

# Resolute<sup>®</sup> Flowdrive SU

For Control, Flexibility, and  
Ease of Use in Manufacturing

## Benefits

- Reduced operating time and labor costs in CIP (Clean-In-Place), buffer storage, and cleaning validation through a single-use solution
- Robust and reliable process control powered by intuitive Process Step Editor control software, pre-calibrated single-use sensors, advanced diaphragm pump, and unique pinch valve block
- User-optimized system architecture and easy flow kit installation enable quick turnaround between batches

## Product Information

The Resolute<sup>®</sup> Flowdrive SU supports two sizes of flow kits for flexible use in Current Good Manufacturing Practice (cGMP) clinical and commercial operations. Instrumentation is sourced from established and respected biotech suppliers with enhanced Sartorius BioPAT<sup>®</sup> flow meter technology. The flow kit volume and flow rate is optimized to deliver high-resolution separations, making Resolute<sup>®</sup> Flowdrive SU suitable for processing columns, membranes, and monoliths. The flow kits come in both isocratic and gradient versions. Unique pinch valve blocks enable the system to accommodate both  $\frac{3}{8}$  in. and  $\frac{1}{2}$  in. flow kits, conferring maximum flow rates of 600 L/hr and 900 L/hr, respectively. The operation range is 10–60 cm diameter for prepacked or conventional column and membrane chromatography capsules.



## System Concept

The Resolute® Flowdrive SU offers a combination of hardware, automation, and single-use assemblies designed to work together seamlessly. Clever system design ensures ease of use when running fully automated chromatography process sequences with simplified single-use assemblies, incorporating all critical sensors and instrumentation technologies. Flexibility is a key requirement for single-use system design. The system offers the end user a choice of single-use sensors for isocratic, gradient, filter/bubble-trap, column, and outlet flow kits.

A review of your specific process needs with our application specialists or integrated solutions engineers will ensure a solution that exactly meets all process requirements. This might be achieved with our standard platform design for the Resolute® Flowdrive SU, or it might lead to the creation of a custom design.

