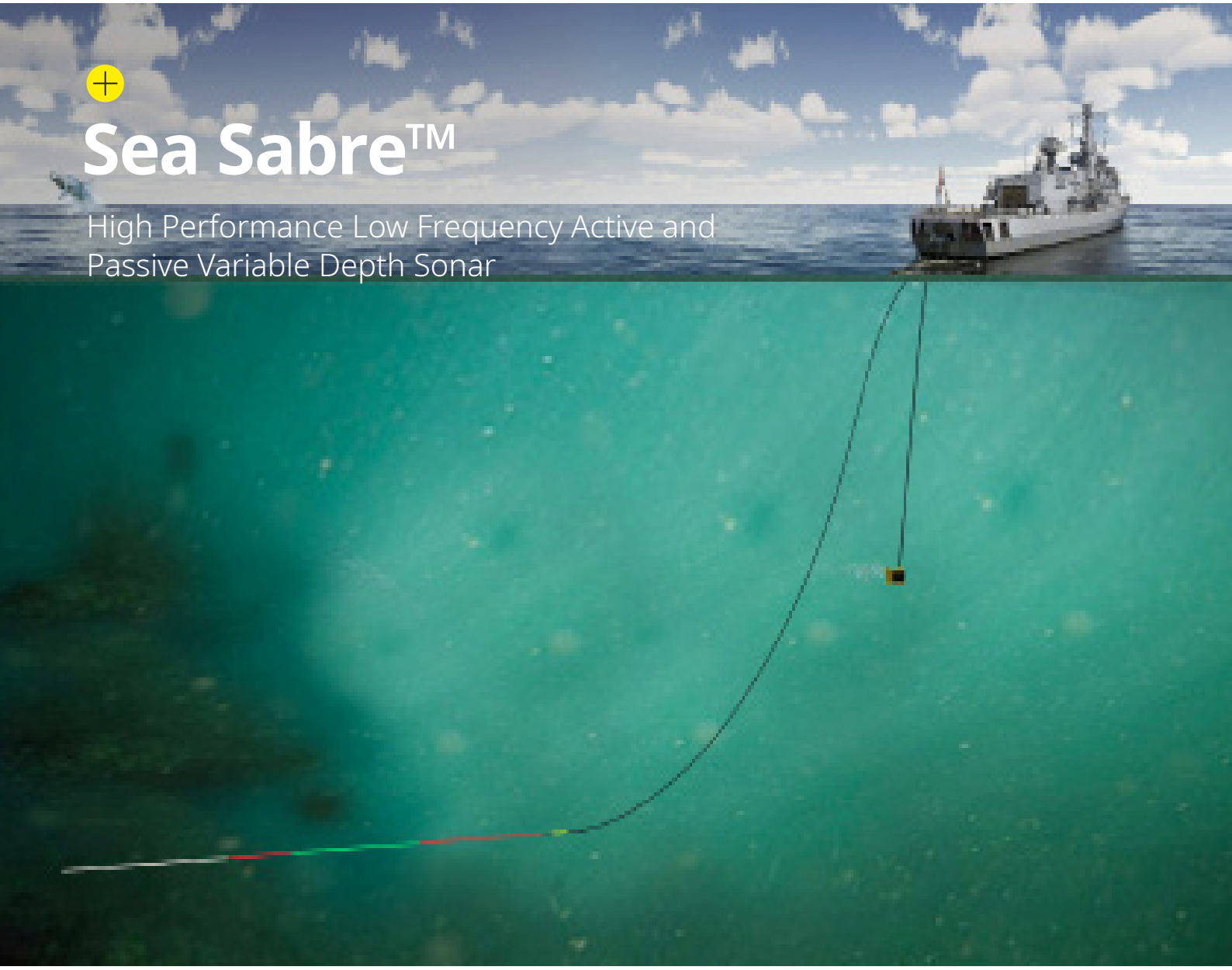
ULTRA

Sea Sabre™

High Performance Low Frequency Active and Passive Variable Depth Sonar



Key features

- Wide bandwidth operation
- Stable, hydrodynamic tow body
- Vertical directivity increases range, reduces surface and bottom reverberation
- Integrates seamlessly with Ultra's NEXUS Integrated Sonar Suite
- Can be containerized into 20 ft Mission Modules
- MIL-STD-810G Environmental and Shipboard Vibration qualified
- MIL-S-901D Shock qualified

Overview

The Sea Sabre™ Variable Depth Sonar (VDS) consists of a tow body, providing a high power acoustic source from a stable platform across a wide range of tow speeds, combined with a QUAD directional passive receive array and its tow cable. The control of the tow body and receiver array is independent through use of separate winch and handling systems allowing the receiver array to be located further astern to minimize own-ship acoustic interference.

