rheonics

ReCircLine System with Type-SR Sensor

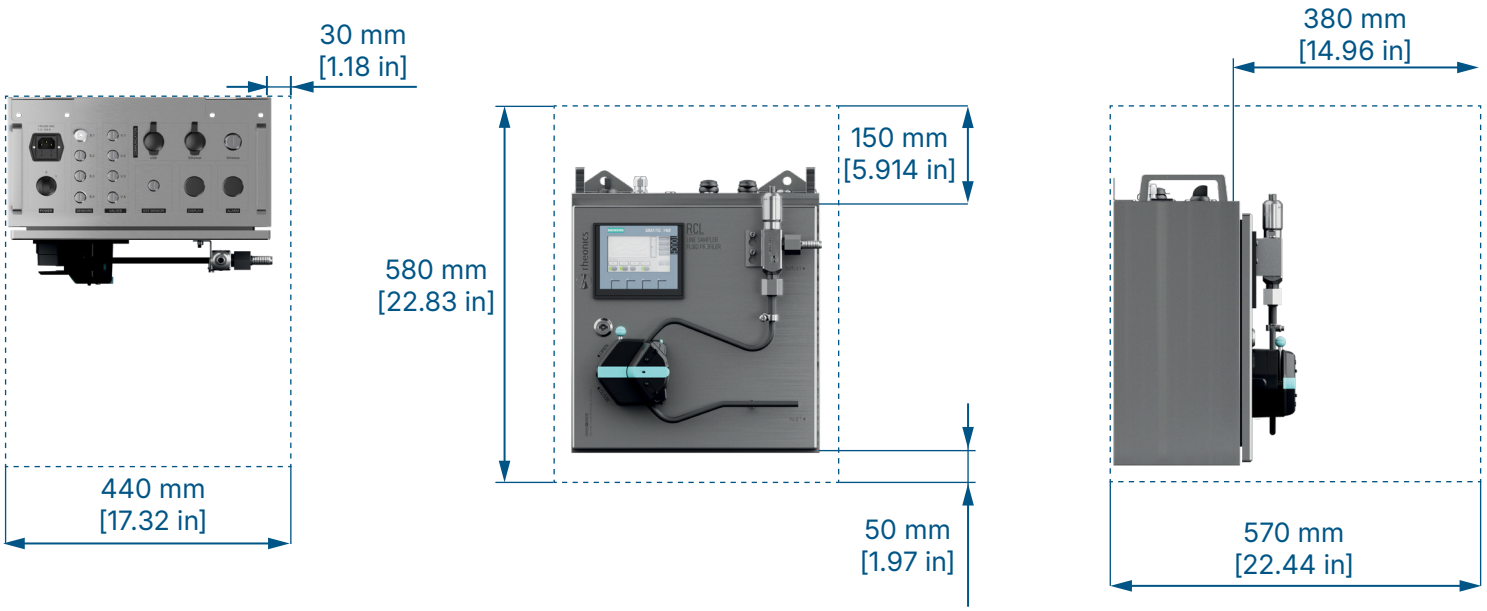
All-in-one Recirculation Line with integrated Rheonics sensor probe for controllable and repeatable flow conditions.



© Rheonics | Brochure

Rheonics ReCircLine System

The ReCircLine system enables fluid measurements in tanks or process lines, where a direct sensor probe installation is not feasible due to e.g. the presence of a mixer. It is possible to connect the outlet back to the process or to a waste bucket. A Rheonics inline viscometer (SRV or SRD) is installed in the ReCircLine system to provide stable and repeatable measurements under controlled flow conditions, independent of disturbances in the main process line or tank.



