

## Product description

Flow-Lab™ : Educational Fluid Mechanics Laboratory  
Viosense Corporation



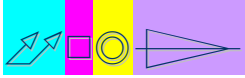
## Summary

The Flow-Lab™ is a flexible training system for teaching fluid mechanics principles and modern flow measurement techniques. It includes a bench-top water tunnel with interchangeable test sections, complete LDV system with 3D traverse and documentation, including student worksheets in Microsoft Word® format for easy modification.

The Flow-Lab™ is targeted at educators who want a turnkey laboratory system to complement their fluid mechanics classes and is also available with the PIV system, PixelFlow-Educational™ and a portable storage cart for convenient storing when not in use.

## Who should be interested?

- Engineering fluids laboratory supervisors and trainers
- Undergraduate fluid mechanics instructors
- Professors interested in teaching the principles and practice of experimental fluid mechanics, turbulence, LDV, PIV and/or data acquisition and processing
- Employees of industry or government research organizations who use modern fluid mechanics diagnostic instrumentation



## Flow-Lab™ System specifications

**Specifications subject to change without notice.**

### Product ID: **Flow loop**

Description: Bench scale re-circulating water tunnel with interchangeable test sections and dye injection system

Power: 115 VAC, 220VAC also available

Size (h x l x w): 43.5" x 52" x 22"

Weight: 90 lbs (empty), 250 lbs (full)

Major components: 1) Water reservoir: capacity: 20 g  
2) Sumersible recirculating pump: 1/3 HP, 0 – 40 gpm  
3) Control valve  
4) Head tower with adjustable stand pipe  
5) Return plenums: wier plenum (standard)  
free plenum (optional, required for hydraulic jump)  
6) Nozzle: contraction ratio: 6.25:1  
7) Dye injection system (uses standard food coloring)

### Product ID: **Interchangeable test sections**

Dimensions: 2" x 2" x 24"

Material: plexiglass with o-ring seals

Airfoil: NACA 0012, 2" cord, adjustable angle of attack

Cylinder: diameter: .25", brass, round, Re = ~20,000

Pipe flow: diameter: .25", length: 23.9", plastic, round

Flat plate: stainless steel plate with knife edge, length: 23.9"

Axisymmetric jet: diameter: 19mm, Re = ~60,000

max. velocity (centerline): ~5 m/s

Impinging jet: diameter: , includes self-sealing quick disconnect

Hydraulic jump: barrier height: 1 3/4"

### Product ID: **Documentation**

Manual: 64 pages

Formats: hard copy and Word® document on CD-ROM

### Product ID: **Measurement system**

Description: 1D MiniLDV-100 probe with VioBP-1 Burst processor and 3D manual traverse

Laser: laser diode, 660 nm, 20 mw power, typical cable length: 15'

Probe volume: size,  $d_x$  x  $d_y$  x  $d_z$ : 400 x 60 x 120 um, typical standoff distance (in air): 100 mm, typical

Velocity: range: 0.008 - 92 m/s, typical

resolution: .1%, typical

accuracy: .3%, typical, depends on SNR

Software: National Instruments LabVIEW® runtime

Outputs:  $U_i$ ,  $i = 1, N$ ,  $U_{bar}$ ,  $U_{rms}$ ,  $U_{bar}(x,y,z)$ ,  $U_{rms}(x,y,z)$

PC: Microsoft Windows 2000®, Intel Pentium4®, recommended

Traverse: dimensions: 6" x 6" x 26" (manual)



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