

LISST-SL

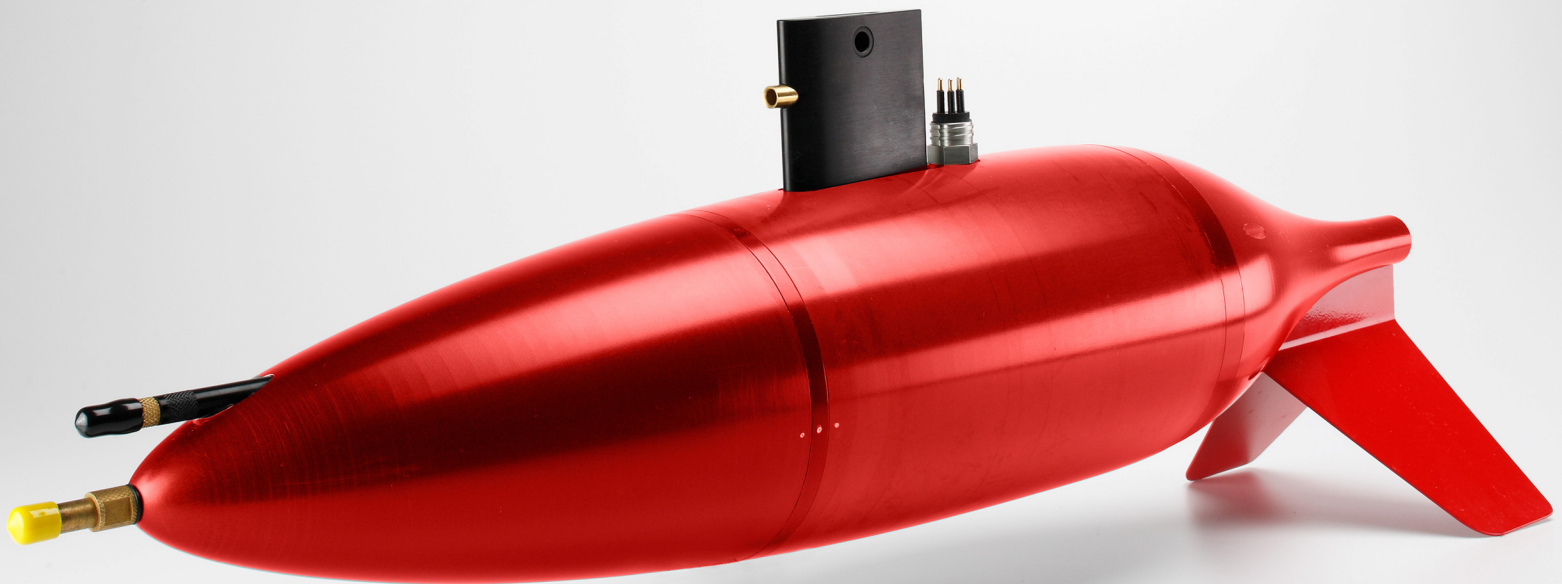
StreamLined Isokinetic Sediment Sensor

- **Particle Size Distribution**
- **Sediment Concentration**
- **River Discharge**
- **Sediment Flux**

The LISST-SL is Sequoia's advanced laser diffraction system for measuring suspended sediment flux and river discharge in rivers and streams. The streamlined body minimizes drag, while the twin fins below the body quickly orient the LISST-SL facing upstream during insertion into the river. Water and sediment is pumped through the instrument; a novel, non-

moving sensor matches the pump intake speed to current speed, making the sample acquisition isokinetic. As the water pass through the enclosed electro-optics cell laser light scattering is measured. This data is transmitted up a USGS B-reel to a Topside Control Box (TCB) for immediate processing. The mean particle size, concentration,

temperature, depth, and current speed is displayed in real-time on a touch panel display and stored on the TCB for offloading and further data processing if desired. Post-processing of the data yields the size distribution in 32 size classes. The LISST-SL, therefore, ultimately, delivers river discharge as well as sediment flux in 32 size classes.



FEATURES

- Small-angle forward laser light scattering (laser diffraction) - compliant with ISO-13320-1 standard
- Isokinetic, self-contained operation
- 2-wire special communication protocol consistent with USGS B-reel use
- Real-time display of multi-parameter measurements: Current speed, temperature, concentration, depth, mean sediment grain size
- Streamlined shape for low drag ($C_D < 0.2$) in fast streams
- Twin stabilizer fins facilitate rapid re-orientation into flow on insertion and maintain accurate orientation
- 4.3" graphics display, 480 × 272 pixels (3.75" W × 2.12" H), 16-bit color allows for easy programming and display of data without a PC
- Switch between ft and ft/s or m and m/s for depth and velocity units.
- Data processing performed on board and stored in ASCII-format; raw binary data can be post-processed to obtain full size distribution.

SPECIFICATIONS (subject to change without notice)

Sediment concentration range

- 10-3,000 mg/l @ < 1mg/l resolution (actual range is grain-size dependent)

Size range

- 2.5-500 μm in 32 log-spaced size classes

Depth range

- 0.15-30 m @ 0.02 m resolution

Current speed range

- 0-8 m/s @ 0.03 m/s resolution

Water temperature range

- 0-25°C @ 0.1° resolution

Sample acquisition time

- 3 seconds for a 16 sample average; average values subsequently transmitted to the topside control box for immediate display

Mechanical and electrical

- Dimensions (SL): 13 cm (5.1") maximum \varnothing × 75 cm (29.5") L
- Topside Box: 40.6 cm (16") × 31.8 cm (12.5") × 16.5 cm (6.5")
- Weight in air / submerged (SL): 16 kg (35 lbs) / 7 kg (15.4 lbs)
- Topside Box: 8.6 kg (19 lbs)
- Rechargeable battery life: 6 hours (nominal; longer available)



LISST-SL with topside control box and USGS B-reel (not included). No computer is necessary for deploying the LISST-SL.



Data are transmitted to the topside control box for real-time processing and immediate display of mean particle size, total concentration, velocity, temperature and depth.