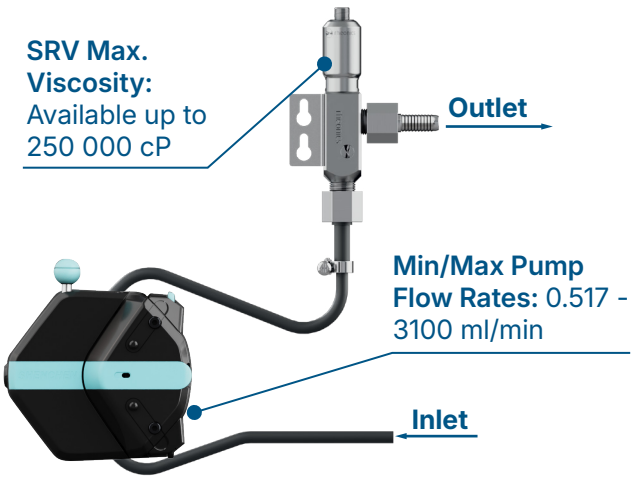
The dashed lines show the recommended clearance space around the ReCircLine system for a wall installation units

Parameter	Value
HMI Interface	4.3" touchscreen
Control System	Siemens PLC System
Communication Interface	Ethernet Port with Profinet

Parameter	Value
Total Weight	17 kg (37.5 lb)
Power Input	110 / 220 V AC
Power consumption	max. 150 W

Flow loop

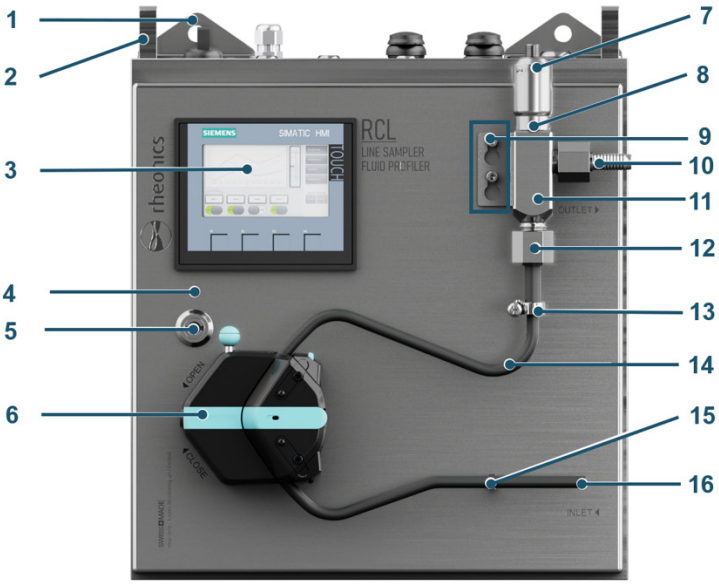
- **Full flow control** using Continuous flow conditions or occasional pump operation.
- **Easy assembling and disassembling** for cleaning, hose exchange etc.
- **Hose available in FKM** with dimensions of ID 9.6 / OD 14.4 mm (Alternative materials can be requested from external suppliers).



Operation

For non-Newtonian fluids, viscosity is shear rate and therefore flow-dependent. For this reason, it is strongly recommended to perform viscosity measurements under constant, steady-state flow conditions. The ReCircLine System supports three operating modes – continuous, pulse, and intermittent – each capable of delivering the stable flow required for reliable measurements. In all cases, the viscosity value of interest is at a steady flow. Start-up and static behavior are typically not of interest.

Rheonics RCL - Components





N°	Description
1	Two wall angles with mounting holes
2	Two handles for carrying
3	4.3″ HMI Interface
4	Stainless Steel Standard Cabinet
5	Cabinet lock
6	Pump head
7	Rheonics Sensor
8	O-ring FKM D15.1 x 1.6 mm
9	Two screws for attaching the latch
10	Outlet of flow loop
11	Flow cell with latch