Ultra's Sea Sabre™ is the ideal Low Frequency Active (LFA) Sonar System where search speed is a critical factor. With Ultra's Free Flooded Ring (FFR) projectors at its core, the Sea Sabre™ tow body emits acoustic energy in a toroidal pattern that is uniform in azimuth. Each ping provides full 360° azimuth coverage.

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Technical Specification

The FFRs used in the Sea Sabre™ Tow Body are wide-bandwidth, high-efficiency projectors, with inherent vertical directivity that focuses the energy horizontally and reduces surface and bottom reverberation. Vertical directivity is further enhanced when multiple FFRs are stacked in a vertical array configuration. The wide bandwidth provided by the FFR enables the use of wideband transmissions that also minimize the effect of surface and bottom reverberation.

The Sea Sabre™ combines a Tow Body with a Towed Array containing a high performance directional QUAD hydrophone receive array that provides instantaneous Port-Starboard ambiguity resolution, allowing the sonar to fully resolve the target direction using a single transmission. Detection performance is further improved by discriminating between the reverberation and noise coming from the port and starboard sides of the receiver array.

A Sea Sabre™ configuration can optionally include bistatic sonar operation with a Hull Mount Sonar using additional receive array of very high frequency sensors. It can also include an optional receive array of low frequency omnidirectional sensors, and ultra high frequency sensors which enable mammal detection and active intercept of torpedo sonars.

Key benefits

- Full azimuth coverage in a single ping
- Independent tow body and towed array allow both vertical and horizontal separation
- Resolves port-starboard ambiguity without ship manoeuvers
- Bistatic operation with Hull Mount Sonar
- Automatic Torpedo Detection, Classification, and Tracking
- Scenario and torpedo-specific tactics and countermeasures
- Automatic Mammal Detection, Classification, and Tracking

Sea Sabre™ Characteristics (typical configuration)	
Installation Mass (Active / Passive)	12107 / 8815 kg
Single Phase Power (winching/transmitting)	3.5 / 4.2 kW 115 VAC, 60 Hz
Three Phase Power (winching/transmitting)	42 / 71.3 kW 440 VAC 3Ø, 60 Hz
Active Winch Dimensions (WxDxH)	2.1 m x 4.0 m x 2.2 m (excl. maintenance area)
Active Overboarding Dimensions (WxDxH)	2.4 m x 3.2 m x 2.3 m (excl. maintenance area
Passive Winch Dimensions (WxDxH)	3.1 m x 3.2 m x 2.3 m (excl. maintenance area)
Passive Overboarding Dimensions (WxDxH)	2.3 m x 3.3 m x 1.2 m (excl. maintenance area)
Tow Body and Towed Array	
Operating Temperature	-2°C to +35°C
Storage Temperature	-30°C to +70°C
Deployment and Recovery Speed	4-12 kts
Survival Speed	Up to 25 kts in Sea State 5
Tow Body – Typical Configuration with two Model 28Fx1000 FFRs	
Operating Bandwidth (-6 dB)	1000 Hz to 2000 Hz
Maximum Pulse Length	16 seconds
Pulse Types	LPM, CW. Configurable for other waveforms.
Source Level	High Power. Dependent on configuration.
Maximum Duty Cycle at maximum Source Level	20% at 35°C sea temperature
Operating Depth	> 80 m at maximum Source Level
Towed Array – Sensor Module(s)	
QUAD Directional Sensors	
Octaves	Up to 3 (nested)
Channels	Up to 192 QUAD directional hydrophones
Operating Frequency	Up to 4 kHz
Very High Frequency Sensors	
Octaves	Single
Channels	Up to 64 omnidirectional hydrophones
Operating Frequency	Up to 9 kHz
Ultra High Frequency Sensors	
Channels	Single omni, 3 omni array (bearing resolving)
Operating Frequency	Up to 120+ kHz

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