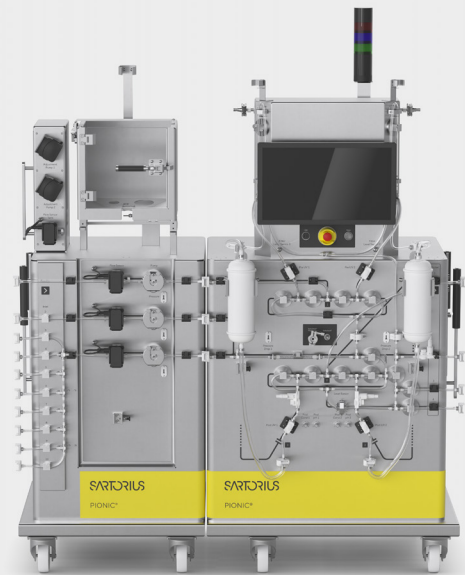


Pionic® Dual

A Continuous Filtration and Chromatography System for Connected Downstream Processes



Product Information

Pionic® Dual is an advanced continuous filtration and chromatography system, offering a dual approach that allows users to select between two distinct applications.

The system facilitates continuous processing in a fully automated manner, ensuring both efficiency and precision. The integrated Biobrain® Automation Software enhances process control and enables real-time decision-making. Engineered for aseptic operations, Pionic® Dual is suitable for process volumes ranging from 1 to 150 L/h, supporting continuous processing for long durations (e.g., 28 days).

Features and Benefits

- **Dual filtration and chromatography:**
Automated continuous operation for efficient processes.
- **Modular design:**
Integrates seamlessly into new or existing facilities, supporting process intensification.
- **Biobrain® automation:**
Enhances process control and real-time decision making.
- **Scalability:**
Supports 50 – 2,000 L/day, suitable for various scales.

Introduction

Relevant Applications

Integrated continuous biomanufacturing of monoclonal antibodies (mAbs) at clinical or commercial scale.

Relevant Process Steps

- Intensified downstream process steps:
 - Capture chromatography
 - Polishing chromatography
 - Bind and elute or flowthrough
- Filtration steps:
 - Membrane filtration for bioburden reduction
 - Virus filtration
 - Pre-filtration

Description

Pionic® Dual is a cornerstone of Pionic®'s intensification platform, offering maximum process flexibility to support both standalone and integrated downstream operations.

Its plug-and-play capability, combined with seamless SCADA integration and automation, allows users to shift easily between molecules, campaigns, or production scales.

Each Pionic® system offers flexibility for integrated and continuous downstream process intensification, either by intensifying a single unit operation or linking multiple units together.

Pionic® Dual: Engineered for Flexibility in Continuous Downstream Processing

As biologics manufacturing shifts toward smaller batch sizes and multi-product operations, manufacturers need systems that can pivot quickly between process requirements. Pionic® Dual meets this challenge with a modular, automated solution designed for flexibility across filtration and chromatography operations.

Together with the Pionic® Flow unit — the dedicated pumping module for the Pionic® Dual — the system forms a fully integrated unit operation. This combination enables advanced process functionalities such as inline buffer dilution and precise fluid management, enhancing efficiency and control in continuous downstream processing.

Whether handling capture, depth filtration, virus filtration, or polishing chromatography, Pionic® Dual allows users to configure and reconfigure unit operations to meet specific process demands. This adaptability supports both dedicated production lines and agile facilities serving diverse product pipelines.

With ready-for-use flow kits supporting long process durations over multiple days of operation and fully automated control, Pionic® Dual reduces changeover complexity, minimizes operator input, and ensures consistent product quality — all within a smaller facility footprint.

Product Highlights

- **Unmatched process flexibility:** Pionic® Dual enables adaptable configuration across filtration and chromatography steps, allowing manufacturers to tailor processes to diverse molecule types and production scales.
- **Modular and scalable design:** Designed for use as a standalone unit or integrated module within the wider platform, Pionic® Dual adapts easily to evolving manufacturing needs — from clinical to commercial scale.
- **Continuous and connected operation:** Minimizes disruptions by linking multiple downstream operations, supporting continuous processing without sacrificing control or quality.

