

LISST-SL2

StreamLined Isokinetic Sediment Sensor

- **Particle Size Distribution**
- **Sediment Concentration**
- **Velocity, Depth, Temperature**
- **Sediment Flux**

The LISST-SL2 is our most powerful multi-parameter iso-kinetic river sediment monitoring instrument. It delivers detailed real-time data, as well as instantly processed point-integrated, or depth-integrated results. Immediate on-site data processing achieves significantly improved convenience and economy.

The streamlined body has a minimum drag shape. A pitot static tube on top of the body measures river velocity. The system employs active control of an intake pump to match intake velocity to river velocity, thus achieving iso-kinetic pumping. Fins are designed to orient the LISST-SL2 facing upstream before immersion. Laser light diffracted by sediment

particles is measured in the included electro-optics mid-section. The LISST-SL2 operates from B-reel and crane equipment used with samplers, making it a simple replacement.

The LISST-SL2 system comprises of 3 subsystems: the LISST-SL2 submersible sensor, a Topside Box (TB) and a B-Reel. The TB contains a rechargeable battery and electronics. It supplies power down the B-Reel cable to the LISST-SL2, and receives raw data from it. These data are, in turn, transmitted via a serial cable or Bluetooth to a nearby laptop, or tablet (Windows only). The measured parameters are: depth, velocity, temperature, sediment concentration, and sediment size distribution. Using

the computing power of the laptop, raw data are processed in real-time, displayed, and saved. The operator can choose from time-series view or vertical profile view of all data. The time series data can be converted to user-selected depth-averaged or point-averaged profiles instantly by pressing a button on software. Thus, fully processed sediment data are available in the field itself, eliminating bottle samplers and post-processing in a laboratory.

The rich data from a LISST-SL2 permits analysis of statistics, time-scales of fluctuations, and transport rates of sediment in 36 size classes. Such detail is truly unprecedented.



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FEATURES

- The LISST-SL2 has a greatly simplified user interface compared to the original LISST-SL.
- Uses laser diffraction; new: redesigned optics cover expanded grain size range, 1-500 microns (from 2-386 microns for LISST-SL)
- Iso-kinetic; new: advanced feedback controlled pump operation.
- 2-wire special communication protocol consistent with USGS B-reel use.
- Topside Box (TB) contains batteries, powers LISST-SL2, and transfers data to laptop computer.
- Display on computer shows battery life remaining, and issues warning when low.
- Real-time display: Current velocity, temperature, concentration, grain size distribution, depth, and mean sediment grain size.
- New: One-step software delivers point-integrated and depth-integrated sediment data. Blue-tooth data link permits operation out of weather.
- Switch between ft and ft/s or m and m/s for depth and velocity units.

SPECIFICATIONS (subject to change without notice)

■ Sediment concentration range

Range: 10 – 44,000 mg L⁻¹ (approx.) for 120 µm particles.

► **NOTE: THE ACTUAL CONCENTRATION LIMITS ARE GRAIN-SIZE DEPENDENT.**

► For other sizes, see:

<https://www.sequoiasci.com/article/working-limits-particle-concentrations/>

- Resolution: < 10 mg L⁻¹.
- Grain Size Range: 1-500 µm in 36 log-spaced size classes.
- Depth Range: 0.15 - 30 m @ 0.02 m resolution.
- Velocity Range: 0-3.5 m/s @ 0.03 m/s resolution.

■ Iso-kinetic Control Range: 0.5 – 3m/s

■ Water Temperature Range: 0-25C @ 0.1 °C resolution.
[Please ask for higher temp. range.]

■ Sample Rate: 1 Hz.

Mechanical and electrical

- Dimensions (-SL2): 17 cm (6.7") maximum Ø × 87 cm (34.2") L
- Weight in air / submerged (-SL2): 19.5 kg (43 lbs) / 8.2 kg (18 lbs)
- Topside Box: 16.4" (41.7cm) x 8.7" (22.1cm) x 13.2" (33.4 cm)
- Topside Box: 15 kg (33 lbs)
- Rechargeable battery life: 6 hours (nominal; longer available)



LISST-SL2 with Topside Control Box and USGS B-reel (computer & reel, not included)



LISST-SL2 Power & Control Box