

New Logarithmic  
Detector

# Ice Profiling Sonar (IPS)<sup>TM</sup>



An upward-looking sonar device, mounted above the ocean floor to accurately measure ice draft.

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## Applications

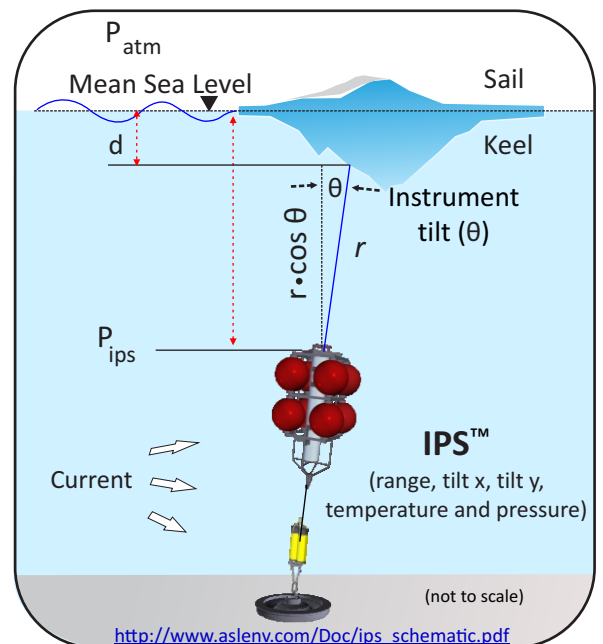
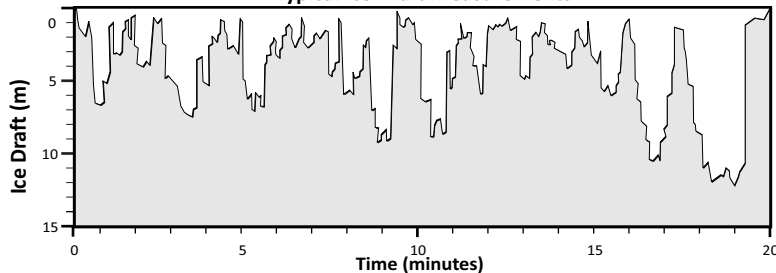
In order to estimate ice forces, production rates, and mass balances, accurate measurements of ice thickness are essential. The Ice Profiling Sonar (IPS)<sup>TM</sup> makes those measurements much easier to obtain for applications in:

- Offshore Oil Platforms
- Design of Coastal Structures
- Research Oceanography
- Bridges and Causeways
- Global Warming Studies
- Pipeline Studies.

## Features

- New logarithmic detector takes the ice-water and water-air interface out of saturation.
- Full profiles on all pings.
- The IPS<sup>TM</sup> has been the proven instrument of choice for ice researchers since 1996.
- Pressure sensor: Paroscientific Digiquartz 2000 series, with long term stability and 0.01% full scale accuracy.
- Excellent horizontal resolution using a high frequency 420 kHz transducer with narrow 0.9° half-beam width.
- Very low power consumption enables continuous sampling at ping rates of 1-2 seconds over one year or more.

Typical Ice Draft Measurements



The IPS instrument was originally developed by Dr. H. Melling of the Institute of Ocean Sciences, DFO Canada. Since then ASL has made ongoing upgrades to the design and features of the instrument.



## Features (continued)

# Ice Profiling Sonar (IPS)<sup>TM</sup>

- Multiple sampling options within a deployment to accommodate seasonal changes (up to 12 phases).
- Ocean wave monitoring capability using interleaved 2 Hz burst sampling.
- Windows-based software for deployment planning, initialization, testing and data downloading.
- Full digitized echo can be stored to 1 cm resolution.
- Full profiles are measured and targets are identified in post processing.

### Model IPS6 Specifications

#### UPWARD LOOKING SONAR

Operating Frequency	420 kHz
Beam Width	0.9° (center beam to half power point)
Sampling Rate	up to 2 Hz (continuous or burst)
Duty Cycle	up to 100%
Range	240 m (ice), up to 310 m (water)
Accuracy of Ice Draft	± 0.05 m *
Resolution	0.01 m

#### REALTIME CLOCK

Accuracy	± 10 sec/year
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#### DATA STORAGE

Standard	2X512 GB SD Cards. Writes to second card if there is a failure on the first or after the first card fills.
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#### POWER

Provides more than 52 weeks at 1 Hz sampling

#### TILT SENSOR

Range	± 20°
Accuracy	± 0.5°
Precision	0.01°

#### TEMPERATURE SENSOR

Accuracy	± 0.1°C
Resolution	0.05°C

#### PRESSURE SENSOR

	Paroscientific Digiquartz <sup>®</sup> 2000 series
Range	0 - 126 m
Resolution	0.003 m
Accuracy	0.01% full scale (other ranges available)

<b>SIZE</b>	0.17 m diameter x 1.0 m length
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\* Assumes variations in sound speed and density are accounted for.

**SOFTWARE** The following Windows-based software is included in the IPS<sup>TM</sup> package:

ASLLink	Communications software to enable setup and download functions.
IPS6Extract	Utility package for extracting raw binary data files (available upon request).

#### OPTIONAL FEATURES

Short housing which can be powered by an external battery or by an external power source.

Extended alkaline battery pack or carrier for Lithium battery packs to extend deployment duration.

The IPS<sup>TM</sup> is also available in a version designed for river applications which includes an RS 422 serial connection for real time data and remote power - Shallow Water Ice Profiler<sup>TM</sup> (SWIP).

Custom versions of the IPS<sup>TM</sup> are also available for Autonomous Underwater Vehicles (AUV).

Both taut line and gimballed bottom mount moorings available.

