

# ARC Explorer

Towed Side Scan Sonar

Marine Sonic Technology

Attachment C



## Sea Scan® ARC Explorer Mk II

Dual Simultaneous Frequency | Stainless Steel | Adjustable Transducers

The ARC Explorer Mk II is the newest generation of Marine Sonic's towed side scan sonar designed for search, survey, and recovery applications. The Adaptive CHIRP Technology provides the highest imaging quality possible from a side scan sonar and supports ranges up to 60 % greater than non-Adaptive CHIRP systems. The high resolution imaging and simultaneous dual frequency operation, in conjunction with an adjustable tow point and variable transducer angle, make it an ideal tool for survey and infrastructure inspection applications that require a high level of flexibility. The rugged construction and a 300 m depth rating all in a one-man portable system also make it an ideal tool for the search & recovery and security communities.



A rugged stainless steel tow fish, portable watertight topside processor and a user choice of ruggedized laptop all interconnected with a twisted pair Kevlar tow cable make up the core of the ARC Explorer Mk II system. To best suit different user applications two standard dual frequency options are available. The 600 / 1200 kHz option provides the ideal compromise between high range and high resolution, whereas the 900 kHz / 1800 kHz option is optimized for applications that require ultra-high-resolution imagery for detecting very small targets in the first survey pass reducing time and cost. Further, 150 kHz and 300 kHz low frequency transducer options are available. The small form factor of all system components as well as the weight optimized design make the ARC Explorer Mk II ideal for one-man operation on small vessels of opportunity. The 30 m and 100 m lightweight Kevlar tow cables included with the Mk II provide flexibility for different applications and simplified cable management on those smaller platforms. Customer-specified lengths are also available. Like all Marine Sonic Technology products, the ARC Explorer Mk II comes with the user-friendly and self-explanatory Sea Scan Survey acquisition and review software.

### Applications

- Search & Recovery (Victim & Evidence)
- Security Scans for Piers, Docks, & Bridges
- Civil Infrastructure Inspection
- Salvage, Treasure, & Diving Surveys
- Terrain Mapping & Obstruction Surveys
- Offshore Infrastructure Inspection
- Archaeological & Biological Surveys
- Vessel Hull Inspections

### Key Features

- Dual Simultaneous Transmission
- Adaptive CHIRP
- Altimeter / Depth Sensor
- Stainless Steel Construction
- Variable & Modular Design
- Robust Nose and Fin Design
- 100 m & 30 m Cables Standard
- One Man Portable



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# Sea Scan<sup>®</sup> ARC Explorer Mk II

Full Flexibility | Low Lifecycle Costs | Great Customer Service

## Towfish Specifications

<b>Construction</b>	Stainless Steel & Polymer
<b>Dimensions</b>	Diameter 9.5 cm / 3.75 in x Length 113 cm / 44.5 in
<b>Weight</b>	22 kg / 49 lbs
<b>Depth Rating</b>	300 m / 984 ft

## Tow Cable Specifications

<b>Construction</b>	Twisted Pair with Kevlar Strength Member
<b>Length Options</b>	30 m to 500 m / 98 ft to 1640 ft
<b>Bend Radius</b>	10 cm / 4 in
<b>Strength</b>	340 kg / 750 lbs, Safe Working Load

## Topside Communications Unit Specifications

<b>Construction</b>	IP68 Watertight Enclosure
<b>Dimensions</b>	24 cm x 16.5 cm x 9 cm / 9.5 in x 6.5 in x 3.5 in
<b>Connections</b>	Ethernet / Towfish / Power
<b>Power</b>	12V - 30V DC, 100V - 200V AC with Adapter

## Acoustic Specifications

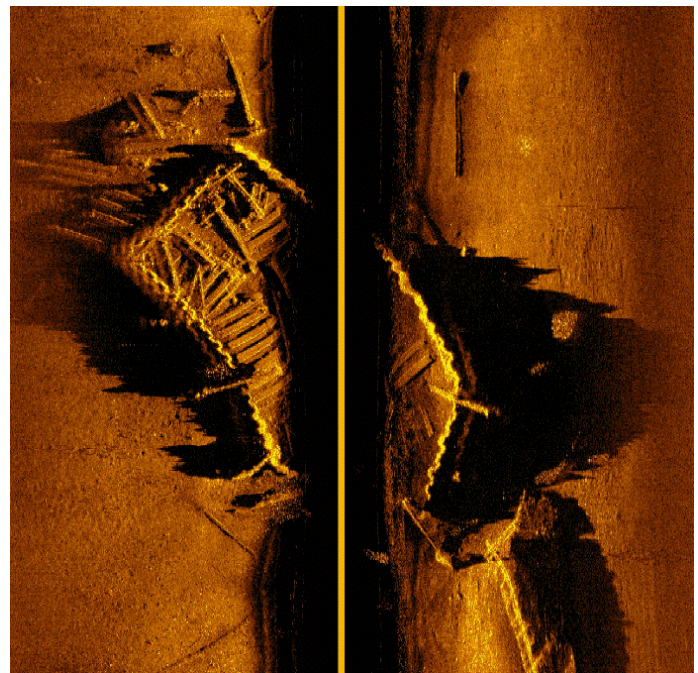
<b>Across Track Resolution</b>	0.4 cm to 1.5 cm
<b>Horizontal Beam Angle</b>	0.4° (one-way), < 0.3° (two-way)
<b>Vertical Beam Angle</b>	24° (two-way)
<b>Transmit Pulse Technology</b>	Marine Sonic Technology Adaptive™ CHIRP
<b>Transmit Pulse Bandwidth</b>	50 to 200 kHz
<b>Transmit Pulse Length</b>	< 0.5 ms
<b>Data Collection Speed</b>	5.3 Knots Max. (4.7 Knots @ 100 m Range)

## Frequency Specifications

Frequency	Max Range (per side)	Along Track Resolution
150 kHz	500 m / 1640 ft	60.8 cm
300 kHz	250 m / 820 ft	30.4 cm
600 kHz	140 m / 460 ft	15.2 cm
900 kHz	80 m / 262 ft	10.0 cm
1200 kHz	45 m / 148 ft	7.5 cm
1800 kHz	25 m / 82 ft	5.0 cm

The ARC Explorer Mk II employs dual simultaneous frequency operation with user selectable range and range delay settings per frequency. The integrated variable angle tow point and transducer angle adjustments are ideal for survey inspection of bridges, piers, harbor walls and offshore platforms as well as vessel hulls. Options include a depressor, keel weights, and a pole mount and a variety of customization options including magnetometer integration, and build-to-order tow fish designs. Modular construction minimizes maintenance costs and maximizes upgrade capabilities.

The ARC Explorer Mk II includes a quick-release safety mechanism to prevent the loss of the tow fish should it strike an object during the survey.



The above image of the *Betsy*, known as YO88 sunk in 1781, Yorktown River, was taken with the ARC Explorer Mk II using 1800 kHz transducers at a 30 m Range. The corrugated steel cofferdam is clearly visible around the wreck highlighted by the density of the steel. The less dense elongated concrete blocks protecting the top of the wreck resemble the ship's deck and can be distinguished from the steel.

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