 **For more information on the Pionic® platform, visit**
sartorius.com/pionic

Technical Specifications

System Specification

Pionic® Dual

System features	Details
Number of columns	2
Number of capsules	2 positions with a maximum of 10 connectable capsules
Number of process pumps	3 (feed, WFI, buffer)
Number of fluid adjustment pumps	2
Flow rate range [L/h]	1 – 150 (depending on hardware configuration and flowkit used)
Single-use system or multi-use system	Single-use
GMP (as advertised)	Yes
Number of load buffer water inlets	1 × feed
	1 × WFI
	8 × buffer
Number of outlets for product and waste	4
Dimensions (w × d × h) [mm]	1,650 × 800 × 1,786
Mobility	Castors
Weight [kg]	318 (excl. 264 Pionic® Flow module)
HMI	21" touch screen
Electrical enclosures (NEMA rating)	Yes – IP 54 rated
Power needs [V]	120 or 240

Ready-for-Use Flowkits

System Name	Pionic® Flow		Pionic® Dual		Pionic® Dual	
Application	Pumping unit		Chromatography		Filtration	
Connectors	Sterile connector AseptiQuik® S		Sterile connector AseptiQuik® S and AseptiQuik® G		Sterile connector AseptiQuik® S and AseptiQuik® G	
Tubes	Pharmed PBT ($\frac{1}{4}$ " × $\frac{1}{8}$ "") Tuflux® Silicone ($\frac{1}{4}$ " × $\frac{7}{16}$ ", $\frac{1}{2}$ " × $\frac{3}{4}$ ", $\frac{3}{8}$ " × $\frac{5}{8}$ "") Pharma 80 ($\frac{1}{8}$ " × $\frac{1}{4}$ "")	Pharmed PBT ($\frac{1}{4}$ " × $\frac{1}{8}$ "") Tuflux® Silicone ($\frac{1}{4}$ " × $\frac{7}{16}$ ", $\frac{1}{2}$ " × $\frac{3}{4}$ ", $\frac{3}{8}$ " × $\frac{5}{8}$ "") Pharma 80 ($\frac{1}{4}$ " × $\frac{3}{8}$ "")	Pharma 80 ($\frac{1}{8}$ " × $\frac{1}{4}$ ", $\frac{1}{4}$ " × $\frac{3}{8}$ "")	Pharma 80 ($\frac{1}{4}$ " × $\frac{3}{8}$ ", $\frac{3}{8}$ " × $\frac{5}{8}$ "")	Pharma 80 ($\frac{1}{8}$ " × $\frac{1}{4}$ ", $\frac{1}{4}$ " × $\frac{3}{8}$ "")	Pharma 80 ($\frac{1}{4}$ " × $\frac{3}{8}$ ", $\frac{3}{8}$ " × $\frac{5}{8}$ "")
Airfilter	Sartopore® Air G-Midicaps® Size 7		-		Sartopore® Air G-Caps Size 4	
Fluid adjustment pump	Watson Marlow 314		-		-	
Valves	Carten pinch valves $\frac{1}{8}$ " or $\frac{1}{4}$ "		Carten pinch valves $\frac{1}{8}$ " or $\frac{1}{4}$ "		Carten pinch valves $\frac{1}{8}$ " or $\frac{1}{4}$ "	
SU pump head	■		-		-	
Pressure sensors	■		■		■	
Flow sensor	■		-		-	
Conductivity sensors	■		■		■	
pH sensor	■		■		■	
Bag	Flexsafe® 20 L		-		-	
Empty line sensor	■		■		■	

