Echo Surveyor III is a “state of the art” Kongsberg Hugin 1000 autonomous underwater vehicle (AUV), specifically designed for high resolution and efficient survey operations in water depths down to 3000 metres.

AUVs are the ultimate choice of instrument platform for deep sea and remote surveys. Placing survey sensors onboard an AUV means the geophysical measurements take place close to the seafloor, dramatically improving data resolution and accuracy. The AUV is based on a Kongsberg Maritime manufactured Hugin 1000 body with a payload selected by Fugro to meet the demands of the offshore survey industry. In comparison to towed systems, the tight turning circle enormously reduces the time to change between survey lines. The inertial Navigation System (INS) adds rigor to the positioning of hazards and features. Compared to an ROV, the AUV operates without and umbilical and is able to move both faster and more quietly, collection data with a very high signal-to-noise ratio. The survey is completed sooner and the results are more accurate. Clients within the oil and gas industry, the utilities sector and government agencies utilize Fugro’s AUVs to obtain engineering grade, high resolution data for deep sea field development and seabed mapping. Design is optimized and risk is reduced.

Fugro own and operate five deep water Echo class AUV’s which are mobilised either from one of Fugro’s dedicated fleet of international survey vessels or from 3rd party charter ship’s. AUV container system is ready for rapid deployment to survey locations worldwide.
ECHO SURVEYOR III

CAPABILITIES

- Efficient lithium-polymer cell battery
- Up to 24 hour dive endurance
- Nominal survey speed 3 – 4 knots
- Inertial Navigation System
- Standard payload comprises:
  - Multibeam echosounder
  - Sidescan sonar
  - Sub-bottom profiler
  - CTD profiler
- Typically survey operations:
  - Deep water field developments
  - Site surveys
  - Pipeline and cable routes
  - Regional mapping

Technical Specifications

Physical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>4.75 m</td>
</tr>
<tr>
<td>Weight (air)</td>
<td>850 kg</td>
</tr>
<tr>
<td>Diameter</td>
<td>0.75 m</td>
</tr>
<tr>
<td>Depth</td>
<td>3000 m</td>
</tr>
<tr>
<td>Hull Material</td>
<td>Carbon fibre reinforced epoxy, titanium and syntactic foam</td>
</tr>
</tbody>
</table>

Power System

- Battery: Three Lithium Polymer
- Battery Capacity: 15 kWh
- Propulsion: Smart Motor, Rudders & Propellor

Acoustic Navigation System

- Aided Inertial Navigation System: Simrad HiPAP 500 USBL
- Inertial Measurement Unit (IMU): Honeywell HG 9900
- Depth Pressure Sensor: Paroscientific Digiquartz
- Doppler Velocity Log (DVL): RDI Workhorse Navigator WHN-300 Khz

Acoustic Communication

- Command Link: Kongsberg 24 to 28 kHz, 55 bps
- ACL Transducers: TP324, TP331
- Data Link: LinkQuest UWM4000 12.75 to 21.25 khz
- DVL Transducers: UVM4010
- Emergency Link: Kongsberg 25 to 25.6 kHz, 10bps

Surface Communication

- Radio Frequency Link: Wood & Douglas M971, UHF SX450, 458 MHz

Control Sensors

- CTD: Falmouth FSI 2" Micro CTS
- Avoidance Sonar: Mesotech 1007, 675 kHz
- Altimeter Height: Mesotech 1007, 200 kHz

Payload Sensors

- Multibeam Echo Sounder: Simrad EM 2000, 150 degrees coverage, Frequency 200kHz
- Side Scan Sonar: Edgetech Full Spectrum Sidescan Sonar
- Sub-Bottom Profiler: Edgetech Full Spectrum Chirp Frequence 2 to16 kHz

Information may be subject to change without prior notice.