

ULTRA.



Sea Lancer™ (2nd Gen)

High Performance Low Frequency Active & Passive Sonar in a Single Tow



Key features

- Focused-beam or sector steerable transmissions, or omnidirectional transmissions
- Full power operation at shallow depth
- Configurable sensor spacing, nesting, and apertures
- Health monitoring with continuous built-in test
- Integrates seamlessly with Ultra's NEXUS Integrated Sonar Suite
- Can be containerized into a single 20ft Mission Module
- MIL-STD-810G Environmental and Shipboard Vibration qualified
- MIL-S-901D Shock qualified

Overview

The Sea Lancer™ system provides a Low Frequency Active (LFA) Variable Depth Sonar (VDS) in a reelable single tow that is ideal for smaller platforms and multi-role ships. It can be containerized into a Mission Module for easy installation on multi-role platforms.

The second generation Sea Lancer™ consists of a Horizontal Projector Array (HPA), which is a line array of independently driven projectors, combined with a receive array of QUAD sensors to provide an LFA sonar with instantaneous Port-Starboard ambiguity resolution. The QUAD receive array also enables improved detection performance by discriminating between the reverberation and noise coming from the port and starboard sides of the array. These advantages offer improved sonar performance in littoral environments.

Technical Specification

When operating in littoral waters, the Sea Lancer™ HPA offers advantages over more traditional towed bodies that employ a small number of high power projectors. The HPA directional transmit capability operates without cavitation at shallower depths because less acoustic energy is needed from each individual HPA projector. The HPA directional transmit capability allows it to focus energy in the directions of interest thus lowering risk to marine mammals in known areas of habitation.

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

A Sea Lancer™ configuration can optionally provide Torpedo Detection Classification and Localization as well as marine mammal detection and classification.

Key benefits

- High Performance
- Low size and weight compared to active dual tow systems
- Resolves port-starboard ambiguity instantaneously
- Low noise array performance – flow and mechanical
- 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
- < 30 kW Power Requirement

Sea Lancer™ Characteristics	
Sea Lancer™ System	Typical configuration
Installation Mass (Winch & Tow)	8,690 kg
Single Phase Power	3.2 kW 115 VAC; 60 Hz
Three Phase Power (winching)	21 kW 440 VAC 3Ø; 60 Hz
Three Phase Power (transmitting)	25 kW 440 VAC 3Ø; 60 Hz
Winch Dimensions (WxDxH)	2.76 m x 2.65 m x 2.24 m (excl. maintenance area)
Sea Lancer™ Towed Array	
Operating Temperature	-2 °C to +35 °C
Storage Temperature	-30 °C to +70 °C
Deployment & Recovery Speed	4 kts to 15 kts
Survival Speed	Up to 30 kts in Sea State 5
Survival Depth	Exceeds tow length
Flow Noise	Available upon request
Horizontal Projector Array (HPA)	
Channels	Up to 32 active transmit channels per aperture
Apertures	Single or Dual
Operating Frequency	1.5 kHz to 3.5 kHz (configuration dependent)
Bandwidth	>=20% of operating frequency
Maximum Pulse Length	16 seconds
Pulse Types	LPM, CW. Configurable for other waveforms.
Source Level	High Power. Dependent on tow configuration.
Maximum Duty Cycle	>20% at 35 °C sea temperature
Operating Depth	50 m to 200 m at maximum source level
Sensor Module(s)	
Quad Directional Sensors	
Octaves	Up to 3 (nested)
Channels	Up to 192 Quad directional passive channels
Operating Frequency	Up to 4 kHz
Very High Frequency Sensors	
Octaves	Single
Channels	Up to 64 omnidirectional hydrophones
Operating Frequency	Up to 9 kHz
Omnidirectional Sensors	
Octaves	Up to 4 (nested)
Channels	Up to 512 omnidirectional hydrophones
Operating Frequency	Up to 4+ kHz
Ultra High Frequency Sensors	
Channels	Single omni, 3 omni array (bearing resolving)
Operating Frequency	Up to 120+ kHz



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