrosFlo® TFDF® Process System
Filters	Recommended process volume - rProtein	< 1 L	< 50 L	< 2000 L
	TFDF Filter surface area	3 cm <sup>2</sup>	150 cm <sup>2</sup>	6000 cm <sup>2</sup>
Provided equipment	TFDF Filter part number	TFDF-3	N/A	N/A
	ProConnex TFDF Flow Path part number	15110S	STDFCL15112S	*
	Feed pump - Magnetic levitating pump (1)	10 LPM recommended, 20 LPM maximum		*
	Auxiliary pumps (2)	Maximum 340 ml/min with 4.8 mm ID and 1.6 mm thick tube		*
	Controller	PLC	PLC	PLC
	User interface (HMI)	12" Color touch screen	*	*
	Operating temperature		5 - 40° C	5 - 40° C
	Environmental requirements	5 - 50° C, Relative humidity 10 - 90 % (Non condensing)	5 - 50° C, Relative humidity 10 - 90 % (Non condensing)	5 - 50° C, Relative humidity 10 - 90 % (Non condensing)
	Enclosure material of construction	Powder coated aluminum (enclosure), Delrin and powder coated/anodized aluminum	Stainless steel 304	Stainless steel 304
	Connectivity - Pressure sensor range	Up to 5 single-use sensors / -7 to 75 psi (-0.48 to 5.2 bar)	Up to 5 single use sensors / -7 to 75 psi (-0.48 to 5.2 bar)	Up to 5 single use sensors / -7 to 75 psi (-0.48 to 5.2 bar)
Connectivity - Weighing scales	Up to 2 scales	*	*	
Options	Stand	Normal position   Extended position	N/A	N/A
	Turbidity sensor	1 Turbidity Photometer transmitter with 880 nm light source	*	*
Utilities	Feed flow meter	Clamp on flow sensor for 9/16" OD tubing	Clamp on flow sensor	Clamp on flow sensor
	Permeate flow measurement	Permeate weigh scale   Permeate weigh scale	Clamp on flow sensor	Clamp on flow sensor
Dimensions	Power	110 - 240 V AC, 1 Phase, 50/60 Hz	*	*
	Compliance	UL and CE Certified	UL and CE Certified	UL and CE Certified
Ordering	Controller	16 x 13 x 21 in (40 x 33 x 53 cm)	*	*
	Pump station	11 x 11 x 19 in (28 x 28 x 48 cm)   11 x 11 x 39 in (28 x 28 x 99 cm)	N/A	N/A
Service	Controller weight	34 lbs (15.5 kg)	N/A	N/A
	Pump station weight	20 lbs (9 kg)	N/A	N/A
Service	System part number	TFDFLP2S2F1TONCFRS	*	*
	Summary	Controller - PLC, HMI - 12" Color TFT 800x600 SVGA, Power supply, Analog/Digital I/O Modules, Pump Station - MagLev pump (1), Peristaltic pumps (2), Pressure transmitter boards (2) to support max. 5 SU Pressure sensors, weight transmitters (2), Flow transmitters (1)		
Service	Installation, test and basic user training (1 day)	SV-IT-TFDF-L	SV-IT-TFDF P	SV-IT-TFDF P
	Installation, test, IQOQ and basic user training	SV-IT-TFDF-L-IQOQ	SV-IT-TFDF P-IQOQ	SV-IT-TFDF P-IQOQ

\* Contact your Repligen sales representative to customize your TFDF® system.

