KrosFlo® FS-15 RPM™ System

Product Specifications

Specification Sheet

Part ID: **SYS-RPM-FS15**

Overview

The KrosFlo® FS-15 RPM™ System integrates Real-time Process Management with lab-scale Tangential Flow Filtration (TFF). The system combines the KrosFlo® FS-15 System and the CTech™ FlowVPX® Variable Pathlength UV-Visible spectrophotometer to provide automated TFF with in-line concentration monitoring and end point control. By coupling the FS-15 and FlowVPX functionality, the system delivers improved process control and efficiency with reduced process risk.

- Strengthen process control with high quality and highly reproducible concentration results.
- Increase process efficiency by reducing cycling time, increasing yield, throughput, and eliminating the need for time consuming off-line pre and post run concentration measurements and dilution.
- Reduce process risk by ensuring accurate concentration throughout the TFF process.

Automation and Modernization

The KrosFlo FS-15 System provides automated, modern, flat-sheet TFF capabilities from 140 ml to 15 L. Modular plug-and-play hardware components, configurable ProConnex® Flow Paths, and graphically driven software ensure optimal performance and ease of use. The system is driven by a Quattroflow® diaphragm pump, which supports high-pressure processes up to 4 bar.

Real-Time Concentration Insights

The FlowVPX in-line spectrophotometer uses variable pathlength technology to monitor and optimize critical process parameters in real-time for improved quality and consistency. Slope-based concentration measurements increase the efficiency of the process and avoid costly dilution and background correction steps, revealing process characteristics previously hidden from traditional, fixed-pathlength sensors. In-line measurements enable real-time, automated decisions, potentially eliminating out-of-spec results and costly, time-consuming deviation reports.

Robust Control Software

The proprietary KrosFlo® RPM™ Software enables the combined functionality of the FS-15 and FlowVPX systems. The software can execute complicated TFF processes using real-time concentration data through user-specified set points for the system auxiliary pumps, scales, backpressure valve, and FlowVPX System. This level of system programmability results in improved accuracy, method reproducibility, and process efficiency.

Quattroflow® is a registered trademark of PSG.

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KrosFlo FS-15 System

Main Pump	Quattroflow® Diaphragm Pump
Typical Process Volume	140 ml to 15 L
Filtration Area	0.1–0.3 m^2
Operating Pressure	0–4 bar (0–58 psi)
Flow Rate	0.018–3.0 LPM
Flow Rate Accuracy	±0.1%
Cassette Holder	TangenX® SIUS® PD Clamp
Reservoir	(One included) 1 L volume, polypropylene, ported flat bottom
Mixing	Stir plate positioned on scale
TMP Control	Non-Invasive / No Product Contact
Flow Path	ProConnex® Single-Use High Pressure Flow Path
Software	Real-time Process Management (RPM) Software

CTech FlowVPX System

Linear Range-Finder Technology	Automatically identifies linear region of absorbance data to verify compliance with Beer-Lambert Law
Flow Cell Volume	3 mm Flow Cell: 0.9 mL 10 mm Flow Cell: 9.0 mL
Spectroscopic Engine	Agilent Cary 60
Qualification Slope Range	0.10 AU/mm to 46 AU/mm using NIST-traceable slope standards
Qualification Slope Repeatability	±2%
Maximum Pathlength	3 mm Flow Cell: 3.000 mm 10 mm Flow Cell: 5.000 mm
Minimum Pathlength Step	0.001 mm
Delivery Fiber Length	3 m (optional 6 m cable available upon request)

KONDUiT Add-On Conductivity and Temperature Monitor

Inputs	2 Conductivity Inputs 2 Temperature Inputs
Sensor Size	1/4" HB and 1/2" HB
Conductivity Range	0.1–100 mS/cm
Conductivity Accuracy	0.1–2.0 mS/cm: ±0.1 mS/cm 2.0–50 mS/cm: ±5% 50–100 mS/cm: ±5% (Typical)
Temperature Range	0°C to 70°C
Temperature Accuracy	±0.2°C or better

Auxiliary Components

Auxiliary Pumps	Up to 2 KrosFlo KR Jr Peristaltic Pumps Flow Rate: 0.36–380 ml/min
Pressure Sensors	Up to 3 Single-Use Pressure Transducers Pressure Range: -9.99 to 75 psi (-0.69 to 5.2 bar) Polysulfone, Tri-Clamp fittings
Auxiliary Component Octopus Cable	2 cables connect to scales, auxiliary pumps, and KONDUiT System
Additional Reservoirs (Optional)	1 L volume, polypropylene, ported flat bottom

Power Requirements

FS-15	Supply voltage: 115–230 V_{rms} @ 50/60 Hz (Universal Input) Max current: 2.2 A @ 115 V_{rms} or 1.1 A @ 230 V_{rms}
Cary 60	Power Supply Input: 90–265 VAC Frequency: 47–63 Hz
FlowVPX	Power supply input: 100–230 VAC Frequency: 50–60 Hz VPX power input: 24 VDC, 0.6 A max current draw
KONDUiT	Input power supply range: 100–240 VAC Input Frequency: 47–63 Hz KONDUiT Power input: 24 VDC, 0.625 A max current draw

General

Dimensions	FS-15 Main pump:	292 × 267 × 432 mm (11.5 × 10.5 × 17.0 in)
	Auxiliary Pumps (2):	140 x 178 x 160 mm (5.5 x 7.0 x 6.3 in)
	KONDUiT:	197 x 120 x 114 mm (7.75 x 4.75 x 4.5 in)
	Scales (2):	106 x 216 x 318 mm (4.2 x 8.5 x 12.5 in)
	FlowVPX:	120 x 100 x 230 mm (4.7 x 3.9 x 9.1 in)
	Cary 60:	483 x 559 x 203 mm (22 x 8 x 19 in)
Weights	FS-15 Main pump	11.5 kg (25.2 lb)
	Auxiliary Pumps (ea)	2.2 kg (4.8 lb)
	Konduit	1.6 kg (3.53 lb)
	Scales (ea)	2.1 kg (4.6 lb)
	Cary 60	18.1 kg (40lb)
	FlowVPX (3 mm Flow Cell):	4.3 kg (9.5 lb)

Compliance

ETL Mark	UL 61010-1, CAN/CSA C22.2 No. 61010-1
CE Mark	Low Voltage Directive 2014/35/EU Electromagnetic Compatibility Directive 2014/30/EU RoHS Directive 2011/65/EU
Environmental Compliance	WEEE (Directive 2012/19/EU) REACH Regulation (EC) No. 1907/2006) California Proposition 65

Customer Support

Support and Training: Repligen is committed to customer success from predelivery through installation and training.

Included with purchase:

- IQOQ
- Full 12-month warranty support
- Single- and multi-year service contract options, which include annual PM service
- Preventative Maintenance (PM) service options
- Remote and on-site training and support
- Software support
- Two Flow Cells and Flow Fibrette® Optical Components

Customer Support Options

Final application suitability of all materials and ratings are the sole responsibility of the user. Specified pressure and temperature ratings may be subject to limitations. Contact a Repligen's Analytics Representative for more information.

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