Pionic® Dual

Specification	Details
Flow kit and tubing connections	Closed processing sterile connectors
Size	⅝" ¼"
Valves	Carten pinch valves insert ⅝" ¼"
Pressure sensors	PendoTECH® Pressure Sensor ⅝" ¼" HB
Conductivity sensors	BioPAT® Conductivity pH flow through ⅝" ¼"
pH sensors	BioPAT® Conductivity pH flow through ⅝" ¼"
pH sensor (calibration)	1 point reference calibration
UV flowcell	BioPAT® Spectro flow through ⅝" ¼"
UV spectrometer	J&M spectrometer with 3 wavelengths from 185 nm to 400 nm
Empty line detection	Yes

Pionic® Flow

Specification	Details
Flow kit and tubing connections	Closed processing sterile connectors
Mixing technology	3D 20 L mixing bag active bottom impeller driven
Size	⅝" ¼"
Process pumps	Pumphead QF30DM ⅝" QF150DM ¼" HB single-use
Fluid adjustment pumps	Watson Marlow 314
Valves	Carten pinch valves insert ⅝" ¼"
Pressure sensors	PendoTECH® Pressure Sensor ⅝" ¼" HB
Flow sensor	Levitronix® flow sensor ⅝" ¼" HB-HB
Conductivity sensors	BioPAT® Conductivity pH flow through ⅝" ¼"
pH sensors	BioPAT® Conductivity pH flow through ⅝" ¼"
pH sensor (calibration) (w/ mixing bag)	1 point reference calibration
Empty line detection	Yes
Conductivity sensor bag	BioPAT® Conductivity pH
pH sensor bag	BioPAT® Conductivity pH

Ordering Information

Pionic® Dual

Application	Item	Description	Units required***	Article-No
Filtration and Chromatography	Hardware	Pionic® Dual 150 System (EMA)	1	PIONICDUAL150
Filtration ¼"	Flowkit	Pionic® Dual 150 (EMA) Filtration IN	1	FKTX6000010
		Pionic® Dual 150 (EMA) Filtration OUT	1	FKTX6000011
Filtration ⅜"	Flowkit	Pionic® Dual 30 (EMA) Filtration IN	1	FKTX6000006
		Pionic® Dual 30 (EMA) Filtration OUT	1	FKTX6000007
Chromatography ¼"	Flowkit	Pionic® Dual 150 (EMA) Chroma IN	1	FKTX6000012
		Pionic® Dual 150 (EMA) Chroma OUT	1	FKTX6000013
Chromatography ⅜"	Flowkit	Pionic® Dual 30 (EMA) Chroma IN	1	FKTX6000009
		Pionic® Dual 30 (EMA) Chroma OUT	1	FKTX6000008
Filtration and Chromatography	Transfer lines*	Pionic® Dual (EMA) Vent Line	Upon request	FKTX6000015
		Pionic® Dual (EMA) Sensor Line	Upon request	FKTX6000016
		Pionic® Dual (EMA) Manifold**	Upon request	FKTX6000014
		Pionic® Dual (EMA) Line Ext. Size 7	Upon request	FKTX6000023
		Pionic® Dual (EMA) Line Ext. Size 8	Upon request	FKTX6000024
		Pionic® Dual (EMA) Line Ext. Size 9	Upon request	FKTX6000025
		Pionic® Dual (EMA) Line Ext. HF	Upon request	FKTX6000028
		Pionic® Dual (EMA) Line Ext. 10in Filter	Upon request	FKTX6000017
		Pionic® Dual (EMA) Line Ext. 20in Filter	Upon request	FKTX6000026
		Pionic® Dual (EMA) Line Ext. 30in Filter	Upon request	FKTX6000027

*Additional transfer line variants are available upon request to accommodate specific filter configuration.

**Depending on the process volume, filter changes may be necessary. In such instances, 4 units of Pionic® Dual Manifolds will be required.