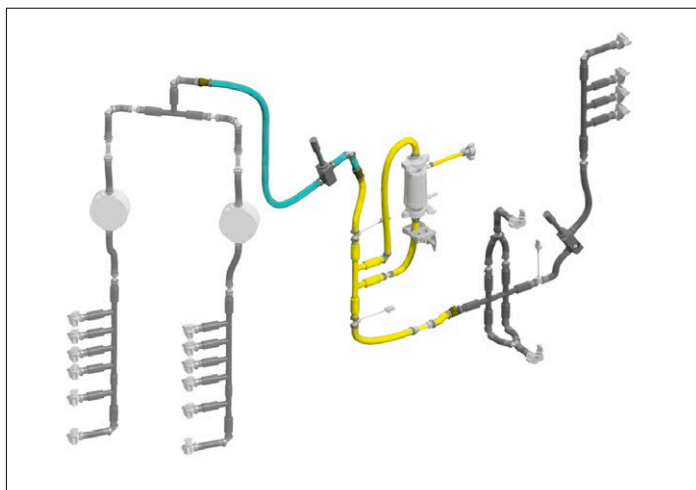


Figure 1: Resolute® Flowdrive Gradient Flow Kit

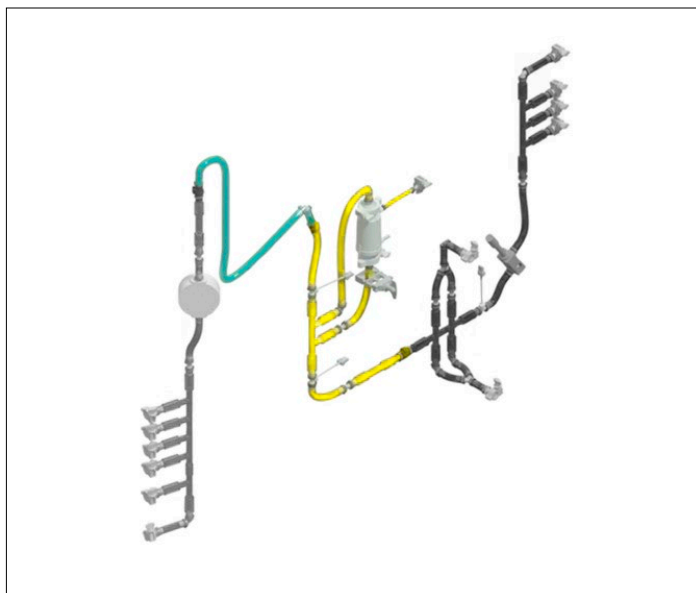


Figure 2: Resolute® Flowdrive Isocratic Flow Kit

## Process Automation and Control

The Process Step Editor is a programmable logic controller-based automation that enables process robustness in manufacturing environments and complies with 21 CFR Part 11 and cGMP guidelines.



Figure 3: Fully maneuverable touchscreen human machine interface (HMI).

Supervisory control and data acquisition (SCADA) process data is captured using the integrated analytical tool software module via open platform communications (OPC) and saved to a discrete database. Data can be displayed in customized charts, and historical trend analysis can be carried out for comparison of batches. Calculation and reporting of critical process indicators, such as transition analysis, peak asymmetry, and height equivalent to a theoretical plate (HETP), is simplified with the analytical tool.

## Key System Features

- Isocratic and gradient configurations for resin, monolith, and membrane chromatography
- Flexibility in using  $\frac{3}{8}$  in. and  $\frac{1}{2}$  in. single-use flow kits
- Unique pinch valve block technology simultaneously reduces the void volume and enables easy flow kit installation
- Ready to operate with pre-calibrated single-use sensors
- Compact system design with maneuverable HMI
- cGMP compliant design and documentation

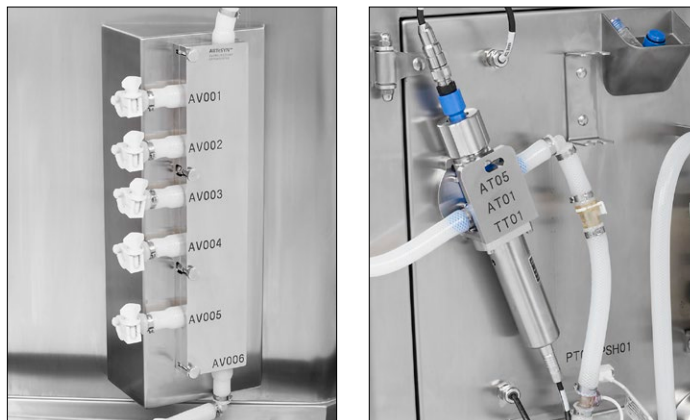


Figure 4: Pinch valve buffer inlet block (left); compact single-use flow cell (right).

# Technical Data

## System Specifications

| System Dimensions and Weight |  | System Capacity             |                                  |
|------------------------------|--|-----------------------------|----------------------------------|
| Dimensions (W × D × H)       | 186 × 80 × 180 cm (73 × 31.6 × 71 in.) | $\frac{3}{8}$ in. Flow Kits | $\frac{1}{2}$ in. Flow Kits      |
| Weight (Net)                 | 550 kg (1213 lb)                       | Volumetric Flow             | 18 to 600 L/hr                   |
|                              |  | Tubing ID                   | 36 to 900 L/hr                   |
|                              |  | Hold-up Volume              | $\frac{3}{8}$ in. (0.95 cm)      |
|                              |  | Column Diameter             | $\frac{1}{2}$ in. (1.27 cm)      |
|                              |  | Pressure Rating             | 0 to 4 bar                       |
|                              |  | System Pumps                | Up to × 2 diaphragm (single-use) |
|                              |  | Inlets                      | 6 per pump                       |
|                              |  | Outlets                     | 4                                |

