



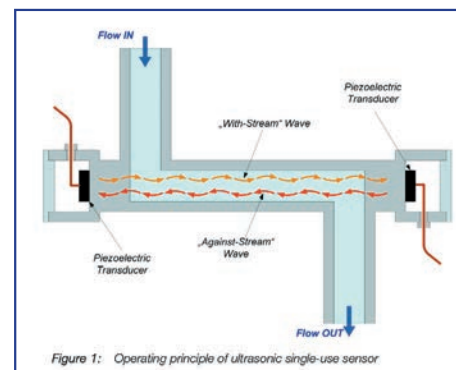
LEVIFLOW® Single Use Flowmeters & PendoTECH LEVIFLOW Sensor Monitor



INTRODUCTION

The LEVIFLOW® single-use flowmeters are for ultrasonic flow measurements in many different applications in the Biopharm Industry. Figure 1 illustrates the operating principle. Two piezoelectric transducers, mounted in the sensor housing, generate and receive an ultrasonic wave. The wave going in direction of the flow (with-stream wave) is accelerated and the wave going against the flow direction (against-stream wave) is slowed down. The two waves are processed by the PendoTECH Leviflow® Sensor Monitor. The difference of the transit time of both waves is proportional to the velocity of the fluid. The monitor has a digital LED display for the flow reading. It also has both a 4-20mA analog output and a digital frequency output. These outputs facilitate interface of the monitor to other systems for process control and data acquisition.

The standard configuration of the LEVIFLOW single-use flowmeters (Figure 2) consists of a flow sensor and the PendoTECH LEVIFLOW Sensor Monitor with a digital signal processor (DSP) for processing the sensor signals.

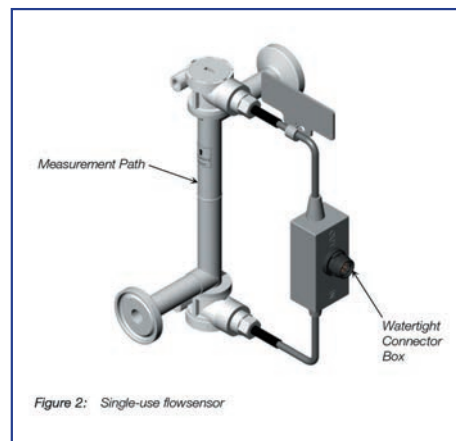


SYSTEM BENEFITS

- High precision (1%) flow measurement
- Flow sensor can be used as single use to prevent cross-contamination or re-used
- No moving parts -> no particle generation
- Improved bubble robustness due to DSP technology
- Easy integration into OEM equipment
- The wet materials of the single-use sensors fabricated from biocompatible (FDA, USP-VI, BSE/TSE and Animal free) gamma sterilizable polypropylene (PP).

APPLICATIONS

- TFF filtrate flow
- Normal flow/depth filtration
- Chromatography



Sensor Specifications:

Sensor Type/Characteristics	FM-LFS-03SU	FM-LFS-06SU	FM-LFS-10SU	FM-LFS-20SU
Flow Range [lpm] Triclamp Fitting Size Measurement Path ID in [mm]	0 – 0.8 3/8" (ID = 6.4 mm) 2.5	0 – 8 3/8" (ID = 6.4 mm) 6	0 – 20 1/2" (ID = 9.4 mm) 10	0 – 80 1" (ID = 22.2 mm) 20
Accuracy of Reading Note: Repeatability < Accuracy/2	see Figure 3	LFS-06SU: > 1.7 l/min: ±1% < 1.7 l/min: ±17 ml/min	F> 4.7 l/min: ±1% < 4.7 l/min: ±47 ml/min	>18.8 l/min: ±1 % <18.8 l/min: ±188 ml/min
Wetted Surface Area [cm ²] Wetted Surface Area [ml] Weight [g]	29.5 4 42	32.2 4.8 43	53.2 12.3 61	173.5 95.8 125
Pressure Drop Coefficient C at 20°C $\Delta P = C \times Q^2$, Q = Flow [lpm], ΔP = Press. Drop [kPa]	16.8	0.88	0.075	0.0035
Fluid Temperature Ambient Temperature Maximum Fluid Pressure Kinematic Viscosity Sound Speed Wet Materials Sensor Enclosure Classification Cable Jacket Material Cable Length (re-usable cable) Electrical Connectors	Normal range: 10 – 60 °C (50 – 140 °F) 0 – 40 °C (32 – 104 °F) 0 – 0.5 MPa (0 – 5 bar, 0 – 72.5 psi) 0.8 – 40 mm ² /s (0.8 – 40 cSt) 1000 – 2200 m/s Polypropylene (FDA, USP VI, ADI free), Gamma robust for up to 40 kGy IP-65 (for connected sensor) PVC 9 ft/3 meter Circular type (IP-67), lock-release mounting			