***Based on the specific application requirements.

Pionic® Flow

Application	Item	Description	Units required	Article-No
Filtration and Chromatography	Hardware	Pionic® Flow 150 3 pumps (EMA)	1	PIONICFLOW150
Filtration and Chromatography ¼"	Mixing bag	Pionic® Flow (EMA) Flexsafe® Mixing 20 L	1	FMS320975
		Pionic® Flow 150 (EMA) Feed In Tank	1	FKTX6000021
Filtration and Chromatography ⅜"	Mixing bag	Pionic® Flow (EMA) Flexsafe® Mixing 20 L	1	FMS320975
		Pionic® Flow 30 (EMA) Feed In Tank	1	FKTX6000020
Filtration ¼"	Flowkit	Pionic® Flow 150 (EMA) Feed-Line	2	FKTX6000003
		Pionic® Flow 150 (EMA) Filtration	1	FKTX6000004
Filtration ⅜"	Flowkit	Pionic® Flow 30 (EMA) Feed-Line	2	FKTX6000000
		Pionic® Flow 30 (EMA) Filtration	1	FKTX6000001
Chromatography ¼"	Flowkit	Pionic® Flow 150 (EMA) Feed-Line	2	FKTX6000003
		Pionic® Flow 150 (EMA) Chroma	1	FKTX6000005
Chromatography ⅜"	Flowkit	Pionic® Flow 30 (EMA) Feed-Line	2	FKTX6000000
		Pionic® Flow 30 (EMA) Chroma	1	FKTX6000002

Peripherals and Accessories

Application	Item	Description	Units required	Article-No
Filtration and Chromatography	Flowkit	Pionic® Dual (EMA) FAT line	1	FKTX6000029
Filtration and Chromatography	Flowkit	Pionic® Spin-Dual (EMA) connecting line	1	FKTX6000022
Filtration and Chromatography	Clipster®	Clipster® Large Packaging – XS (1 box of 200)	1*	642-XS-200-N

*Depending on disassembly method.

Services

Pionic® Dual

Service	Description	Article-No
Pionic® Dual Installation	System installation	S876UINST
Pionic® Dual Installation Pack (incl. travel exp.)	System installation (including travel expenses)	S876UINSTP
Pionic® Dual Qualification – SAT	Site Acceptance Test	S876USAT
Pionic® Dual Qualification – SAT pack (incl. travel exp.)	Site Acceptance Test (including travel expenses)	S876USATP
Single Maintenance	Preventive maintenance	S876USM
Service Level Agreement Essential	Service level agreement including preventive maintenance, help desk response within 1 business day, priority on-site support, 10% discount on labor travel costs spare parts	S876USLAE
Service Level Agreement Advanced	Service level agreement including preventive maintenance, help desk response within 8 hours, on-site support within 72 hours, labor travel costs covered, 10% discount on spare parts	S876USLAA
Service Level Agreement Comprehensive	Service level agreement including preventive maintenance, help desk response within 4 hours, on-site support within 48 hours, all costs covered (labor travel spare parts)	S876USLAC

Pionic® Flow

Service	Description	Article-No
Pionic® Flow Installation	System installation	S877GINST
Pionic® Flow Installation Pack (incl. travel exp.)	System installation (including travel expenses)	S877GINSTP
Pionic® Flow Qualification – SAT	Site Acceptance Test	S877GSAT
Pionic® Flow Qualification – SAT pack (incl. travel exp.)	Site Acceptance Test (including travel expenses)	S877GSATP
Single Maintenance	Preventive maintenance	S877GSM
Service Level Agreement Essential	Service level agreement including preventive maintenance, help desk response within 1 business day, priority on-site support, 10% discount on labor travel costs spare parts	S877GSLAE
Service Level Agreement Advanced	Service level agreement including preventive maintenance, help desk response within 8 hours, on-site support within 72 hours, labor travel costs covered, 10% discount on spare parts	S877GSLAA
Service Level Agreement Comprehensive	Service level agreement including preventive maintenance, help desk response within 4 hours, on-site support within 48 hours, all costs covered (labor travel spare parts)	S877GSLAC

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