StarFish Seabed Imaging Systems

The standard range of StarFish Seabed Imaging Systems come with everything you need to get you started;
- A quick start guide
- Top box
- StarFish Scanline
- Software CD
- StarFish Scanline Software
- GPS receiver
- Stainless steel rigging shackle
- 20m cable as standard

The following accessories are recommended optional extras or replacements for your system:

StarFish Scanline Software
The intuitive, easy to use data acquisition and logging package for the range of StarFish Seabed Imaging Systems, allows you to display StarFish side scan sonar imagery in real-time and digitally record along with data from other devices such as GPS receivers, compasses and speedometers.

Product Specifications

<table>
<thead>
<tr>
<th>SONAR</th>
<th>StarFish 990F</th>
<th>StarFish 450F</th>
<th>StarFish 450H</th>
<th>StarFish AS940F</th>
</tr>
</thead>
<tbody>
<tr>
<td>System/Part Number</td>
<td>BP00101</td>
<td>BP00051</td>
<td>BP00181</td>
<td>BP00184</td>
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<tr>
<td>Frequency</td>
<td>1MHz CHIRP</td>
<td>1MHz CHIRP</td>
<td>1MHz CHIRP</td>
<td>1MHz CHIRP</td>
</tr>
<tr>
<td>Operating Range</td>
<td>35m (115ft)</td>
<td>35m (115ft)</td>
<td>60m (197ft)</td>
<td>100m (328ft)</td>
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<tr>
<td>Horizontal Beam Width</td>
<td>0.3º</td>
<td>0.8º</td>
<td>1.7º</td>
<td>3.1º</td>
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<tr>
<td>Vertical Beam Width</td>
<td>60º</td>
<td>12º</td>
<td>10º</td>
<td>5º</td>
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<tr>
<td>Transducer Angle</td>
<td>Tilted Down 30º from Horizontal</td>
<td>Tilted Down 30º from Horizontal</td>
<td>Tilted Down 30º from Horizontal</td>
<td>Tilted Down 30º from Horizontal</td>
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<tr>
<td>Length</td>
<td>130mm (5.12&quot;)</td>
<td>130mm (5.12&quot;)</td>
<td>130mm (5.12&quot;)</td>
<td>130mm (5.12&quot;)</td>
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<tr>
<td>Width</td>
<td>378mm (14.88&quot;)</td>
<td>378mm (14.88&quot;)</td>
<td>378mm (14.88&quot;)</td>
<td>378mm (14.88&quot;)</td>
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<tr>
<td>Height</td>
<td>195mm (7.68&quot;)</td>
<td>195mm (7.68&quot;)</td>
<td>195mm (7.68&quot;)</td>
<td>195mm (7.68&quot;)</td>
</tr>
<tr>
<td>Weight (in Air)</td>
<td>2.0kg (4.41lb)</td>
<td>2.0kg (4.41lb)</td>
<td>2.0kg (4.41lb)</td>
<td>2.0kg (4.41lb)</td>
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<tr>
<td>Construction</td>
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<td>Reinforced polyurethane rubber</td>
<td>Reinforced polyurethane rubber</td>
<td>Reinforced polyurethane rubber</td>
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<tr>
<td>Colour</td>
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<td>Black</td>
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<tr>
<td>Depth Rating</td>
<td>50m (164ft)</td>
<td>50m (164ft)</td>
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<td>50m (164ft)</td>
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<td>Connector</td>
<td>6-Way Souriau “UTS” female socket</td>
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<td>6-Way Souriau “UTS” female socket</td>
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<tr>
<td>Supported</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Software Platforms</td>
<td>Impulse, 5-way (MCIL-5-FS)</td>
<td>Impulse, 5-way (MCIL-5-FS)</td>
<td>Impulse, 5-way (MCIL-5-FS)</td>
<td>Impulse, 5-way (MCIL-5-FS)</td>
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<tr>
<td>Operating System</td>
<td>Windows XP/Vista/7</td>
<td>Windows XP/Vista/7</td>
<td>Windows XP/Vista/7</td>
<td>Windows XP/Vista/7</td>
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<tr>
<td>Supported Software Platforms</td>
<td>Hypack 2009, SonarWiz.MAP/SonarWiz 5 (Chesapeake Technology), Quester Tangent SWATHVIEW system, CleanSweep-Lite (Oceanic Imaging Consultants, Inc.) and GeoDAS (real-time alternative software).</td>
<td>Hypack 2009, SonarWiz.MAP/SonarWiz 5 (Chesapeake Technology), Quester Tangent SWATHVIEW system, CleanSweep-Lite (Oceanic Imaging Consultants, Inc.) and GeoDAS (real-time alternative software).</td>
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Image of a submerged dam, Lake Conroe, TX, USA, courtesy of Subsea Technologies Inc., Katy, TX.

