KrosFlo® KR2i RPM™ System

Product Specifications

Specification Sheet

Part ID: **SYS-RPM-KR2i**

Overview

The KrosFlo® KR2i RPM™ System integrates Real-time Process Management with lab-scale Tangential Flow Filtration (TFF). The system combines the KrosFlo® KR2i 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 KR2i 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 KR2i 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 KR2i 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 TFF System

Filter Mode	Hollow Fiber	Flat Sheet Cassettes
Recommended Process Volume	2 mL–10 L	12 mL–15 L
Filter Surface Area	13 cm^2–3700 cm^2	100 cm^2–5000 cm^2
Main Drive / Feed Pump and Stand	Easy-Load Pump Head – up to 2.3 LPM (600 RPM) Use with tubing sizes #13, #14, #16, #17, #18 and #25. Integrated stand for hollow fibers	
Automatic Backpressure Control Valve (ABV)	Controls user-set process TMP or permeate pressure	
Tablet as HMI	Microsoft® Surface Pro® with Krosflo® RPM™ control and data acquisition software	
Auxiliary Pump	KrosFlo® Junior, flowrates up to 0.3 LPM	
System Scales	Maximum Weight: 20,000 g Readability: 0.1 g Platform Dimensions: 7.7” x 7.7” (17.8 cm x 17.8 cm)	
Enclosures	IP33 rated plastic enclosure. Wipe down cleanable.	
Environmental Requirements	Operating Temperature: 0°C–40°C Relative Humidity: 10%–90%	

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 Monitor

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

Auxiliary Components

Pressure transducer	Up to 3 single-use sensors Pressure Range: -7 to 75 psi (-0.48 to 5.2 bar) Polysulfone, luer-style ports
Tubing	PharmaPure, TPE, size #14 and #16
Stand	Integrated stand with hollow fiber holder
Auxiliary Component *Octopus* cable	Allows for connectivity of scales, auxiliary pumps, and KONDUiT System
Reservoirs (Optional)	15 mL, 50 mL, 250 mL, 500 mL polypropylene conical containers, caps with ported inlets, conical holders
High-Performance pump head (Optional)	High-performance pump head, up to 2.9 LPM For use with tubing sizes #15, #24, #35, and #36 **Note:** Pump will accept up to two (2) pump heads

Power Requirements

KR2i System	Supply voltage: 90–260 V_{rms} @ 50/60 Hz (universal input) Max current: 2.2 A @ 115 V_{rms} or 1.1 A @ 230 V_{rms}
Cary 60	90 VAC–265 VAC, frequency 47 Hz–63 Hz
FlowVPX	Power supply input: 100 VAC–230 VAC Frequency: 50 Hz–60 Hz VPX power input: 24 VDC, 0.6 A max current draw
KONDUiT	Input power supply range: 100 VAC–240 VAC Input Frequency: 47 Hz–63 Hz KONDUiT Power input: 24 VDC, 0.625 A max current draw

General

Dimensions	KR2i Main pump:	267 × 203 × 203 mm (10.5” × 8” × 8”)
	Auxiliary Pumps (2):	140 x 178 x 160 mm (5.5” x 7” x 6.3”)
	KONDUiT:	197 x 120 x 114 mm (7.75” x 4.75” x 4.5”)
	Scales (2):	330 x 203 x 97 mm (13” x 8” x 3.8”)
	FlowVPX:	120 x 100 x 230 mm (4.72” x 3.94” x 9.06”)
	Cary 60:	483 x 559 x 203 mm (22” x 8” x 19”)
Weights	KR2i Main pump	5.9 kg (13 lb)
	Auxiliary Pumps (ea)	2.2 kg (4.8 lb)
	Konduit	1.6 kg (3.53 lb)
	Scales (ea)	2.7 kg (6 lb)
	Cary 60	18.1 kg (40lb)
	FlowVPX (3 mm flow cell):	4.31 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
- Post-obsolescence seven-year hardware support
- Single- and multi-year service contract options, which include an 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 *(cont.)*

More information: 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 analytical sales representative for more information.

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Customer Support
analytics-support@repligen.com
+1 908-707-1009

Repligen Corporation
685 Route 202/206
Bridgewater, NJ 08807, USA
www.repligen.com

Contact

Repligen Corporation
685 Route 202/206
Bridgewater, NJ, USA 08807

analytics-support@repligen.com

(908) 707-1009

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