## Component Specifications

| Instruments                     | Range                                | Accuracy  | Location                                 |
|---------------------------------|--------------------------------------|---|--|
| Flow Meter ( $\frac{3}{8}$ in.) | 18 – 600 L/hr                        | ± 5.4 L/hr or 3% of reading (whichever is greater)  | Pre-column, post pump                    |
| Flow Meter ( $\frac{1}{2}$ in.) | 36 – 900 L/hr                        | ± 10.8 L/hr or 3% of reading (whichever is greater) | Pre-column, post pump                    |
| Pressure Sensor                 | 0.50 to 4 bar                        | ± 0.15 bar complete range                           | Post pump, pre-column, post-column       |
| Conductivity Sensor             | 0.0 – 150 mS/cm                      | ± 2%  | Pre-column, post-column                  |
| Temperature Sensor              | 4 – 40 °C                            | 1 °C  | Part of conductivity sensor              |
| pH Sensor                       | 0 – 14 pH                            | ± 0.2 pH  | Pre-column, post-column                  |
| UV Sensor                       | 0 – 2 AU                             | ± 2%  | Post-column                              |
| Air Sensor                      | Integrated in pre-column flow sensor | N/A   | Pre-column (integrated into flow sensor) |
| Level Sensor                    | Capacitive                           | N/A   | Bubble trap (filter)                     |

# Ordering Information

## Resolute® Flowdrive SU System

For quotation please contact your local Sales Representative.

| Part Number     | Description   |
|-----------------|---|
| LGRCHR1000SGFPO | Resolute® Flowdrive SU with UV wavelength 280 nm. (Electrical rating: CE)           |
| LGRCHR1000SGFP1 | Resolute® Flowdrive SU with dual wavelength 280 and 300 nm. (Electrical rating: CE) |
| LGRCHR1000SGFP2 | Resolute® Flowdrive SU with dual wavelength 254 and 280 nm. (Electrical rating: CE) |
| LGRCHR1000AGFPO | Resolute® Flowdrive SU with single wavelength 280 nm. (Electrical rating: UL)       |
| LGRCHR1000AGFP1 | Resolute® Flowdrive SU with dual wavelength 280 and 300 nm. (Electrical rating: UL) |
| LGRCHR1000AGFP2 | Resolute® Flowdrive SU dual wavelength 254 and 280 nm. (Electrical rating: UL)      |

## Resolute® Flowdrive Flow Kits

For quotation please contact your local Sales Representative.

The table below provides part numbers for the standard product line. Please contact Sartorius for a customized solution.


| Part Number | Description  |
|-------------|--|
| 7450-0481A  | Resolute® Flowdrive Flow Kit with 3/8 in. tube size, Inlet Gradient    |
| 7450-0481B  | Resolute® Flowdrive Flow Kit with 3/8 in. tube size, Pre-Column        |
| 7450-0481C  | Resolute® Flowdrive Flow Kit with 3/8 in. tube size, Bubble Trap       |
| 7450-0481D  | Resolute® Flowdrive Flow Kit with 3/8 in. tube size, Outlet            |
| 7450-0481E  | Resolute® Flowdrive Flow Kit with 3/8 in. tube size, Inlet Isocratic   |
| 7450-0481F  | Resolute® Flowdrive Flow Kit with 1/2 in. tube size, Inlet Gradient    |
| 7450-0481G  | Resolute® Flowdrive Flow Kit with 1/2 in. tube size, Pre-Column        |
| 7450-0481H  | Resolute® Flowdrive Flow Kit with 1/2 in. tube size, Bubble Trap       |
| 7450-0481J  | Resolute® Flowdrive Flow Kit with 1/2 in. tube size, Outlet            |
| 7450-0481K  | Resolute® Flowdrive Flow Kit with 1/2 in. tube size, Inlet Isocratic   |
| 7450-0481L  | Resolute® Flowdrive Flow Kit with 3/8 in. tube size, Pre-Column Bypass |
| 7450-0481M  | Resolute® Flowdrive Flow Kit with 1/2 in. tube size, Pre-Column Bypass |

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