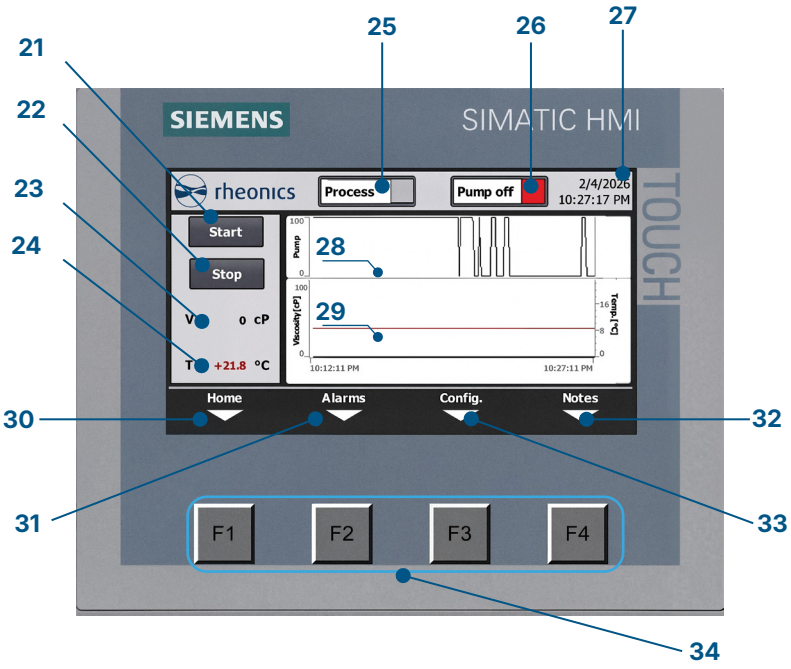
N°	Description
12	Press nipple
13	Hose clamp for the barbed thread
14	Hose
15	Hose clip for fixing the hose location
16	Inlet of flow loop
17	Power Port
18	Power Switch
19	Rheonics Sensor cable port
20	USB Port for SME connection
21	Ethernet Port

Main Features

- All-in one Recirculation Line with integrated Rheonics sensor probe
- Controllable and repeatable flow conditions, especially useful for non-Newtonian fluids
- Process Monitoring using Siemens PLC
- Industrial Ethernet communication with external PLC or SCADA systems

HMI

Using the HMI which is integrated in the ReCircLine System allows for monitoring the temperature and viscosity values, and setting the pump operation conditions such as: operational mode, pump speed, pump cycle times, and maximum run time.

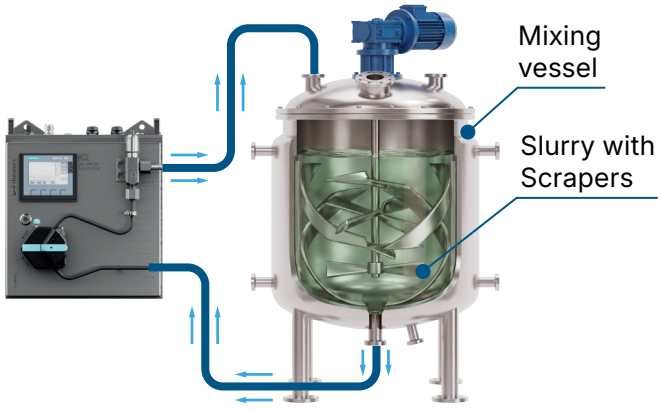


N°	Description
21	Start Button
22	Stop Button
23	Viscosity Display (V)
24	Temperature Display (T)
25	Process Status Indicator
26	Pump Status Indicator
27	Date and Time Display
28	Viscosity Trend
29	Temperature Trend
30	Home Navigation Icon
31	Alarm Navigation Icon
32	Settings Navigation Icon
33	Comment Icon
34	Function Keys (F1 to F4)

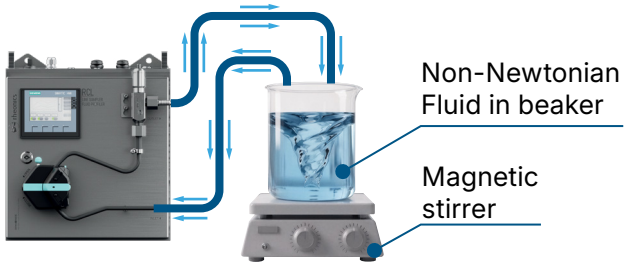
Process Integration

The ReCircLine System can be directly connected to your main pipe or a tank. Connecting the outlet back to the pipe, to the tank, or to a waste bucket provides flexible routing options for your fluid.

