

Integrated TFDF™ Solution for Single-use Filter-based Cell Culture Clarification

TFDF™ Technology

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 enables seamless operation on a KrosFlo® TFDF™ System programmed with application-specific process control logic.

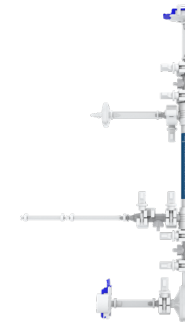
- **Thick-walled depth filter:** High capacity with negligible product retention
- **Tangential flow:** Low concentration polarization
- **Integrated system:** typically 3 - 6 hour run time at > 1000 LMH
- **Closed, single-use, Gamma-irradiated:** Rapid validation

TFDF™ Filter



Sweeping action for reduced concentration polarization and fouling

ProConnex® TFDF™ Flow Path



Closed, Gamma-irradiated and customizable flow paths with integrated filter, sensors, clamps and tubing

KrosFlo® TFDF™ System



Integrated hardware, software and flow path

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 - 5 L volume | Standard Configuration



KrosFlo® TFDF™ Pilot System
1 L - 500 L volume | Customizable Configuration



KrosFlo® TFDF™ Process System
50 L - 2000 L volume | Customizable Configuration

Actual products subject to change. All images shown for display purposes only.

	KrosFlo® TFDF™ Lab System		KrosFlo® TFDF™ Pilot System	KrosFlo® TFDF™ Process System	
Filters	Recommended process volume - rProtein	< 1 L	< 50 L	< 500 L	< 2000 L
	TFDF Filter surface area	3 cm ²	150 cm ²	1500 cm ²	6000 cm ²
	TFDF Filter part number	TFDF-3	N/A	N/A	N/A
	ProConnex TFDF Flow Path part number	STDFCL15111N	STDFCL15112S	*	*
Provided equipment	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	SS 304		SS 304	SS 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		*	*
	Stand	Normal position	Extended position	N/A	N/A
Options	Turbidity sensor	1 Turbidity Photometer transmitter with 880 nm light source		*	*
	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
Utilities	Power	110 - 240 V AC, 1 Phase, 50/60 Hz		*	*
	Compliance	UL and CE Certified		UL and CE Certified	UL and CE Certified
Dimensions	Controller	14.75" x 16.4" x 20" (33.2 x 36.9 x 45 cm)		*	*
	Pump station (Stand - normal position)	16" x 7.75" x 15.12" (36 x 17.4 x 27.3 cm)		N/A	N/A
	Pump station (Stand -108 cm and 40 cm filter)	N/A	16" x 7.75" x 34.4" (36 x 17.4 x 87.5 cm)	N/A	N/A
	Weight	Controller 70 lbs (31.75 kg) and Pump station 36 lbs (16.3 kg)		*	*
	Controller weight	45 lbs (20 kg)	N/A	N/A	N/A
	Pump station weight	50 lbs (23 kg)	N/A	N/A	N/A
Ordering	System part number	TFDFLP2S2F1T0NCFRS		*	*
	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)		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.