

Single-Use Flow Measurements especially for Quattroflow™ Pumps

LEVIFLOW® flowmeters are designed for noninvasive flow measurements of high-purity fluids with flexible tubing.

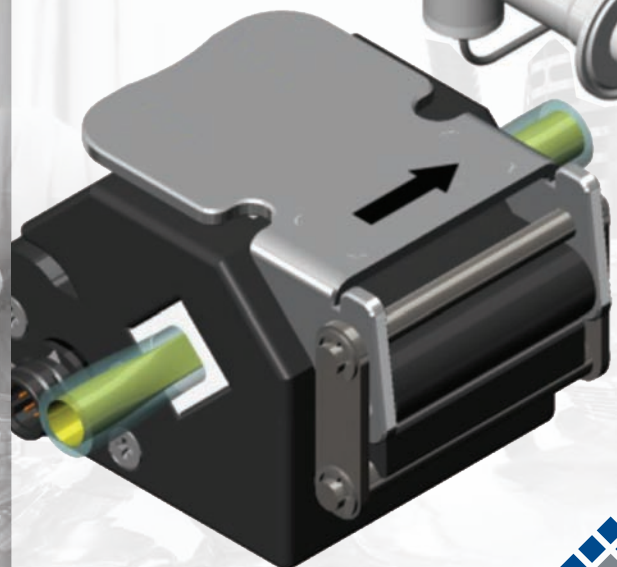
Two piezoelectric transducers, mounted in the sensor housing, generate and receive an ultrasonic wave. The difference of the transit time of both waves is proportional to the velocity and direction of the fluid. Measurement is based on ultrasonic waves those signals are changed due to flow velocity.

The flowmeters are available in two versions:

- **Inline Sensor** – Specially calibrated to fit Quattroflow flow range
- **Clamp-On Sensor**

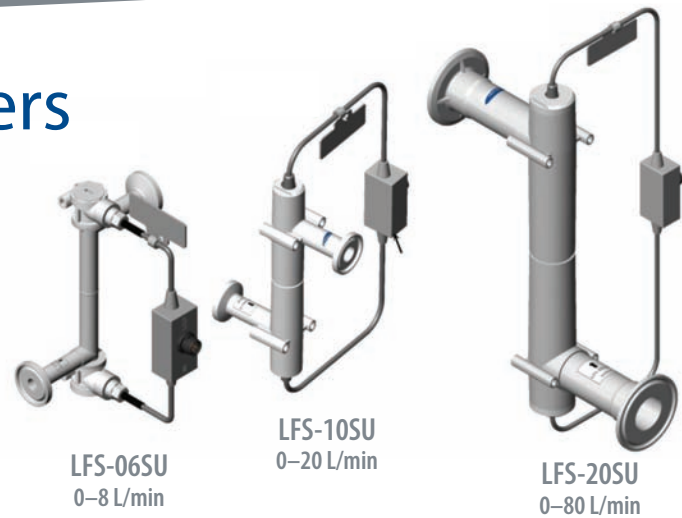
LEVIFLOW®
Flowmeters




Quattroflow™ now offers single-use, ultrasonic flow sensors for precise and non-invasive flow measurements



Inline Sensor Flowmeters

- **Accuracy:** 1% of Reading
- **Full flow range:** 8-80.000 ml/min / 0.48-4'800 l/h
- **Design:** Polypropylene (PP) Wet material, TriClamp fittings
- **Sterilization method:** Gamma, CIP (PP compatible). No autoclave/SIP
- **Biocompatibility:** FDA 21 CFR , USP Class VI, BSE/TSE Free Statement, Validation Guide Available upon request
- **Shipment:** Double-bagged, non sterile