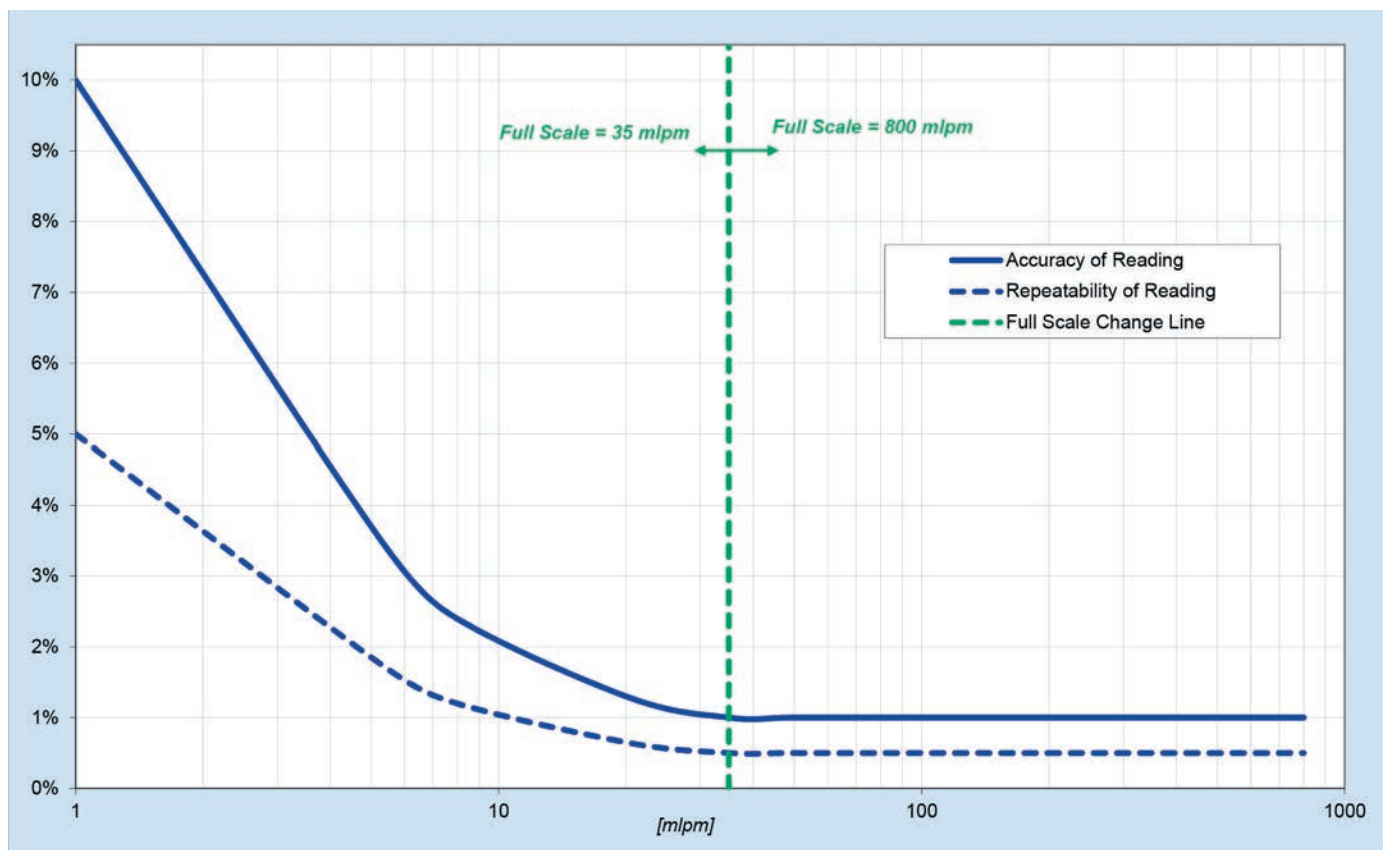
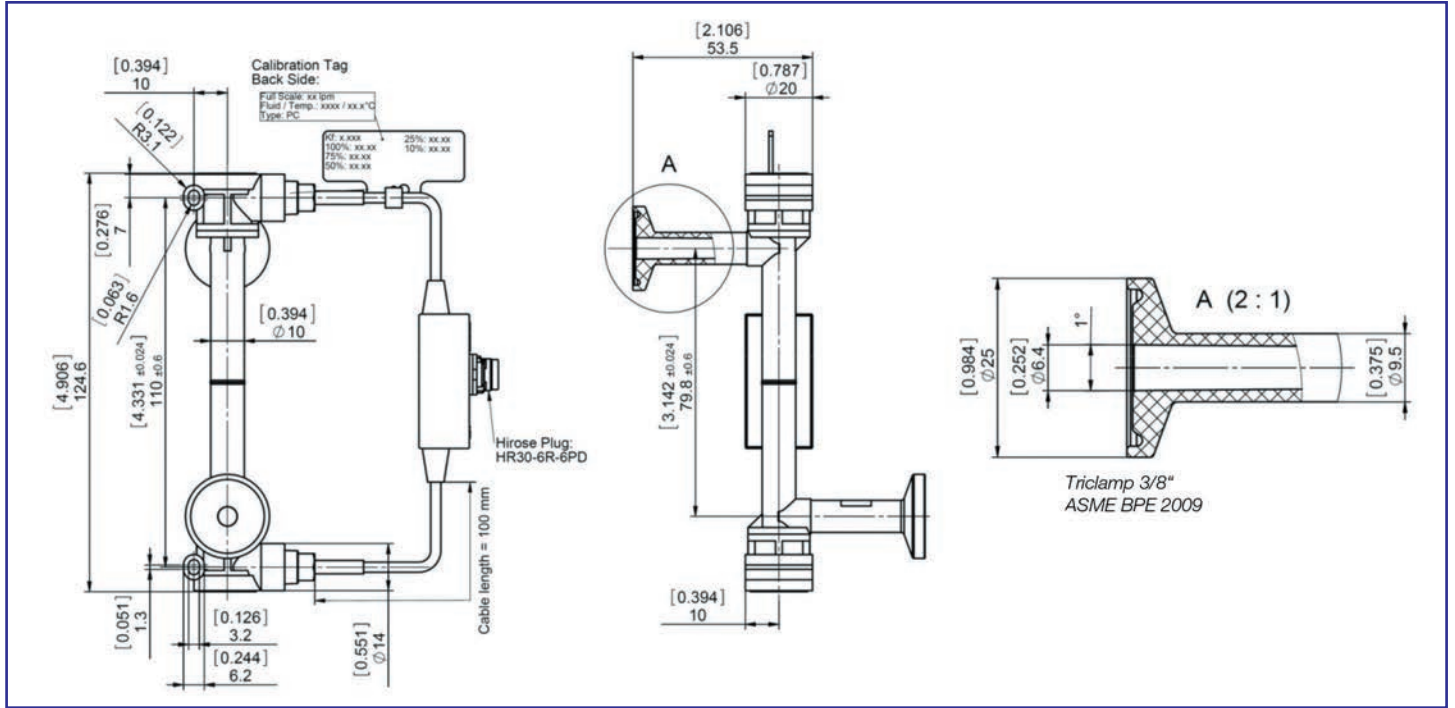
