

LISST-HAB

Harmful Algae Bloom (HAB) Instrument

- **Size Distribution**
- **Concentration**
- **Phycocyanin**
- **Phycoerythrin**
- **Chlorophyll**
- **Beam Attenuation**

The LISST-HAB is a self-contained, stand-alone instrument system for use on profiling packages, towed and remote vehicle applications, for deployment during a HAB event. The system will continuously measure particle size distribution and concentration, along with the fluorescence of Phycocyanin, Phycoerythrin, Chlorophyll and Beam Attenuation.



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FEATURES

- Complete package based on Small Angle Forward Scattering Laser Diffraction Technology
- Measures Particle Size and Concentration in 36 Size Classes
- Integrated with Turner Designs Cyclops-7F fluorometers engineered to detect Phycocyanin, Phycoerythrin and Chlorophyll
- Internal programmable datalogger
- Small and Extended Battery Packs available for self-contained operation
- USB connection to PC for programming, offloading and real-time size distribution displays
- Programmable, autonomous data collection
- Integrated Depth and Fast Response Temperature Sensors
- Towable or integrated on profiling package or vehicle

Fluorometer Performance

The Turner Designs submersible instrumentation modules used in the LISST-HAB includes single-channel fluorometers for detection of chlorophyll, Phycocyanin and Phycoerythrin. Together with particle information from the LISST-200X, this package solution provides a comprehensive picture of cyanobacteria presence.

SPECIFICATIONS (subject to change without notice)

Parameters Measured

- Particle Size Distribution from 1.0-500 μm in 36 size ranges
- Depth (600 m max depth @ 0.01 m resolution)
- Temperature @ 0.01 $^{\circ}\text{C}$ resolution; Response time: 2.5 s.
- Optical transmission @ 0.1 % resolution
- Volume Concentration @ 0.1 $\mu\text{l/l}$ resolution
- Beam transmission from 0.3-0.99 (30-99 %)
- Phycocyanin
- Phycoerythrin
- Chlorophyll

Operating Concentration range

- Optical transmission from 0.3-0.99 (30-99 %)
- Concentration from ~ 0.5-700 mg/l (particle-size dependent)

	Minimum Detection	Linear Range
Phycocyanin	2 ppb ^{PC}	0-4,500 ppb ^{PC}
Phycoerythrin	0.1 ppb ^{PE}	0-750 ppb ^{PE}
Chlorophyll	0.03 $\mu\text{g/L}$	0-500 $\mu\text{g/L}$

Technology (laser diffraction)

- Small-angle forward scattering
- 32-ring custom photodiode Ring Detector + 4 large angle detectors
- 25 mm optical path

Mechanical and Electrical

- Dimensions: 63.9 cm (25.2") L x 10.03 cm (3.95") \varnothing
- Weight: 6 kg (13.2 lbs) in air; 2.5 kg (5.5 lbs) in water
- 600 m depth rating
- External power input: 12 VDC nominal, 8-24 VDC
- Sampling rate: Up to 1 Hz
- Current drain at 12 V: 100 mA sampling, 8 mA between samples.
- Data storage: 1 GB (~12,500,000 measurements)
- Connectors: SubConn MCBH3M, MCBH5M, MCBH6M in brass
- Laser: 670 nm solid state diode laser
- Chlorophyll – Optical filters: EX 465, EM 496
- Phycocyanin – Optical filters: EX 590, EM \geq 645
- Phycoerythrin – Optical Filters: EX 531, EM \geq 590