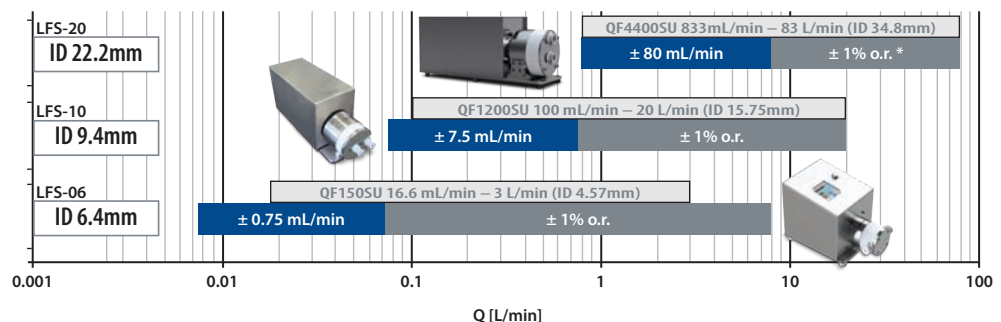


Part Number	LFS-06SU-Z-SC1	LFS-10SU-Z-SC1	LFS-20SU-Z-SC1
Flow range [L/min]	0.008 – 8	0.08 – 20	0.8 – 80
Flow range [L/h]	0.48 – 480	4.8 – 1.200	48 – 4.800
Suitable for Quattroflow pump size	 QF150SU	 QF1200SU QF1200SU-M	 QF4400SU QF5050SU
Fitting Path ID [mm]	3/8" TC 6	1/2" TC 10	1" TC 20
Wetted Surface Area [cm ²]	32.2	53.2	173.5
Wetted Surface Area [ml]	4.8	12.3	95.8
Weight [g]	43	61	125
Maximum Fluid Pressure	5 bar	5 bar	5 bar
Pressure Drop Coefficient C DP = C x Q ² (for water) Q = Flow [L/min] DP = Press Drop [kPa = 10mbar]	0.88 at 20°C	0.075 at 20°C	0.0035 at 20°C
Fluid Temperature / Ambient Temp	10–60 °C (50–140 °F) / 0– 40 °C (32-104 °F)		
Kinematic Viscosity / Sound Speed	0.8 – 40 mm ² /s (0.8 – 40 cSt) / 1000 – 2200 m/s		
IP Classification	IP-65 (for connected sensor)		
Wet Material / Sterilization Methods	Polypropylene (FDA, USP VI, ADI free) / Gamma robust for up to 40 kGy		
Electrical Connector	Circular type (IP-67), lock-release mounting		
Cables	Various extension cables available.		
Part Number Mounting Kit (anodized aluminum)	LMK-1.1	LMK-2.1	LMK-4.1

Inline Sensor–Advantages

1. High accuracy flowmeter solution for Single-Use DISPOSABLE applications,
2. Highly flexible configuration and monitoring options
3. Same Converter (and Cables) as Clamp-On Sensors

Inline Sensor–Accuracy



* Validation Pending

Clamp-On Sensor Flowmeters

- **Accuracy:** 3% of Reading (15-100% Full Scale)
- **Full flow range:** 0.2-80 L/min / 12-4.800 L/h
- **Design:** Re-usable Clamp-on for flexible tubing (Silicone, C-flex)
- **Calibration:** 4 sets Included (Silicone/C-flex, 20/37°C), Chip for automatic Sensor Parameters Transfer, Calibration selection on converter/console

Clamp-On Sensor-Advantages




1. Perfect for Single-Use DISPOSABLE Applications, "NO" CONSUMABLE COST (just tubing costs)
2. Highly flexible configuration and monitoring options
3. Same Converter (and Cables) as Single-Use Inline Sensors