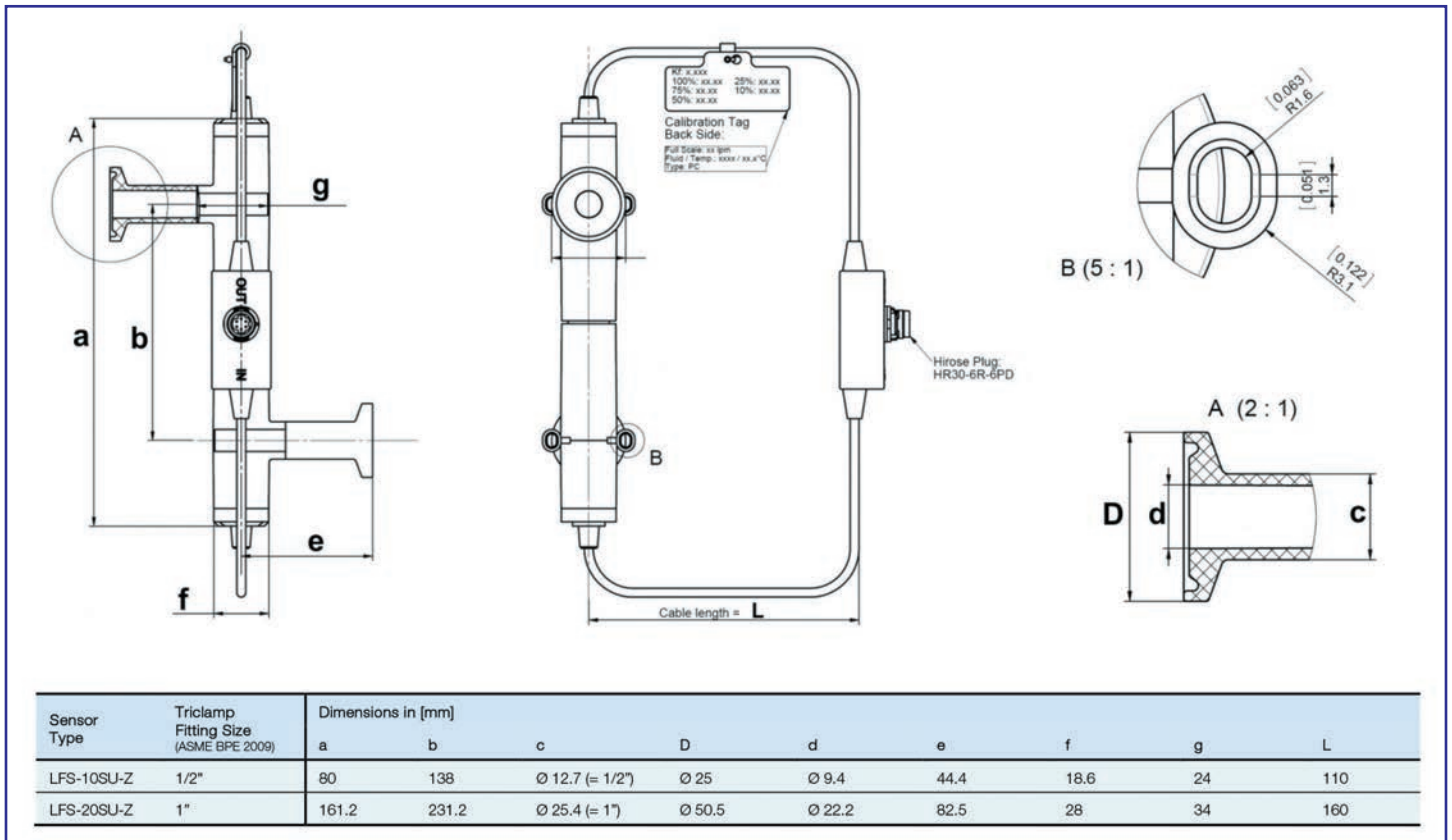


