microPro

Near-Surface Micro-Profilometer Shear Stress Sensor

Reliable. Portable. Precise.

The microPro shear stress sensor measures wall shear using a near-wall traversing 1-D miniLDV. It is designed to automatically obtain the mean velocities at a number of points within the log region and possibly within the linear region of laminar or turbulent boundary layer. Then the velocity data is used to obtain the best estimate for velocity gradient at the wall. Knowing the coefficient of viscosity, the wall shear stress is calculated. MSE's microPro shear stress sensor requires no alignment or calibration by the user.

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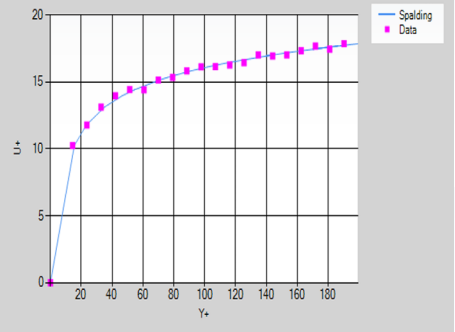
The microPro, the size of a small flashlight, is self-contained and permanently aligned; no calibration required.

The probe contains a miniLDV, micro translation stage, and receiving optics. MSE provides custom attachment hardware designed for your flow facility.

The processing software automatically finds the location of the window, collects near wall boundary layer mean velocity profile, curve fits the data with Spalding, Musker or a profile of your choice to calculate the wall shear.



Advantages of the microPro

- No alignment or calibration required
- Compact, light-weight, and self-contained
- NIST traceable calibration offered
- Works as well for any transparent medium, including air and water.

Specifications

WARNING Avoid Exposure To Beam
Laser Radiation | Class 3B (IIIb) Laser Product

Measurement Specifications	
Sheer Stress Range	0.7 to 6500 Pa (water)* 0.015 to 140 Pa (air)*
Repeatability	97%
Accuracy	97%
Measurement Volume	
Dimensions	15 x 20 x 50 µm*
Standoff	Up to 15mm
System Specifications	
Total Weight	1.1 lb. (500g)
Total Dimensions	1.6” x 2.4” x 5.9” (40 x 60 x 150mm)
Processing Engine	8.2” x 6.8” x 2.4” (208 x 172 x 60 mm)
Cable Length	10’ (3.05 m)
Power Supply	12 VDC, 0.3 Amp

Laser Specifications	
Laser Power	110 mW
Wavelength	658 nm
Laser Type	Class IIIb
Operating Parameters	
Temperature	5 to 40°C
Pressure	Up to 3 bars
Software OS	Windows 10 & 11
Port	USB-A

Optional Features

- Water Proof Housing
- High Pressure and High Temp. Housing
- Battery Powered

*Values are a function of the fringe separation and standoff distance