

Sea Lancer™ (2nd Gen)

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



Key features

- Automatic/manual detection and tracking of submarines and torpedoes
- Classify and localise torpedoes
- Track management
- Record and replay sonar data
- Performance prediction
- End-to-end training facility
- Health monitoring with continuous built-in test
- Marine mammal monitoring (optional)
- Active intercept (optional)
- Integrated or bistatic operation with HMS (optional)
- Can be supplied as part of UM's single 20ft ASW Mission Module (optional)

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

- Suitable for blue water and littoral operation
- No requirement for stern doors, improving safety and reducing ship building complexity
- Minimal size, weight and power
- Low noise array performance – flow and mechanical
- Full power operation achieved at shallow depth
- Improved manoeuvrability
- Low drag and snag risk
- Resolves port-starboard ambiguity instantaneously

Sea Lancer™ Characteristics

Sea Lancer™ System

Installation Mass	
Single Phase Power	
Three Phase Power (winching)	
Three Phase Power (transmitting)	
Winch Dimensions (WxDxH)	

Typical configuration

< 11, 000 kg (Winch, Tow, Cabinet and Console)
5.6 kW 115 VAC; 60 Hz
31 kW 440 VAC 3Ø; 60 Hz
25 kW 440 VAC 3Ø; 60 Hz
2.2 m x 3.4 m x 2.3 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	HFM, 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 Sensor*

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

* Optional



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