

## It's a sound decision

The ATLAS PARASOUND sets the standard in sub bottom profiling. Its high performance and flexibility makes it the perfect tool for advanced marine science down to full ocean depth.



## FEATURES

- Depth range: 10 m – 11 000 m
- Max. bottom penetration >200 m
- Marine mammal protection features
- Parametric signal :
  - 0.5 – 6.0 kHz frequency
  - 4.5° x 5.0° beam width
- Multi beam capability
- Max. survey speed 15 knots
- Barker, chirp or user-defined pulses
- Multi pulse operation
- Automatic Incidence Angle Control for autonomous watch-free operations
- Water column profiling

## PARAMETRIC SUB BOTTOM PROFILER

With the **ATLAS PARASOUND** the water column and seabed structure from 10 m to full ocean depth can be directly explored. It is able to penetrate the seabed more than 200 m and samples data with up to 50 kHz frequency.

The **PARASOUND** utilises the parametric effect to generate a very low frequency secondary signal by emitting two primary signals of higher frequencies. The parametric secondary signal incorporates the high spatial resolution of the primary source signals for maximum measurement accuracy with the unbeatable acoustic performance of low frequency for maximum penetration and range.

The third generation of the **PARASOUND** sensor combines latest technological innovations with the very best, well-proven capabilities of previous versions to satisfy our customers' requirements. It is available in two variants: the P35 with 35 kW transmission power and the P70 with 70 kW transmission power for maximum sediment penetration.

### SEDIMENT RECORDS AT A GLANCE

The **PARASOUND** is a hull-mounted system. All survey operations can be carried

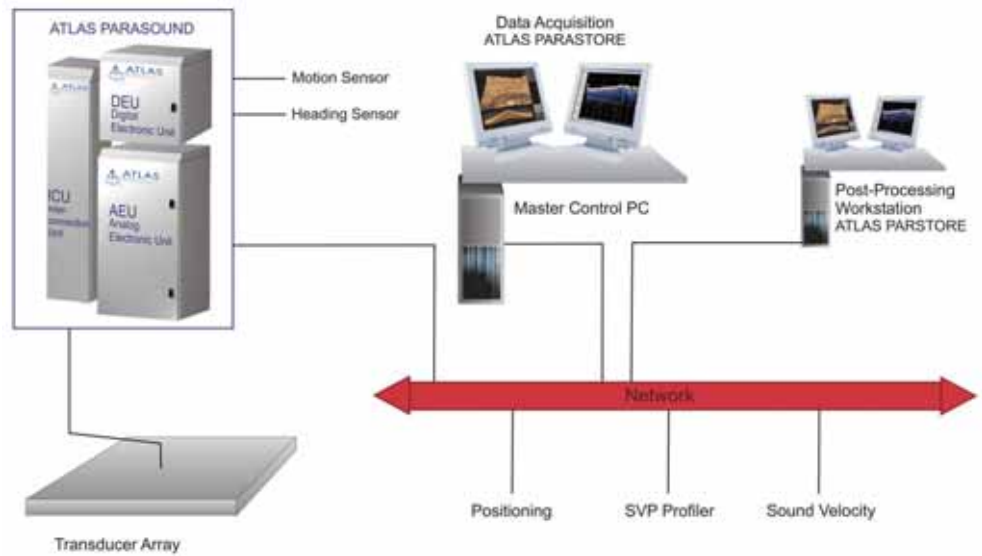
out very easily onboard. Typical and maximum survey speeds (up to 15 knots) far exceed those of sub bottom profilers on ROVs/AUVs (2-3 knots) or towed fish (4-6 knots). **PARASOUND** operations are much more time and cost efficient. The instrumentation investment costs will be amortised after just a few weeks of ship operation.

The data acquisition can be accomplished more rapidly than with any other comparable kind of equipment. At the same time the **PARASOUND** records are of the highest spatial and spectral resolution thanks to the very narrow acoustic beams, very high data sampling rates and 24-bit A/D quantisation.

The **PARASOUND** is the most powerful sub bottom profiler ever built. Surveys can be carried out from 10 m to full ocean depth. Even under deep sea conditions it penetrates the seabed up to 200 m depending on the bottom conditions. Through digital pulse modulation, optimum signal-to-noise ratios can be achieved. Chirp and Barker code modulations are available as standard. Additionally, customised pulse modulation can be defined and applied.

The very narrow beams are real time motion compensated for pitch, roll and yaw on the basis of adequate real time motion sensor data.





## FREQUENCY BANDS

Primary High Frequency band  
**PHF1:** 18 – 33 kHz  
 Primary High Frequency band  
**PHF2:** 18.5 – 39 kHz  
 Secondary (parametric) Low Frequency band  
**SLF:** 0.5 – 6.0 kHz  
 Secondary (parametric) High Frequency band  
**SHF:** 36.5 – 40 kHz  
 Primary Low Frequency band  
**PLF:** 3 – 12 kHz

## SEDIMENT PENETRATION / DEPTH RANGE

Penetration **P70** >200 m  
 Penetration **P35** >150 m  
 Depth Range 10 – 11 000 m  
 (depending on local bottom and environmental conditions)

## BEAM WIDTHS

**PHF** 4.0° x 4.5° (18 kHz)  
 2.2° x 2.5° (33 kHz)  
**PLF** 6.0° x 7.0° (12 kHz)  
 24.0° x 28.0° (3 kHz)  
**SLF** 4.5° x 5.0°  
**SHF** 2.0° x 2.3°

## TRANSMISSION POWER

**P70** 70 kW  
**P35** 35 kW

## PRIMARY/SECONDARY (PARAMETRIC) TRANSMISSION SOURCE LEVEL

**P70** 245 dB / 206 dB  
**P35** 242 dB / 200 dB

## PING RATE

Maximum ping rate >20 Hz

## MULTI PING / PULSE TRAIN

Up to 16 pings

## MOTION STABILISATION

In real time during transmission and reception for roll, pitch and yaw based on appropriate external motion and heading sensor data

## PULSE MODULATION

0.17 – 25 ms pulse lengths  
 Barker, chirp, CW and user-defined pulse modulation

## RESOLUTION AND ACCURACY

Max. output sample rate 12.2 kHz  
 Max. range resolution 6 cm  
 Bottom depth accuracy  $1\sigma$   
 0.2 m  $\pm$  0.2% depth

## BEAM STEERING APERTURE ANGLE

Across ship up to  $\pm 25^\circ$   
 Along ship up to  $\pm 10^\circ$

## OPERATION MODES

Parametric single beam sub bottom profiling  
 Parametric multi beam sub bottom profiling  
 Conventional single beam sub bottom profiling  
 Single beam echosounding  
 Multi beam bathymetric surveying  
 Whale Warning Mode (WWMM)