

LISST-BLACK

Oil-Spill Response Instrument

- **Size Distribution**
- **Concentration**
- **Refined Fuels**
 - **Crude Oil**
 - **Chlorophyll**
- **Beam Attenuation**

The LISST-BLACK is a self-contained stand-alone instrument for use on profiling packages, towed and remote vehicle applications, for deployment during and after an oil spill event. The system will continuously measure particle size distribution and concentration, along with the fluorescence of refined fuels, crude oil and chlorophyll, as well as beam attenuation.



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Oil-Spill Response Instrument

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 crude oil, refined fuels, 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-BLACK includes single-channel fluorometers for detection of chlorophyll, crude oil and refined fuels. Together with particle information from the LISST, this package solution provides a comprehensive picture of potential contamination.

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°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%)
- Refined Fuels
- Crude Oil
- 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
Oil - Fine	0.4 ppm	0-20 ppm
Oil - Crude	0.2 ppm	0-1,500 ppm
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: 12VDC nominal, 8-24 VDC
- Sampling rate: Up to 1 Hz
- Current drain at 12 V: 100 mA sampling, 8 mA between samples.
- Data storage: 1GB (~12,500,000 measurements)
- Connectors: S/S Impulse MCBH(WB)-3-MP, MCBH(WB)-5-MP, MCBH(WB)-6-MP
- Laser: 670 nm solid state diode laser
- Chlorophyll - EX 465, EM 496
- Refined Fuels – EX 290, EM 350
- Crude Oil – EX 325 nm, EM 410-600 nm

