HMS-12M – Broadband Hull-Mounted Minehunting Sonar

... a sound decision
The broadband Hull-Mounted Mine-hunting Sonar ATLAS HMS-12M has been designed to safely counter the threat posed by modern mines in European and also in salty tropical waters. The ATLAS HMS-12M is designed for multiple operations:

- Mine hunting
- Mine avoidance
- Route survey
The sonar array is a proven design and successfully in service with many navies as a further development of HMS-11M, which is in operation e.g. in the German Navy and has earned a high reputation concerning Minehunting within NATO. The new HMS-12M is a triple frequency broadband sonar which can detect and classify ground-, moored- and stealthy mines. Even under unfavourable environmental conditions.

- Acceleration of operations by highest converge rates
- Confidence in achieved clearance. More safety for crew and ship.
- Optimized manning concept – only one operator required
- Simultaneous detection and classification
- Simultaneous tracking of underwater vehicles and detection/classification
- Reduced of life cycle costs
- Can be fully integrated into IMCMS
- Qualified and operational proven design
Operational Characteristics

The ATLAS HMS-12M offers ground mine detection and classification capability in coastal waters to about 200 meters depth. Moored mine detection and classification is also possible in deep waters.
The HMS-12M is easy to operate: apart from the sonar operator there is no further personnel required. Sonar operation including full remote control of the HMS-12M is possible from one or more Multi Function Consoles (MFC).

**HMS-12M operates in five different modes:**
- Minehunting / Route survey
- Mine avoidance
- Side scan
- Test
- Simulation

**Features:**
- Simultaneous detection, echo- and depth classification by parallel operation of the vertical and the linear arrays
- Flexible sector steering results in quick mission progress
- Computer aided detection and classification with simultaneous depth classification
- Multitracking of up to 100 fixed or moving targets
- Recording capability for effective mission evaluation
Key Features

More safety for crew and ship – high resolution means more distance to the threat
The ATLAS HMS-12M is equipped with a triple frequency high resolution sonar. Each of these three frequencies is optimised for a specific task in mine hunting and mine avoidance:

**Low Frequency (LF)**
- Long range detection on mud, sand and gravel bottom
- Simultaneous detection, echo- and depth classification by means of the vertical array
- Volume search by 3D detection for mine avoidance providing real 2 dimensional beamforming

**High Frequency (HF)**
- Medium range detection on mud, sand and gravel bottom
- Echo classification on all bottom types
- Shadow classification on gravel and rock

**Very High Frequency (VHF)**
- Short range detection on rock with strong bottom reverberation
- High resolution echo & shadow classification

**Advantages:**
- Interoperability between all frequencies and high number of different modes offers a unique flexibility in operation
- Large detection and classification sectors resulting in high coverage rates
- Due to functionality and flexibility the best possible approach for mine hunting in European and tropical environments and for different bottom types
- High precision raw data processing and display
- Side scan capability for rapid route survey operations
Technical Characteristics
Advantage:

- Due to the small size sonar trunk it is a suitable system for small and medium size vessels
- The optimized hydrodynamic design of the hoisting unit reduces the flow resistance and the torsional forces on the vessel and is even optimized for high speed operations
- Verified shock resistance by qualification test and real explosive tests
- Automatic retraction to protect the antennas if exceeding the depth or speed limitation
- Separate arrays for transmission, receiving and for all frequencies
- High redundancy of array capacity
- Low magnetic signature due to hydraulic drives and non-magnetic casing
- Low noise level and light weight construction

<table>
<thead>
<tr>
<th>LF</th>
<th>HF</th>
<th>VHF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequencies (approx.)</td>
<td>100 kHz</td>
<td>200 kHz</td>
</tr>
<tr>
<td>Bandwidth (array &amp; signal processing)</td>
<td>24 kHz</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Horizontal transmission sector</td>
<td>$15^\circ / 30^\circ / 60^\circ / 90^\circ$</td>
<td>$15^\circ / 30^\circ / 60^\circ$</td>
</tr>
<tr>
<td>Vertical transmission sector</td>
<td>$3.2^\circ$ to $32^\circ$</td>
<td>$18^\circ$</td>
</tr>
</tbody>
</table>

Operational speed: up to 10 kts and SS 5 (sea state); survival speed: 12 kts

$^1$ Sector is selectable and steerable
## POWER SUPPLY

<table>
<thead>
<tr>
<th>Designation</th>
<th>Voltage [V]</th>
<th>Freq. [Hz]</th>
<th>Max Continues Power [kVA]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonar Cabinet Suite(^2)</td>
<td>1 AC 230</td>
<td>60/50</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>1 AC 115(^3)</td>
<td>60</td>
<td>0.4</td>
</tr>
<tr>
<td>Hydraulics Unit</td>
<td>3 AC 440</td>
<td>60</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>3 AC 115(^4)</td>
<td>60</td>
<td>1.8</td>
</tr>
<tr>
<td>Stabilisation Unit</td>
<td>3 AC 115</td>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1 AC 115(^3)</td>
<td>60</td>
<td>0.4</td>
</tr>
<tr>
<td>HMS Power Supply Unit</td>
<td>3 AC 115</td>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1 AC 115(^3)</td>
<td>60</td>
<td>0.5</td>
</tr>
</tbody>
</table>

## WEIGHT AND DIMENSIONS

<table>
<thead>
<tr>
<th>Designation</th>
<th>Max Dimensions incl. Shock Abs.(^5)</th>
<th>Weight approx [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonar Cabinet Suite</td>
<td>2051 x 600 x 1011</td>
<td>320</td>
</tr>
<tr>
<td>Hoisting Unit(^6)</td>
<td>4648 x 1125 x 920</td>
<td>2300</td>
</tr>
<tr>
<td>Hydraulics Unit(^6)</td>
<td>1355 x 1158 x 885</td>
<td>550</td>
</tr>
<tr>
<td>Indicator Unit</td>
<td>160 x 260 x 109</td>
<td>2.4</td>
</tr>
<tr>
<td>Stabilisation and HMS Power Supply Units(^7)</td>
<td>930 x 1020 x 455</td>
<td>225</td>
</tr>
</tbody>
</table>

\(^1\)Sources in accordance with MIL-STD 461D  
\(^2\)The EC shall be supplied by an uninterruptible power source. UPS AC supply voltage variance:  
- ± 2 % static change  
- ± 5 % dynamic change at 100 % load change for 1 ms  
\(^3\)Stand-by heating only  
\(^4\)Only emergency operation  
\(^5\)Components are delivered with shock absorbers  
\(^6\)No shock attenuation mounting  
\(^7\)Total weight for Stabilisation Unit and PSUs mounted on a common frame
ATLAS ELEKTRONIK
your strategic and reliable Partner for safe maritime operations
Contact

ATLAS ELEKTRONIK GmbH
Sebaldsbruecker Heerstrasse 235
28309 Bremen | Germany
Phone: +49 421 457-02
Fax: +49 421 457-3699

www.atlas-elektronik.com

HMS-12
Mine Warfare System

... a sound decision