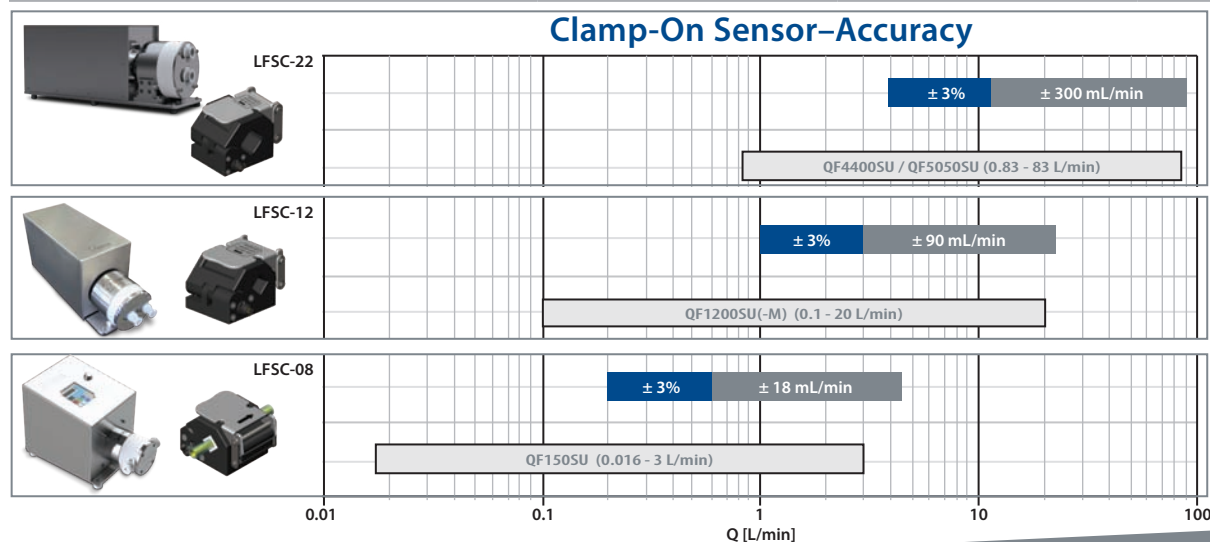


LFSC-08D
(4 L/min / 240 L/h)
ID = 1/4" = 6.4 mm
OD = 3/8" = 9.6 mm

LFSC-22D
(80 L/min / 4,800 L/h)
ID = 3/4" = 19.05 mm
OD = 1" = 25.4 mm

LFSC-12D
(20 L/min / 1,200 L/h)
ID = 3/8" = 9.5 mm
OD = 9/16" = 14.7 mm

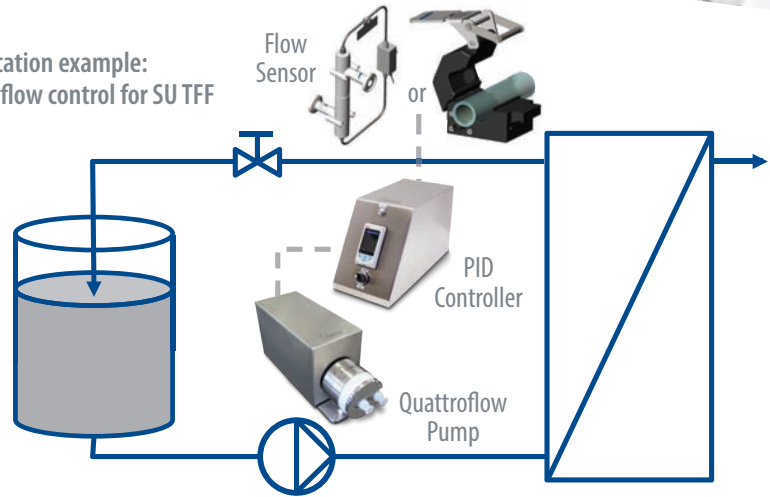
Part Number	LFSC-08D-001	LFSC-12D-007	LFSC-22D-005
Flow range [LPM] Flow range [LPH]	0.2 – 4 12 – 240	1 – 20 60 – 1.200	4 – 80 720 – 4.800
Suitable for Quattroflow pump size (not whole flow range covered)	 QF150SU	 QF1200SU QF1200SU-M	 QF4400SU QF5050SU
Tubing ID Tubing OD	ID = 1/4" = 6.4 mm OD = 3/8" = 9.5 mm	ID = 3/8" = 9.5 mm OD = 9/16" = 14.7 mm	ID = 3/4" = 19.05 mm OD = 1" = 25.4 mm
Accuracy of Reading > 15 % of Full Scale < 15 % of Full Scale	±3 % ±18 mL/min	±3 % ±90 mL/min	±3 % ±360 mL/min
Maximum Fluid Pressure	6.5 bar	6.5 bar	4 bar
Calibration sets	Water @ 20°C and 37°C Silicone and C-Flex®		
Fluid Temperature / Ambient Temp	10 – 60 °C (50 – 140 °F) / 0 – 40 °C (32 - 104 °F)		
Standard Tube Material	C-Flex® 1 (Types: 374, 072 and 082) and Silicone (Pharma 50, 65 and 80)		
Kinematic Viscosity Sound Speed	0.7 – 10 mm ² /s (0.7 – 10 cSt) 1300 – 1700 m/s (others on request)		
IP Classification	IP-65 (for connected sensor)		
Allowed Cleaning	Wiping with IPA or water		
Electrical Connector	Circular type (IP-67), lock-release mounting		
Cables	Various extension cables available.		



Quattroflow™ PID Controller



Application example:
Cross-flow control for SU TFF



Process Controller

Manufacturer	ABB
Type	CM10 Process controller

Signal I/O

Signal Input	1 x Leviflow SU Flow Sensor
Analogue Output (to Quattroflow Pump)	<ul style="list-style-type: none"> • 4-20 mA for QF1200HT and QF4400HT alternatively • 0-5 VDC for QF1200CV or QF150

Power Supply

Power supply PID Controller	100 – 230 VAC, 1-phase, 50/60 Hz
Output power supply for sensors	24 VDC, max. 500 mA

Connectors

Signal Input	1 x Leviflow specific input
Analogue Output	1 x M8x1, 4 pole
Converter configuration	1 x RS485 to USB

Cables Included

Signal cable (between sensor and PID controller)	Need to be ordered separately
Analogue output (between PID controller and Quattroflow)	Included
Power supply cable	Included

Order Code

QFPID01E-4-20-LF	230 VAC EU plug	1 x Leviflow input
QFPID01A-4-20-LF	115 VAC US plug	1 x 4-20 mA analog output
QFPID01U-4-20-LF	230 VAC UK plug	(for QF1200HT and QF4400HT)
QFPID01E-0-5-LF	230 VAC EU plug	1 x Leviflow input
QFPID01A-0-5-LF	115 VAC US plug	1 x 0-5 VDC analog output
QFPID01U-0-5-LF	230 VAC UK plug	(for QF1200CV or QF150)

Options On Request:

- Two channel input
- Input for PendoTECH SU pressure sensors
- Ethernet or Modbus input

Clamp-on flow sensor, 3 sizes



Inline flow sensor, 3 sizes with special calibration



OR

Sensor Connection



Interconnection Cable

Part Number	Length [m]
LFI-C.1-10	1
LFI-C.1-30	3
LFI-C.1-60	6

OR



PID Controller with integrated converter
Fixed calibration for 20°C C-flex or silicone tubing for direct control of Quattroflow pump



Converter for cabinet installation



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Fluid Systems

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