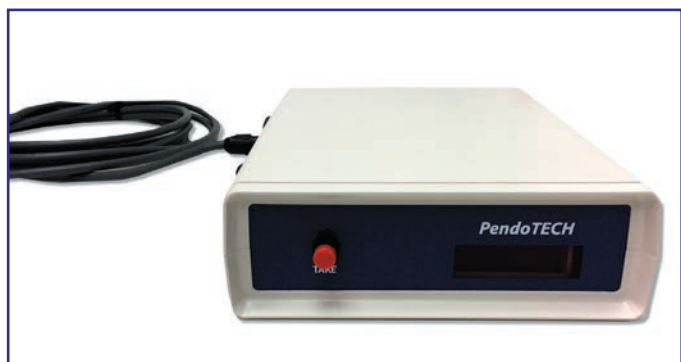
Figure 3: Accuracy and repeatability for single-use sensor FM-LFS-03SU



Dimensions in mm(inches) for FM-LFS-03SU and FM-LFS-06SU flow sensors



Dimensions for FM-LFS-10SU and FM-LFS-20SU flow sensors



FMT-LFS PendoTECH Leviflow Sensor Monitor



Flow sensor stand included with monitor

PendoTECH Leviflow® Monitor Specifications

Characteristics	Descriptions or Values
Power Supply	24 VDC +/- 10%
Current/Inrush (Start-Up) Current	150mA / Peak of 3.8 A within 210 µs
Ambient Temp	0-40 °C (32-104°F)
Humidity Range	30-85% R.H. (no condensation)
Interfaces	Analog Milliamp: Analog Output 4-20mA (20 mA set to max flow automatically) Digital as Frequency (max flow set tp 1KHZ)
Weight	485g
Dimensions (W x L x H) cm	13.6525 x 19.05 x 4.445

Ordering Information

FM-LFS-03SU	Leviflow single use flow sensor to 0.8LPM
FM-LFS-06SU	Leviflow single use flow sensor to 8LPM
FM-LFS-10SU	Leviflow single use flow sensor to 20LPM
FM-LFS-20SU	Leviflow single use flow sensor to 80LPM
FMT-LFS	PendoTECH Leviflow Sensor Monitor
FMT-LFS-CABLE3	Flowmeter cable
MC-6897K35	Micro connector with integral cable with flying leads



Complete setup

LEVIFLOW® is a registered trademark of Levitronix Technologies.

For warranty information see our website at <http://www.pendotech.com/warranty>

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