All specifications are subject to change in line with Tritech’s policy of continual product development. TIL-BRO-004.
**Introduction to Tritech’s StarFish Seabed Imaging Systems - Side Scan Sonar Range**

StarFish Seabed Imaging Systems are some of the most portable, shallow-water side scan sonars available on the market and have been designed with portability and simplicity in mind. StarFish sonars are ideal for shallow water operations, including port and harbour surveys, wreck hunting and Search and Rescue (SAR) missions.

- **High Performance Imaging**
  - utilising CHIRP© acoustic technology and DSP© techniques

StarFish sonar systems have the ability to detect small closely spaced targets at far greater distances than conventional single frequency, monotonic systems: by sweeping the acoustic transmission from one frequency to another, the bandwidth of this ‘chirped’ signal allows closely spaced targets to be imaged individually instead of typically becoming merged into one larger target.

CHIRP techniques also help to remove random or out-of-band noise, therefore reducing the risk of acoustic interference.

- **Advanced Design**
  - the signature full-body three-fin hydrodynamic design

The unique design improves stability of the sonar during towing and ultimately helps to ensure the system produces the highest quality sonar images possible and measuring less than 15” long, StarFish sonars are extremely portable.

- **Simple Operation**
  - ‘plug & play’ technology

StarFish Seabed Imaging Systems connect to a PC/ laptop via a top-box with USB connection (AC or DC powered), in addition, StarFish Scanline software has an easy-to-use interface and has been designed for Windows operating systems.

- **Key Market Applications**
  - Salvage operations, inspection of marine structures, planning of seabed installations, diving operations, pipelines/ cable location and inspection and damage inspection.

StarFish Seabed Imaging Systems - Side Scan Sonar Range

- **Starfish 450系列** entry level and increased image resolution systems
  - The original 450 series offers a powerful side scan sonar system with good, clear image definition and is available in a towed or hull mounted option
  - The 450 model has a narrower horizontal beam resulting in higher resolution images
  - 100m per channel
  - An inline connector permits upgrade to a longer deck cable (see the accessories page)

StarFish 990 series - higher-resolution system

- Higher frequency (1MHz) CHIRP transmission with extremely narrow horizontal acoustic beam, providing higher resolution for enhanced image definition and target detection
- Optimised for SAR operations; where target identification and high-definition underwater mapping of the seafloor are critical in the search and recovery of missing persons

**Wreck Hunting/ Archaeological Survey/ Academic and Research**

- StarFish 452F sonar image of submerged pilings. Image courtesy of Marek Szatan.
- StarFish 990F image of a SAR diver on the seabed and a training mannequin.
- StarFish 450F sonar image of the World War II (WW2) ship, SS Rose Castle; visible structures, include rigging, substructures and cargo holds at approximately 160 ft.
- StarFish 452F sonar image of submerged pilings. Image courtesy of Andrew Hiscock, Ocean Quest Adventure Resort (OCAR), Newfoundland and Labrador, Canada.
- StarFish 452F sonar image of a wreck site in the Gulf of Finland and shows a Finnish steamship at a depth of 33 metres.

**Features**

- Compact and lightweight unit; quick to deploy and no pre-installation required
- Fully LCD, three-fin, hydrodynamic design, to improves operational stability
- Easily powered from almost any source
- Simple, intuitive software (StarFish Scanline)
- Utilises the latest digital electronics and acoustic Compressed High Intensity Radar Pulse (CHIRP) and Digital-Signal-Processing (DSP) techniques

**Benefits**

- Easily transportable, fits in a small rucksack
- Plug & Play, ease of use with USB interface to a Windows®/PC
- Ease of integration, Software Development Kit (SDK) available
- Obtain GPS reference positions of seafloor targets
- Fast evaluation of waterways and unknown hazards
- Large area search from any surface vessel

**Image courtesy of Decktops, London in the Gulf of Finland and shows a Finnish steamship at a depth of 33 metres.**