Unsurpassed data clarity

The Teledyne Parasound delivers exactly this – unsurpassed data clarity – as the most versatile and best in class marine sub-bottom profiler providing full ocean depth range and >200 m sediment penetration.

With its 4.5° beam width, due to its 15 cm vertical sampling and especially because of innovations like its intelligent Quasi Equi-Distant (QED) multi-ping, the ParaSound delivers a unique data resolution, a unique data density that unveils sub-sea structures at an unrivalled sharpness. The unsurpassed data clarity, the ParaSound’s versatility, its robust operations even under severe conditions on sea, make the Teledyne ParaSound the ideal tool for ocean science and offshore surveys.

The ParaSound is able to map the seafloor structures and to image the water column in parallel. The sonar performs sub-bottom profiling and senses faint echoes of air bubbles directly above deep ocean seafloor at the same time by applying the unique Double Digitising Technology (DDT). DDT employs a two-stage amplification of received signals and subsequent 24 bit digitization of each of the two amplification paths. Afterwards, the results are re-combined to an an extra ordinary dynamic range of effectively 32 bit quantification of each amplitude and phase sample. DDT and ParaSound’s ability of in-parallel water column imaging is utilized extensively in ocean science, for example to search and locate accurately gas hydrates due to proof of gas in water column, due to clear imaging of fault structures, of free gas and of gas hydrates in the sediments.

The ParaSound has been pushing the limits of hydro-acoustics again and again. From the first employment of parametric technology in 1986 in a deep water sonar, throughout permanent innovation, the ParaSound has continued to improve and strengthened its position as the benchmark for marine sub-bottom profiling. Ultimately, it is the users who benefit most from always best in class data quality and performance, and the ParaSounds broad versatility in applications as sediment profiler, in water column imaging, for full motion stabilized narrow singlebeam echosounding or in multibeam sub-bottom scans.

**PRODUCT BENEFITS**

- The ParaSound is the most versatile tool for ocean science and offshore survey in sediment profiling, water column imaging, for full motion stabilised narrow singlebeam echosounding and multibeam sub-bottom scanning.

- High resolution geophysical surveys are possible in parallel to seismic or bathymetric survey campaigns at virtually any sea-state with the hull-mounted ParaSound in contrast towed sonar solutions.

- With its 4.5° beam width, due to its 15 cm vertical sampling and especially because of innovations like its intelligent Quasi Equi-Distant (QED) multi-ping, the ParaSound delivers a unique data resolution and data density that unveils sub-sea structures at an unrivalled data clarity and reliability.

- DDT and ParaSound’s ability of in-parallel water column imaging is utilized extensively in ocean science, for example to search and locate accurately Gas Hydrates due to proof of gas in water column, due to clear imaging of fault structures, of free gas and of gas hydrates in the sediments.

**Key Features**

- Depth range 11000 m
- Max. bottom penetration >200 m
- 0.5 – 7.0 kHz sub-bottom profiling
- Intelligent QED multi-ping
## APPLICATION

Fields of application in Ocean Science:
- Sedimentation processes such as channel levee systems, sediment slides, deep ocean currents, sub-sea impact of glacial processes
- Search for marine resources: detection and exact localisation of gas hydrates via in-one-survey gas seep mapping, sub-sea fault imaging, in-sediment free gas and gas hydrate highlighting
- Climate research: impact of regional ocean climates and currents on sedimentation processes
- Sub-sea seabed mapping of geological structures such as mud volcanoes, gas seeps, hydrothermal vents, nodule fields

Fields of application in Offshore pre-survey and seabed monitoring:
- Super high resolution sediment structure mapping to identify sites for constructions or potential geological risks to infrastructure
- Applicable in parallel to seismic or bathymetric survey campaigns at virtually any sea-state due to vessel based operations not depending on towing equipment
- Support of cable lay to secure ploughing equipment
- Detection of buried pipelines and archeological spots
- Pre-investigations for drilling activities
- Acoustic extrapolation of sediment sampling results

### ParaSound SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td><strong>Sediment Penetration/Depth Range</strong></td>
<td>Penetration P70 &gt;200 m, Penetration P35 &gt;150 m, Depth range 10 – 11000 m</td>
</tr>
<tr>
<td><strong>Frequency Bands</strong></td>
<td>Primary High Frequency: 18 - 24 kHz, Parametric Low Frequency P70: 0.5 - 7 kHz, Parametric Low Frequency P35: 0.5 - 6 kHz, Parametric High Frequency: 37 - 42 kHz</td>
</tr>
<tr>
<td><strong>Multi-Ping and Ping Rate</strong></td>
<td>Max 16 simultaneous pings, QED multi-ping, Pulse train multi-ping, Max 16 Hz ping rate</td>
</tr>
<tr>
<td><strong>Pulse Modulation</strong></td>
<td>0.17 – 25 ms pulse lengths; CW or frequency modulated (Chirp) pulses</td>
</tr>
<tr>
<td><strong>Max Transmission Power</strong></td>
<td>P70: 70 kW, P35: 35 kW</td>
</tr>
<tr>
<td><strong>Transmission Source Level</strong></td>
<td>P70: 245 (206) dB (primary/parametric), P35: 242 (200) dB (primary/parametric)</td>
</tr>
<tr>
<td><strong>Beam Resolution</strong></td>
<td>4.5°</td>
</tr>
</tbody>
</table>

Acoustic performance (sub-bottom penetration, depth range) is depending on local bottom and environmental conditions.