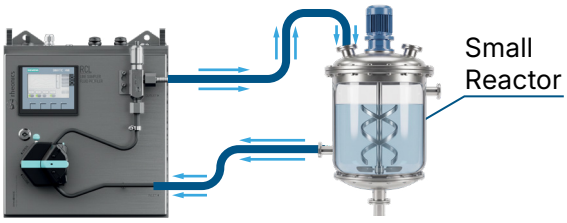
1.Sampling Mixing Vessels



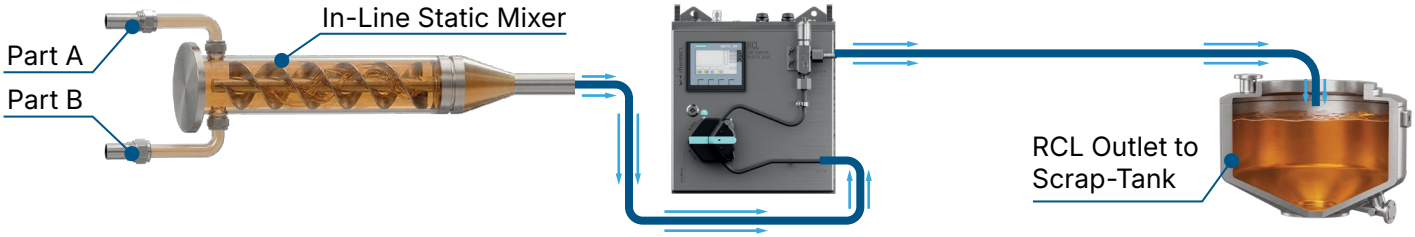
2.Characterizing Shear-Sensitive Fluids



3.Monitoring Small-Scale Vessels & Reactors



4.Monitoring Fouling-Prone or Sticky Fluids



ReCircLine System Industry Applications

The Rheonics ReCircLine (RCL) is an all-in-one recirculation sampler and fluid profiler with an integrated Type-SR sensor probe. It extracts a controlled, representative slipstream to enable real-time monitoring where direct inline installation is impossible.



Sampling Mixing Vessels

Applications: Battery cathode/anode slurry mixers or chocolate conches where moving helical blades continuously sweep the vessel walls.

Installation Point
Connect bypass to sampling port. Loop through RCL, return separately.

Key benefit - Protection
Ideal for vessels with moving blades that damage stationary sensors



Characterizing Shear-Sensitive Fluids

Applications: Generating viscosity curves for specialized polymers, cosmetic gels, or complex coatings without interrupting main production.

Installation Point
Draw fluid into RCL. Vary flow rates to map profiles.

Key benefit - Protection
Measures non-Newtonian fluids with flow-dependent viscosity changes.

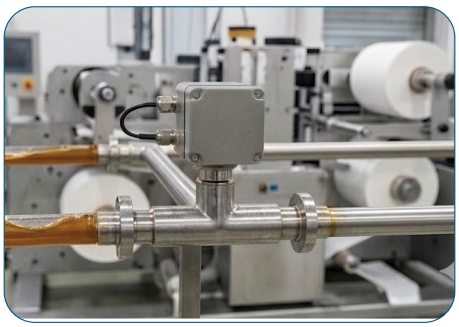


Monitoring Small-Scale Vessels & Reactors

Applications: Pilot-scale chemical synthesis or pharmaceutical research reactors where space is tight and standard probes disrupt internal mixing dynamics.

Installation Point
Route bypass from bottom port through RCL back to top.

Key benefit - Protection
Perfect for small reactors lacking space for direct-insertion probes.



Monitoring Fouling-Prone or Sticky Fluids

Applications: Two-part adhesive lines for medical island dressings, using a Y-junction to divert a slipstream for on-demand curing analysis.

Installation Point
Draw fluid into RCL. Vary flow rates to map profiles.

Key benefit - Protection
Measures non-Newtonian fluids with flow-dependent viscosity changes.

Core Benefits

The Rheonics ReCircLine (RCL) is an all-in-one recirculation sampler and fluid profiler with an integrated Type-SR sensor probe. It extracts a controlled, representative slipstream to enable real-time monitoring where direct inline installation is impossible.

Zero Main-Line Disruption:
Measurements leave total production throughput unaffected.

Easy Maintenance:
Isolate, purge, or service the sensor without shutting down the primary process.

Hardware Integrity:
Eliminates the need to modify complex, high-cost mixing equipment.

rheonics

Ready to isolate your measurements from interferences?

Contact us today to configure your ReCircLine system and ensure stable, lab-grade data.

https://rheonics.com/products/rcl-re-circ-line

rheonics

info@rheonics.com

+1 713 955 7305